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An Analysis of User Satisfaction Toward the Maxim Application in Medan City using the E-Servqual Model

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Abstract

The development of information technology has facilitated various activities, including online transportation services. Maxim, as one of the digital transportation service providers, has received numerous user complaints, particularly regarding its navigation features, interface design, and electronic payment system. This study aims to analyze user satisfaction with the Maxim application in Medan City using the E-Servqual method, which includes five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The research used a quantitative approach by distributing online questionnaires to 104 respondents. The results showed that all dimensions had negative GAP values, with tangibles being the most dominant factor affecting user satisfaction. As a solution, a real-time dashboard prototype was designed to help developers monitor feature evaluations directly. This research is expected to serve as a reference for improving the quality of Maxim's services in the future.

Keywords: *user satisfaction, e-servqual, Maxim application*

1. Introduction

The development of information technology has transformed patterns of social interaction across various sectors, including transportation. Information technology has created new opportunities for companies to innovate and develop new businesses. It not only provides opportunities for large-scale enterprises but also supports the growth of small businesses. With technology, business activities have become faster, easier, and more efficient. Nowadays, shopping, learning, and transportation can be carried out conveniently through mobile phones [1]. The success of implementing information technology is assessed in two stages, namely implementation and operational. In the implementation stage, the evaluation includes system design to be applied and readiness for system transition. Meanwhile, in the operational stage, the assessment covers the execution of procedures, data security, recovery capabilities, and the alignment of the system with user expectations and needs. The effectiveness of information technology implementation in an organization can be measured by the level of user satisfaction [2].

Service quality can be determined by comparing expectations with reality. The level of user satisfaction with a technology is influenced by the quality of the service itself. An important aspect of evaluation is that an application is deemed successful and functioning according to its intended purpose when it fulfills user needs. Good service quality becomes a factor that drives repeat transactions and fosters user loyalty. Online transportation represents a service sector that leverages technology through application-based and online systems, covering both payments and bookings. Online transportation has become an alternative choice for the Indonesian public because it is affordable and readily available anytime and anywhere [3].

The most widely used online transportation service is Gojek, with 59.13% of respondents in a public survey by Databooks stating that they use Gojek [4]. This is followed by Grab, acknowledged by 32.24% of respondents, while Maxim occupies the third position, used by 6.93% of respondents. Maxim is a Russian transportation application that entered and began operating in Indonesia in 2018.

Studies on user satisfaction with online transportation applications have been conducted previously with various approaches. Study [5] examined the use of GrabFood services in Lubuk Linggau City. The findings indicated that there were still several weaknesses in the service, such as fares considered too expensive, insufficient customer promotions, and limited restaurant options available

on the application. Nevertheless, the level of user satisfaction among Bina Insan University students reached 94%, which was categorized as very satisfactory.

Study [6] investigated service quality in the Maxim application using the Servqual approach. The results showed that all service quality dimensions (X) significantly influenced user satisfaction (Y). Questionnaire responses were dominated by "Strongly Agree" and "Agree" on the satisfaction variable, indicating that the majority of respondents were satisfied with the Maxim application's services.

Meanwhile, study [7] highlighted the importance of access speed as a key factor in enhancing user satisfaction with the eHAC (Electronic Health Alert Card) application. Supported by the Indonesian Ministry of Health, the application was used for travel data collection during the COVID-19 pandemic. The findings emphasized that system speed was a crucial aspect in ensuring user comfort and satisfaction, particularly in health emergency situations.

In addition, a study by Yolangga and Dinna Yunika (2024) also examined the Maxim application using the EUCS (End User Computing Satisfaction) model. Their research demonstrated that users were satisfied with five dimensions: content, accuracy, format, ease of use, and timeliness. However, the study did not specifically address common user complaints frequently found in Playstore reviews, such as difficulties in determining pickup locations and the complexity of payment features.

