

Analysis of Public Satisfaction with the JKN Mobile Application in Samarinda City Using the SERVQUAL Method and the Customer Satisfaction Index

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Abstract— The rapid advancement of information and communication technology has significantly influenced the delivery of public services, particularly in the healthcare sector. One of the digital innovations aimed at improving healthcare accessibility in Indonesia is the JKN Mobile application developed by BPJS Kesehatan. This application enables users to access various administrative services, membership information, healthcare facilities, and online queue systems. As the number of users continues to increase, evaluating service quality becomes essential to ensure that the application meets user expectations and performs effectively. This study aims to examine public satisfaction with the JKN Mobile application in Samarinda City by integrating the Service Quality (SERVQUAL) method and the Customer Satisfaction Index (CSI). Data were collected through structured questionnaires distributed to active users of the application, covering five service quality dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The SERVQUAL method was employed to assess the gap between user expectations and perceived performance, while the CSI method was used to determine the overall level of user satisfaction. The findings indicate that negative gaps are primarily observed in the reliability and responsiveness dimensions, suggesting that system stability, service accuracy, and response time require improvement. Meanwhile, the tangibles, assurance, and empathy dimensions demonstrate relatively positive evaluations. The overall CSI result shows that users are generally satisfied with the application, although continuous improvements are still necessary. The integration of SERVQUAL and CSI provides a comprehensive approach for identifying service deficiencies and supporting strategic improvements in digital healthcare services in Samarinda City.

Keywords— Public Satisfaction, Service Quality, SERVQUAL, JKN Mobile, Customer Satisfaction

I. INTRODUCTION

The rapid development of information and communication technology has significantly transformed the delivery of public services, particularly in the healthcare sector. Digitalization has become a strategic instrument for improving service efficiency, transparency,

and accessibility for the public (Dwi Anastasya et al., 2024). In Indonesia, the transformation of healthcare services into digital platforms is reflected in the development of the JKN Mobile application by BPJS Kesehatan. This application was designed to facilitate participants in accessing administrative services, membership information, healthcare facility data, digital queue systems, and other related features through an online platform. The implementation of JKN Mobile (Bahri et al., 2022) represents a broader governmental effort to modernize public service delivery and enhance the quality of healthcare administration through electronic systems (Febldiyanti, 2025).

As the number of JKN Mobile users continues to grow, ensuring the quality of digital healthcare services becomes increasingly important. In application-based services, user satisfaction is influenced not only by the availability of features but also by system reliability, ease of use, responsiveness, security, and overall service performance (Firman et al., 2023). When digital services operate effectively and align with user expectations, public trust and adoption rates are likely to increase. Conversely, system instability, slow response times, and inaccurate information may reduce user confidence and hinder service utilization. Therefore, a systematic evaluation of service quality is essential to identify weaknesses and provide data-driven recommendations for service improvement.

In service management literature, service quality is commonly evaluated using the Service Quality (SERVQUAL) framework. This model measures the gap between customer expectations and perceived performance across five primary dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Trinoto & Zamakhsari, 2021). The SERVQUAL model has been widely applied in various service industries, including digital and public services, because of its ability to provide diagnostic insights into specific service attributes that require improvement. Through gap analysis,

organizations can determine which dimensions fall short of user expectations and prioritize corrective actions accordingly.

In addition to SERVQUAL, the Customer Satisfaction Index (CSI) is frequently employed to measure overall satisfaction levels in a quantitative and aggregated manner (Afiffuddin & Widyaningrum, 2022). Unlike SERVQUAL, which focuses on identifying service gaps within specific dimensions, CSI summarizes user evaluations into a single index value that reflects the overall level of satisfaction. This index-based measurement enables institutions to categorize satisfaction levels into distinct classifications such as very satisfied, satisfied, or dissatisfied. The integration of SERVQUAL and CSI offers a comprehensive evaluation approach by combining detailed diagnostic analysis with aggregate satisfaction measurement. Such an integrated framework allows both in-depth assessment of service attributes and a general overview of user satisfaction levels.

Although numerous studies have examined service quality and customer satisfaction in digital platforms, empirical research focusing specifically on healthcare applications at the city level remains limited. Local characteristics such as digital literacy, infrastructure readiness, socio-economic conditions, and user behavior may significantly influence perceptions of digital healthcare services. In cities like Samarinda, variations in internet accessibility, public awareness, and user experience may produce different service quality assessments compared to larger metropolitan areas. Consequently, findings from studies conducted in other regions cannot be directly generalized without contextual empirical investigation (Hassya & Azwar, 2024).

Previous research has generally used only one analysis method, namely SERVQUAL or CSI, resulting in less comprehensive evaluations. Studies using SERVQUAL tend to focus on gap analysis without presenting an overall satisfaction index, while studies using CSI only present aggregate satisfaction levels without identifying specific weaknesses in service dimensions. This limitation indicates a research gap in the comprehensive evaluation of digital healthcare service quality. Therefore, an integrated approach that combines diagnostic analysis and aggregate measurements is needed to produce stronger findings (Afiffuddin & Widyaningrum, 2022).

Based on this, this study aims to analyze public satisfaction with the JKN Mobile application in Samarinda City by integrating the SERVQUAL and Customer Satisfaction Index methods. This approach allows for the identification of gaps in five dimensions of service quality while simultaneously measuring overall satisfaction levels in the form of an index. The novelty of this research lies in the application of the combination of SERVQUAL and CSI in the context of digital healthcare services at the city level. In addition to providing empirical evidence from a developing urban area, this research is also expected to assist BPJS Kesehatan in determining service improvement priorities. Academically, this research strengthens the study of service quality by demonstrating the importance of integrating gap analysis and satisfaction

index measurement in the evaluation of digital public services.

II. METHODS

This research employs a quantitative approach to examine public satisfaction with the JKN Mobile application in Samarinda City (Rahman et al., 2025). The quantitative method was chosen as it allows systematic measurement of user perceptions and expectations through statistical analysis. The study aims to assess service quality performance and measure overall user satisfaction by applying the SERVQUAL and Customer Satisfaction Index methods. The stages of the research design are illustrated in Figure 1. (Hanif et al., 2024)

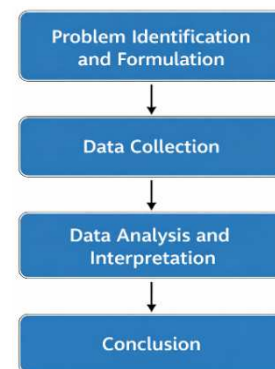


Figure 1. Research Design

A. Problem Identification and Formulation of Problems

The research design includes problem identification, data collection, and data analysis. This study examines user satisfaction with the JKN Mobile application by measuring the gap between user expectations and perceived service performance and determining the overall satisfaction index (Estiningtyas & Nawangsari, 2022).

B. Data Collection

Data were obtained through questionnaires, and in this study, the commonly used Lemeshow sample size was used. This formula is widely used to estimate the minimum number of respondents needed to represent the population. (Caniago & Rustanto, 2022). The Lemeshow formula can be seen in equation (1).

$$n = \frac{z^2 \times p(1-p)}{e^2} \quad (1)$$

$$n = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.1)^2}$$

$$n = 100$$

Description (1)

n : minimum sample size

z^2 : the z -score at a 95% confidence level = 1.96

p : the estimated proportion, which is 50% or 0.5

e^2 : the allowable margin of error due to researcher error = 10%

The calculation result indicates that the minimum number of respondents required for this study is 96 respondents. To improve the reliability of the data and ensure sufficient representation of JKN Mobile users in Samarinda City, the total number of respondents was rounded up to 100 respondents.

The structured questionnaire that had been developed was subsequently distributed to the selected respondents, namely residents of Samarinda City who had previously used the JKN Mobile application. The instrument was constructed based on the Service Quality (SERVQUAL) framework to assess the gap between users' expectations and their perceived performance of the services provided through the JKN Mobile application. The SERVQUAL approach was adopted because it enables the evaluation of service performance in relation to user expectations.

across five principal dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Yunita & Yansyah, 2024). The gap score was calculated by determining the difference between the overall mean perception score and the overall mean expectation score

using the specified calculation formula. The gap score formula can be seen in equation (2).

$$GAP = P - E \quad (2)$$

Description (2)