Previous studies concluded that users were generally satisfied with the Maxim application; however, they did not specifically highlight the service dimensions most frequently criticized in Playstore reviews [8]. Therefore, a more specific and diagnostic approach is needed, namely the E-Servqual model, which assesses the gap between expectations and actual services based on five dimensions: tangibles, reliability, responsiveness, assurance, and empathy [9]. The choice of this topic is based on the urgency of improving service quality in online transportation applications such as Maxim, which continues to grow and compete in Indonesia's digital market. By identifying the dimensions that most significantly influence user satisfaction, this study is expected to provide a valuable contribution to the development of application-based digital services, particularly in the city of Medan

2. Literature Review

2.1 User Satisfaction

User satisfaction is a subjective evaluation that arises after users interact with an information system. Generally, satisfaction occurs when the system's performance meets or exceeds the initial expectations of the users. Conversely, dissatisfaction arises when the system fails to provide benefits in accordance with user expectations. In the context of information systems, user attitudes toward the system are highly significant, as they determine the continuity of system usage and serve as a basis for the development of new features [10].

To measure this level of satisfaction, researchers refer to several indicators. Some of these include efficiency, ease of use, pride in using the system, and overall satisfaction. In addition, another approach refers to five dimensions: Content, related to the completeness and relevance of information provided by the system; Accuracy, reflecting the correctness of processed and displayed data; Format, which evaluates the aesthetics and navigability of the user interface; Ease of Use, describing the convenience of operating system functions; and Timeliness, referring to the speed of the system in delivering output [11].

2.2 Online Transportation

Online transportation is a transformation of the conventional transportation system combined with application-based technology. By utilizing smartphones and internet connectivity, transportation services such as motorcycles and taxis can now be accessed instantly. This change did not occur suddenly but was driven by lifestyle shifts, particularly after the COVID-19 pandemic, which encouraged digital interaction as a new habit. Online transportation offers convenience, efficiency, and time flexibility for its users [12].

2.3 Maxim

Maxim is one of the application-based transportation service providers offering various integrated services, ranging from personal transportation to household services. Originating from Russia, the application has been active in Indonesia since 2018. Unlike its competitors, Maxim has expanded its service coverage by adding features such as cargo, cleaning, massage, and helper services, thereby addressing diverse community needs within a single platform [13].

2.4 E-Servqual (Electronic Service Quality)

The E-Servqual model is an extension of the traditional SERVQUAL model, which was initially designed to measure service quality in direct service sectors. In the digital context, E-Servqual is employed to evaluate the quality of services delivered through electronic media, such as applications or websites. This model assesses the extent of the gap between user expectations and their perceptions of the services received [14]

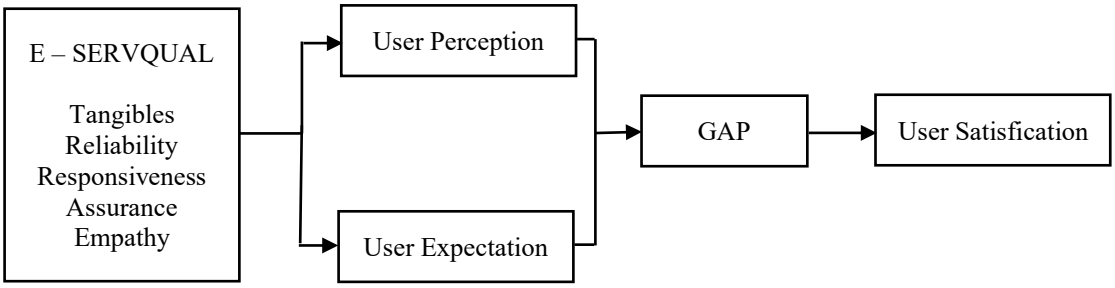

Fig 1. E-servqual Model

The five main dimensions in this model include:

1. Tangibles, referring to the visual appearance and completeness of system features;
2. Reliability, related to the consistency and accuracy of the system in delivering information;
3. Responsiveness, assessing the speed of the system as well as customer service in responding to user needs;
4. Assurance, encompassing a sense of security, trust, and system credibility;
5. Empathy, referring to the ability of the system or service provider to demonstrate personal attention to users.