GAP = the gap value between user perception and expectations

p = perception

e = expectation

The gap value is obtained by subtracting the average perception value from the average expectation value for each service attribute. The results of this calculation are used to determine whether the services provided have met user expectations or not

A positive gap score indicates that the JKN Mobile application meets or exceeds user expectations, whereas a negative gap score indicates performance below expectations. Table 8 presents the SERVQUAL gap values for each service quality dimension, while Table 1 lists the questionnaire items measured using a five-point Likert scale from Strongly Disagree (SD) to Strongly Agree (SA)

Table 1. Research Instrument

No	Variabel	Code	Indicator	perception					expectation				
				S D	D G	S A	A G	S A	S D	D G	S A	A G	S A
1	Tangibles	X1.1	Is the JKN Mobile application interface clear enough and easy to understand when you use it?										
		X1.2	How can the features and menus in the JKN mobile application help you find health services easily?										
2	Reliability	X2.1	Does JKN mobile often experience system disruptions when accessing important services?										
		X2.2	Does the information displayed in the application always match the service conditions you receive at the health facility?										
3	Responsiveness	X3.1	Does the JKN Mobile application provide a fast response when you access the application?										
		X3.2	How is the loading process of the JKN Mobile application? Does it often take a long time?										
4	Assurance	X4.1	As a JKN Mobile participant, do you feel safe when accessing personal data via JKN Mobile?										
		X4.2	Can you trust that JKN Mobile can manage the system well and maintain the confidentiality of user data security?										
5	Empathy	X5.1	Does JKN Mobile make it easier for you to manage health services without having to come to the hospital?										
		X5.2	In your opinion, can JKN Mobile help you get health services more easily?										

C. Data Analysis and Interpretation

The data analysis and interpretation conducted in this study include statistical analysis and the interpretation of the Customer Satisfaction Index.

1) Statistical analysis

Statistical analysis was conducted through validity and reliability testing of the questionnaire instrument. The validity test aims to determine whether each question item is able to accurately measure the research variables. The instrument is considered valid if the calculated r value is greater than the r table value. Furthermore, the reliability test was performed to measure the consistency level of the instrument using the Cronbach's Alpha method with the assistance of SPSS software (Pradana et al., 2024).

2) Interpretation Customer Satisfaction Index

The Customer Satisfaction Index (CSI) method is applied to measure the overall satisfaction level of JKN Mobile users in Samarinda City. The CSI result is presented in percentage form, where a higher percentage reflects a greater level of user satisfaction, as illustrated in Table 2 (Rohmah et al., 2024)

Table 2. Interpretation table CSI

No	CSI value %	Description
1	81% - 100%	Very Satisfied
2	66% - 80.99	Satisfied
3	51% - 65.99%	Quite Satisfied
4	35% - 50.99	Dissatisfied
5	0.34% - 34.99	Very Dissatisfied

In general, a CSI value above 80% indicates that users are categorized as very satisfied, while values ranging from 60% to 80% reflect a satisfied level. A CSI value below 40% suggests a low level of satisfaction. This interpretation is used to evaluate the service performance of the JKN Mobile application and to identify priority areas for improvement. The CSI calculation involves several stages, including the determination of the Mean Satisfaction Score (MSS), Mean Importance Score (MIS), Weight Factor (WF), and Weighted Score (WS) represents the average importance level of each attribute and is calculated using Equation (Sihotang & Oktarina, 2022).

The Mean Importance Score (MIS) formula is used to calculate the average importance level of each service attribute based on respondents' assessments. The MIS value is obtained by dividing the total importance score given by respondents by the number of respondents, thus indicating the level of importance of each service attribute for JKN Mobile app users. MIS formula can be seen in equation (3).

$$MIS = \frac{\sum Y_i}{n} \quad (3)$$

Description (3)

n = number of respondents

MIS = Mean Importance Score

$\sum Y_i$ = respondent importance score

The Mean Satisfaction Score (MSS) represents the average satisfaction level of users toward each service attribute and is calculated using equation above. MSS formula can be seen in equation (4).

$$MSS = \frac{\sum X_i}{n} \quad (4)$$

Description (4)

n = number of respondents

MSS = Mean Satisfaction Score

$\sum X_i$ = respondent satisfaction score

The Weight Factor (WF) formula is used to determine the importance weight of each service attribute by dividing the MIS value of an attribute by the total MIS value of all attributes. This value indicates the contribution of each attribute to measuring customer satisfaction. WF formula can be seen in equation (5).