2.5 Laravel

Laravel is a PHP-based framework designed to simplify the process of web application development through an efficient structure. This framework provides various features such as routing systems, template engines, database migration, authentication, and APIs. Laravel also supports the use of a command-line interface through Artisan CLI and facilitates automated testing. In the context of this research, Laravel is utilized to develop a real-time dashboard prototype aimed at assisting developers in monitoring and evaluating the performance of application features [15].

3. Research Methodology

This study employs a quantitative approach with a survey method, in which data were collected through the distribution of questionnaires to Maxim application users in Medan City. Using the criterion of individuals who have previously used Maxim in Medan, a total of 104 respondents were obtained. The objective of this research is to measure the level of user satisfaction by applying the E-Servqual model, which encompasses five dimensions as described in the previous section. The data were analyzed using the GAP formula from E-Servqual, namely:

GAP = Perception – Expectation

A positive GAP value indicates that the service has met or exceeded expectations, whereas a negative value signifies user dissatisfaction.

4. Results and Discussion Data Analysis

The respondent characteristics in this study were obtained from questionnaires completed by 104 participants, and the data were processed using Microsoft Excel and SPSS.

Table 1: Respondents by age

	Age	Frequency	Percent
Valid	< 20 years old	7	6.7
	21 - 30 years old	65	62.5
	31 - 40 years old	30	28.8
	> 40 years old	2	1.9
	Total	104	100.0

Table 2: Respondents by job

	Job	Frequency	Percent
Valid	Students	31	29.8
	Employees	41	39.4
	Civil Servants	17	16.3
	Entrepreneurs	14	13.5
	Housewives	1	1.0
	Total	104	100.0

Table 3: Respondents by education

	Education	Frequency	Percent
Valid	Elementary school	1	1.0
	Junior High school	1	1.0
	Senior High school	42	40.4
	Bachelor's Degree	53	51.0
	Master's Degree	7	6.7
	Total	104	100.0

Table 4 presents the average values of the responses from all respondents for each statement. Subsequently, these average values were recalculated to obtain the overall mean. The average score of each respondent was then grouped according to its respective variable. Afterwards, the mean values of each variable were again calculated to generate the overall mean score. The final results of these calculations are presented in Table 5 below

Table 4: The mean score of each variable

Variables	Expectation
Tangibles	-0,9818
Reliability	-0,9188
Responsiveness	-0,6154
Assurance	-0,6755
Empathy	-0,609

Table 5: The mean score of each dimension

Perception		Expectation	
Tangibles	3,86965812	Tangibles	4,851496
Reliability	3,908119658	Reliability	4,826923
Responsiveness	4,294871795	Responsiveness	4,910256
Assurance	4,194711538	Assurance	4,870192
Empathy	4,307692308	Empathy	4,916667

The final results between reality and expectations were calculated using the GAP score to determine the level of user satisfaction with the Maxim application through the E-SERVQUAL method. If the GAP calculation produces a positive value, it can be concluded that users are satisfied. Conversely, if the GAP calculation results in a negative value, it indicates that users are dissatisfied with the respective variable, as presented in Table 5 above.

The table shows that all dimensions of user satisfaction with the Maxim application have negative GAP values, which means the service has not yet met user expectations. Tangibles (-0.9818) reflect dissatisfaction with visual aspects and facilities, while Reliability (-0.9188) indicates that the service lacks consistency and is not always dependable. Responsiveness (-0.6154) suggests that responses to users are not sufficiently fast and effective, whereas Assurance (-0.6735) indicates a lack of safety and trust in the service. In addition, Empathy (-0.609) highlights that attention to user needs still requires improvement.