$$WF_i = \frac{MIS_i}{\sum MIS} \times 100\% \quad (5)$$

Description (5)

WF_i = Weight factor

MIS_i = Mean Importance Score i

$\sum MIS$ = total average importance of all attributes

The Weighted Score (WS) formula is used to calculate the contribution of each service attribute to user satisfaction. The WS value is obtained by multiplying the Weight Factor (WF) by the Mean Satisfaction Score (MSS) for each service attribute. WS formula can be seen in equation (6).

$$WS_i = WF_i \times MSS_i \quad (6)$$

Description (6)

WS_i = Weighted Score

WF_i = Weight Factor

MSS_i = Mean Satisfaction Score

The Customer Satisfaction Index (CSI) formula is used to determine the overall level of user satisfaction. The CSI value is obtained by dividing the total Weighted Score (WS) by the highest Likert scale score, then multiplying by 100% to obtain the percentage level of user satisfaction with the JKN Mobile application. CSI formula can be seen in equation (7).

$$CSI = \frac{\sum WS_i}{HS} \times 100\% \quad (7)$$

Description (7)

CSI = Customer Satisfaction Index

$\sum WS_i$ = total weighted score

HS = Highest scale value

III. RESULT AND DISCUSSION

A. Statistical Analysis

1) Validity test

The validity test was conducted to ensure that each questionnaire item is capable of accurately measuring the research variables. The test was performed on 100 respondents by comparing the calculated r value with the r table value at a significance level of 0.05 as seen in table 3 and table 4. (Ananda & Hapsari, 2024)

Table 3. Validity Test and Perception Items

NO	R count	R table	Description
1	0.623	0.1946	VALID
2	0.664	0.1946	VALID
3	0.704	0.1946	VALID
4	0.667	0.1946	VALID
5	0.741	0.1946	VALID
6	0.730	0.1946	VALID
7	0.738	0.1946	VALID
8	0.765	0.1946	VALID
9	0.756	0.1946	VALID
10	0.687	0.1946	VALID

Table 4. Validity test Expectation Items

NO	R count	R table	Description
1	0.602	0.1946	VALID
2	0.750	0.1946	VALID
3	0.762	0.1946	VALID
4	0.765	0.1946	VALID
5	0.674	0.1946	VALID
6	0.751	0.1946	VALID
7	0.769	0.1946	VALID
8	0.706	0.1946	VALID
9	0.753	0.1946	VALID
10	0.745	0.1946	VALID

Based on the results of the validity test presented in Tables 3 and 4, it is known that all questionnaire items, both for the perception and expectation variables, have calculated r values greater than the r table value of 0.1946. Therefore, all questionnaire items are declared valid and suitable for use as research instruments.

2) Reliability Test

The reliability test was conducted to assess the consistency and stability of the research instrument. In this study, Cronbach's Alpha was applied using SPSS version 27, as presented in Tables 5 and 6. (Haryanto et al., 2023).

Table 5. Realibility test Perception and Expectation

Variable	Number of Items	Cronbach Alpha	Description
Perception	10	0.888	Reliable
Expectation	10	0.900	Reliable

The research instrument is considered reliable if the Cronbach's Alpha value is ≥ 0.60 . Based on the reliability test results shown in Table 5, the Cronbach's Alpha values obtained were 0.888 for perception items and 0.900 for expectation items (Simon Silalahi & Joanda Kaunang, 2022)

B. Customer Satisfaction Index CSI

The Customer Satisfaction Index (CSI) is applied to describe the overall level of public satisfaction with the JKN Mobile application in Samarinda City based on the evaluation of each service indicator. The CSI calculation is conducted through several stages, including the computation of the Mean Satisfaction Score (MSS), Mean Importance Score (MIS), Weight Factor (WF), and Weighted Score (WS). The results of these calculations are presented in Table 6, which summarizes the overall CSI indicator values. (Tandilino et al., 2023).

Table 6 CSI Result Indicators

Code	Statement	MSS	MIS	WF	WS
A1	Is the JKN Mobile application interface clear enough and easy to understand when you use it.	3.76	3.52	9.27	34.86
A2	How can the features and menus in the JKN mobile application help you find health services easily.	3.74	3.9	10.27	38.40
A3	Does JKN mobile often experience system disruptions when accessing important services.	3.67	3.88	10.22	37.99
A4	Does the information displayed in the application always match the service conditions you receive at the health facility.	3.58	3.65	9.61	34.40
A5	Does the JKN Mobile application provide a fast response when you access the application.	3.78	3.77	9.93	37.52
A6	How is the loading process of the JKN Mobile application? Does it often take a long time.	3.80	3.89	10.24	38.92
A7	As a JKN Mobile participant, do you feel safe when accessing personal data via JKN Mobile.	3.92	3.78	9.95	39.01
A8	Can you trust that JKN Mobile can manage the system well and maintain the confidentiality of user data security.	3.83	4.07	10.72	41.04
A9	Does JKN Mobile make it easier for you to manage health services without having to come to the hospital.	3.74	3.79	9.98	37.32
A10	In your opinion, can JKN Mobile help you get health services more easily.	3.8	3.73	9.82	37.32

Indicators with the highest Weighted Score (WS) values indicate the service aspects that most influence JKN Mobile user satisfaction, such as ease of accessing BPJS services through the app and perceived security of personal data. Conversely, indicators with lower WS values, such as the interface and menu features within the JKN Mobile app, are affected.

C. Calculation of the Servqual Gap Method

The SERVQUAL method is applied to measure the gap between user expectations and perceived service performance. The gap value represents the difference between the perceived score and the expected score for each service attribute.

The gap value is obtained by subtracting the average perception value from the average expectation value for each service attribute. The gap calculation results are used to determine whether the service provided has met user expectations. The following gap value results are provided.

Table 7. Result of the Servqual Gap Analysis

Variable	Perception	Expectation	GAP
Tangibles	3.75	3.71	0.04
Reliability	3.6	3.8	-0.1
Responsiveness	3.8	3.9	-0.1
Assurance	3.9	3.8	0.1
Empathy	3.77	3.76	0.01

The Servqual gap analysis results presented in Table 7 indicate that the Tangibles, Assurance, and Empathy dimensions show positive gap values, suggesting that the performance of the JKN Mobile application in these aspects has met user expectations. In contrast, the Reliability and Responsiveness dimensions demonstrate negative gap values indicating that the application's consistency and response speed have not fully satisfied users. Therefore, these two dimensions should be prioritized for improvement in order to enhance service quality and increase public satisfaction with the JKN Mobile application in Samarinda City (Bachtiar et al., 2022).

D. Comparison of Servqual and CSI Method Results

The comparative analysis of the Servqual and Customer Satisfaction Index (CSI) methods demonstrates that both approaches provide complementary insights into the service quality of the JKN Mobile application in Samarinda City. The Servqual results indicate negative gap values in the Reliability and Responsiveness dimensions, which correspond to lower Weighted Score (WS) values in the CSI analysis, particularly for indicators related to system stability and service accuracy. Conversely, the positive gap values found in the Tangibles, Assurance, and Empathy dimensions are supported by relatively higher WS values, especially in indicators concerning data security and user trust. Therefore, Servqual functions as a diagnostic tool for identifying specific service gaps, while CSI provides an overall measurement of user satisfaction. (Paul et al., 2025)

IV. CONCLUSION

The SERVQUAL analysis indicates that the Reliability and Responsiveness dimensions produce negative gap values, suggesting that system stability and response speed remain the main weaknesses of the JKN Mobile application in Samarinda City. In contrast, the Tangibles, Assurance, and Empathy dimensions demonstrate positive gap values, indicating that these aspects have met user expectations.

The Customer Satisfaction Index (CSI) results show that the overall level of user satisfaction is categorized as satisfied. However, the CSI method only provides an overall satisfaction value and does not identify specific service weaknesses. Therefore, the SERVQUAL method provides more detailed diagnostic information in determining priority areas for service improvement.

Overall, the integration of SERVQUAL and CSI provides a comprehensive evaluation framework for assessing service quality and user satisfaction. These findings can support efforts to improve the performance and quality of the JKN Mobile application in order to enhance public satisfaction with digital healthcare services in Samarinda City.

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