Overall, these results emphasize that the Maxim application needs to make improvements in terms of visual aspects, reliability, service responsiveness, security assurance, and user care in order to enhance customer satisfaction.

4.1 T-Test / Partial Test

The T-test is conducted to determine the effect of each independent variable on the dependent variable individually (partially). The testing criteria are as follows:

1. H0 is rejected if the significance value < 0.05 or if the t-count > t-table. This indicates that the independent variable has a significant partial effect on the dependent variable.
2. H0 is accepted if the significance value > 0.05 or if the t-count < t-table. This means that the independent variable does not have a significant partial effect on the dependent variable.

Based on these criteria, the results of the T-test for the research sample are presented as follows:

Table 6: T-Test/Partial Test

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Dev	Beta		
1	(Constant)	34.844 1.576		22.110	.000
	Tangibles	.226 .039	.541	5.823	.000
	Reliability	-.088 .042	-.235	-2.081	.040
	Responsiveness	.296 .128	.241	2.306	.023
	Assurance	.013 .091	.015	.139	.890
	Emphaty	7.837-5 .136	.000	.001	1.000

a. Dependent Variable: Kepuasan Pelanggan

1. The test results show that the significance value for Tangibles is 0.000 with a t-value of 5.823. This indicates that, partially, Tangibles have a positive and significant effect on Customer Satisfaction, since the significance value of 0.000 < 0.05.
2. The test results show that the significance value for Reliability is 0.040 with a t-value of -2.081. This indicates that, partially, Reliability has a significant effect on Customer Satisfaction, as the significance value of 0.040 < 0.05.
3. The test results show that the significance value for Responsiveness is 0.023 with a t-value of 2.306. This indicates that, partially, Responsiveness has a positive and significant effect on Customer Satisfaction, since the significance value of 0.023 < 0.05.
4. The test results show that the significance value for Assurance is 0.890 with a t-value of 0.139. This means that, partially, Assurance does not have a significant effect on Customer Satisfaction, as the significance value of 0.890 > 0.05.
5. The test results show that the significance value for Empathy is 1.000 with a t-value of 0.001. This indicates that, partially, Empathy does not have a significant effect on Customer Satisfaction, as the significance value of 1.000 > 0.05.

4.2 Website Implementation

In this study, it is explained that the research results include the development of a web-based system designed to analyze user satisfaction with the Maxim application in Medan City, using the E-SERVQUAL model. The following is the proposed website interface:

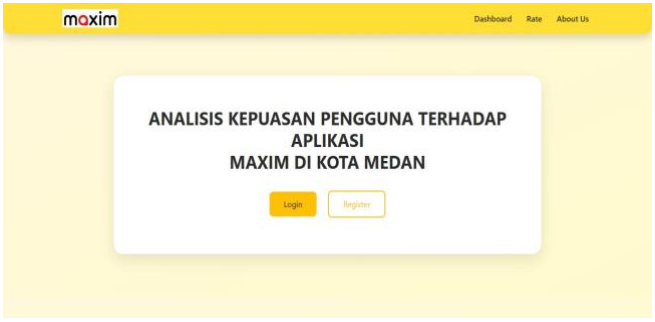

Fig. 2: Home Page

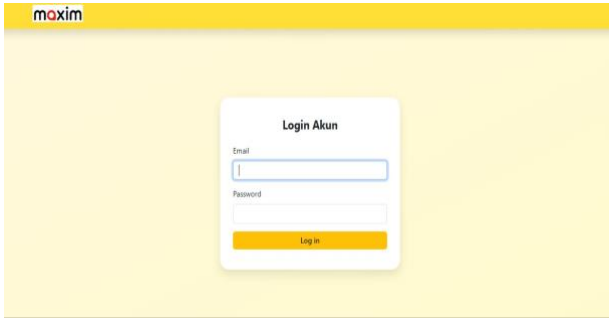

Fig. 3: Login Page

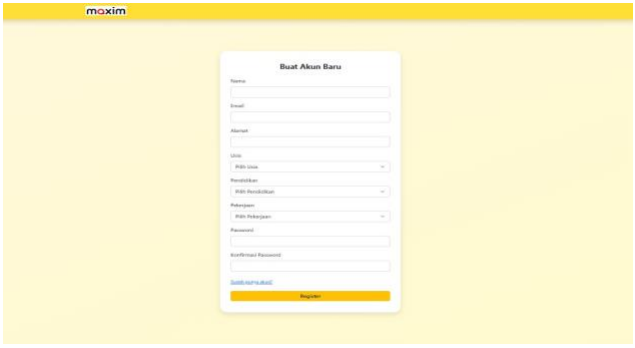

Fig. 4: Register

Fig. 5: Dashboard

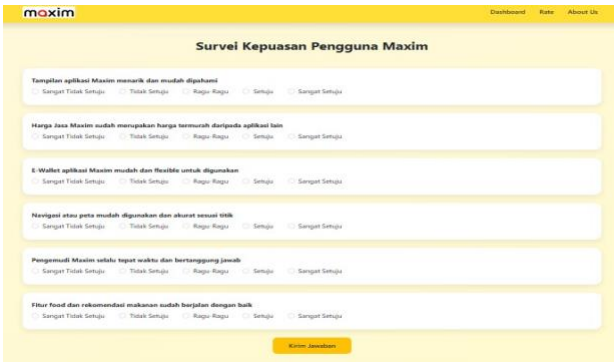

Fig. 6: Rate/survey page

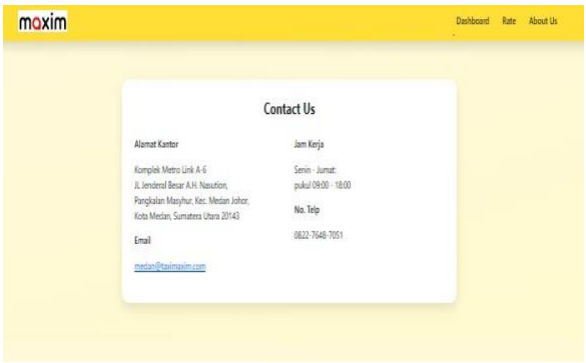

Fig. 7: About us

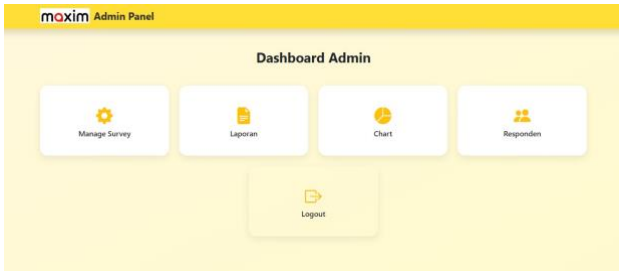

Fig. 8: Admin homepage/dashboard

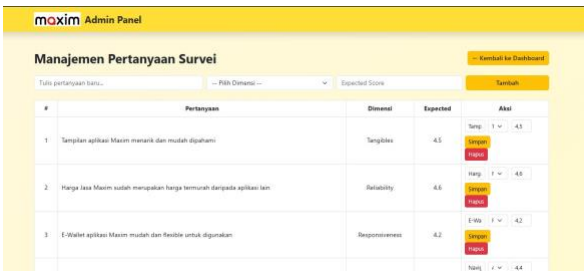

Fig. 9: Manage survey

Fig. 10: Respondent Data Page

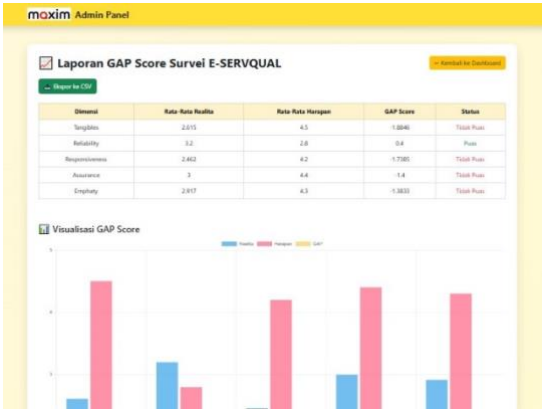

Fig. 11: Report Page

The explanations for each page are as follows:

1 Main Page: The main page contains two options: a login form for users who already have an account and a registration form for users who do not have an account yet.
2 Login Page: The login page provides a form to identify authorized users. Access rights on this website consist of two types, namely admin and respondent.
3 Registration Page: This page contains a form that must be completed by respondents to meet the application's analytical needs, such as information on education, age, and occupation.
4 Dashboard Page: The dashboard page displays the values or rating results given by respondents, both per variable and per feature. This page is intended to assist developers in improving the application. The dashboard is accessible to both admin and respondents with identical displays and data sources.
5 Rating Page: This page contains an assessment form to be completed by respondents. The form consists of several questions with five Likert-scale answer options.
6 About Us Page: This page provides information about the call center, the head office located in Medan, and other contact details needed to reach Maxim in case of issues.
7 Admin Main Page: The admin main page contains several forms from submenu features available only to administrators, including: Manage Survey, Reports, Charts, Respondents, and Logout.
8 Manage Survey Page: This page is used to manage survey questions, including adding, modifying, and deleting questions. Furthermore, the admin can change dimensions and input the company's expectation values.
9 Report Page: This page presents survey results answered by respondents. The displayed data include the total value per variable, the GAP value between the company's expectations (set in the previous questions) and the respondents' actual answers, as well as information indicating which variables have met satisfaction and which have not.
10 Respondent Page: This page displays respondent data reports in the form of demographic characteristics suc

5. Conclusion

This study aimed to measure the level of user satisfaction with the Maxim application in Medan City using the E-SERVQUAL method, which encompasses five service quality dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Based on the GAP analysis, most users expressed dissatisfaction, particularly in certain dimensions. However, through the partial t-test, it was found that three dimensions—tangibles, reliability, and responsiveness—significantly and positively influenced user satisfaction, with tangibles being the most dominant factor (significance value $0.000 < 0.05$, t-value = 5.823).

As a practical implication, it is recommended that Maxim improve its service quality through employee training, the implementation of standardized procedures, and the utilization of real-time customer feedback via the dashboard system developed by the researcher. Meanwhile, future researchers are encouraged to explore other variables beyond the E-SERVQUAL model and to consider customer loyalty as an additional variable to better understand the long-term relationship between service quality and user satisfaction.

It should also be noted, and serves as a limitation of this study, that the research was conducted without interviews with Maxim representatives. Therefore, it is advisable for future studies to include interviews with Maxim's management or staff to gain deeper insights.

References

[1] M. F. Hardines, "Analisis Kualitas Layanan Aplikasi Maxim Terhadap Kepuasan Pengguna Dengan Menggunakan Metode E-Servqual(Studi Kasus Maxim Kota Jambi)," 2022.
[2] M. Ariandi and D. Marsolina, "Analisis Kepuasan Driver Terhadap Aplikasi Maxim Menggunakan Metode End User Computing Satisfaction (EUCS)," JURIKOM (Jurnal Ris. Komputer), vol. 10, no. 2, p. 412, 2023, doi: 10.30865/jurikom.v10i2.5819.
[3] Diana, "Penerapan Metode E-Servqual Untuk Evaluasi Kualitas Layanan Sistem Informasi," J. Ilm. Matrik, vol. 17, no. 1, pp. 43–52, 2015, [Online]. Available: https://media.neliti.com/media/publications/224994- penerapan-metode-e-servqual-untuk-evalua-94a2276e.pdf
[4] Desvintria, "Analisis Pengaruh Kualitas Sistem, Kualitas Informasi, Kualitas Layanan Terhadap Kepuasan Pengguna Aplikasi ISD," 2022. doi: 10.32409/jikstik.20.2.2714.

[5] B. Budiman, S. F. Rodiyansyah, and D. Abdurrahman, "Pengukuran Kepuasan Pengguna Dan Peningkatan Layanan Sistem Informasi Pelayanan Desa Dan Data Terpadu (Siladdu) Kabupaten Majalengka," J-Ensitec, vol. 5, no. 01, pp. 272–281, 2018, doi: 10.31949/j-ensitec.v5i01.1216.
[6] A. Afrizon, "Sistem Informasi Pelayanan Pelanggan Dan Kepuasan Pelanggan Sebagai Prediktor Terhadap Kinerja Perusahaan Pt. Pln (Persero) Rayon Tanjungbatu," Cash, vol. 4, no. 02, pp. 97–112, 2021, doi: 10.52624/cash.v4i02.1794.
[7] M. S. Dr. Retnowati WD Tuti, M.Si Dr. Asep Setiawan and M. S. Winda Dwi Astuti Zebua, S.Kom., M.Si Muhammad Sahrul, S.Sos., Pelayanan Transportasi Antarmoda, vol. 19, no. 1. 2021.
[8] Ivoryn and A. Diny, "Analisis Kepuasan Pengguna Layanan Transportasi Online Maxim Roda Dua dengan Kerangka Kerja PIECES FRAMEWORK (Studi Terhadap Pengguna Maxim Di Bekasi) - The LSPR Repository," 2023.
[9] L. Mulyadi, I. Fitrianti, and A. A. Ridha, "Analisis User Experience Aplikasi Ojek Online Maxim Dengan Model Hci," Dinamik, vol. 28, no. 2, pp. 79–84, 2023, doi: 10.35315/dinamik.v28i2.9368.
[10] Yolangga and D. yunika Hardiyanti, "User Satisfaction Analysis of the Maxim Application Using Model End User Computing Satisfaction (EUCS)."
[11] N. A. O. Saputri and Alvin, "Measurement of User Satisfaction Level in the Bina Darma Information Systems Study Program Portal Using End User Computing Satisfaction Method," J. Inf. Syst. Informatics, vol. 2, no.1, pp. 154–162, 2020, doi: 10.33557/journalisi.v2i1.43.
[12] R. R. F. Tambunan, J. I. Sihotang, and J. Y. Mambu, "Analisa Tingkat Kepuasan Kerja Driver Maxim Terhadap Sistem Layanan Maxim Dengan Pieces Framework," CogITo Smart J., vol. 7, no. 2, pp. 339–348, 2021, doi: 10.31154/cogito.v7i2.330.339-348.
[13] N. Nopalia and D. Dalilah, "Analisis Kepuasan Pelayanan Aplikasi Maxim Pada Pengguna Mahasiswa Di Fakultas Sains Dan Teknologi Universitas Pgri Silampari Menggunakan Metode Servqual," JUSIM (Jurnal Sist. Inf. Musirawas), vol. 7, no. 2, pp. 167–174, 2022, doi: 10.32767/jusim.v7i2.1866.
[14] M. A. N.H., E. Setiawan, N. R. Dzakiyullah, and Y. Wicaksono, "Analisis Tingkat Kepuasan Pengguna Terhadap Aplikasi Maxim Menggunakan Metode Servqual Dan Importance Performance Analysis," vol. 5, no. August, pp. 152–162, 2024, doi: 10.35957/jtsi.v5i2.9036.
[15] I. G. N. Suteja and A. Sansprayada, "Implementasi Aplikasi Framework Laravel Studi Kasus PT. XYZ," J. Tek. Inform., vol. V, no. 1, pp. 18–24, 2019