

The Influence of Perceived Use and Perceived Usefulness on the Loyalty of JKN Mobile Application Users through Satisfaction as a Mediating Variable

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Abstract: This study aims to analyze the influence of Perceived Ease of Use and Perceived Usefulness on loyalty in using the JKN Mobile Application through satisfaction as a mediating variable. This study uses a quantitative approach with an explanatory research type. The study population is all active users of the JKN Mobile Application in Pasuruan, Probolinggo, Lumajang, Jember, Banyuwangi, Bondowoso, and Situbondo Regencies. The sampling technique uses non-probability sampling with a purposive sampling method, and obtained 402 respondents based on the Slovin formula calculation with a 5% error rate. Data collection was carried out through online and offline questionnaires. Data analysis used the Partial Least Square (PLS) method with the help of SmartPLS 4 software to test the direct and indirect effects between variables. The results of this study, involving state-owned banking institutions in Jember Regency, show that perceived ease of use and perceived usefulness significantly influence satisfaction. Perceived ease of use and perceived usefulness significantly influence user loyalty. Satisfaction significantly mediates the effects of perceived ease of use and perceived usefulness on user loyalty.

Keywords: perceived ease of use, perceived usability, user loyalty, satisfaction

1. INTRODUCTION

Health is a basic human need that is crucial to maintain and fulfill. Without good health, people cannot carry out their activities optimally, which impacts productivity. The state has an obligation to ensure public access to fair, equitable, and affordable health services. The Indonesian government responded to this need by establishing a comprehensive social security system. The enactment of Law Number 40 of 2004 concerning the National Social Security System (SJSN) marked the first milestone in the realization of universal health insurance in Indonesia. This law was later reinforced by Law Number 24 of 2011 concerning the Social Security Administering Body (BPJS), which established BPJS Kesehatan as the institution that administers health insurance for all Indonesians. In line with these regulations, on January 1, 2014, the government officially launched the National Health Insurance Program (JKN). This program aims to provide health protection to all Indonesians without exception. JKN is expected to be a solution to reduce the burden of public health costs and increase access to adequate healthcare facilities.

The National Health Insurance Council (2025) shows that there were 208.2 million registered JKN participants in 2018, of which 208.2 million were active, in 2019 there were 224.1 million registered participants, while the number of active participants decreased by 204.0 million, in 2020 there were 222.5 million registered participants, while the number of active participants decreased by 197.9 million, in 2021 there were 235.7 million registered participants, while the number of active participants was 187.0 million, in 2022 there were 248.8 million registered participants, while the number of active participants increased by 204.4 million in the previous year, in 2023 there

were 267.3 million registered participants, while the number of active participants was 213.5 million, in 2024 there were 276.6 million registered participants, while the number of active participants was 220.2 million people (DJSN, 2025).

Table 1. Number of registered participants and active JKN participants

Year	Registered Participants (millions)	Active Participants (millions)
2018	208.2	208.2
2019	224.1	204.0
2020	222.5	197.9
2021	235.7	187.0
2022	248.8	204.4
2023	267.3	213.5
2024	276.6	220.2

Source: National Health Insurance Council (2025)

Table 1. below shows the number of registered and active participants in the National Health Insurance (DJSN 2025). Based on data from the Central Statistics Agency (BPS), the Horseshoe Region in East Java, which includes the regencies of Pasuruan, Probolinggo, Lumajang, Jember, Banyuwangi, Bondowoso, and Situbondo, is a densely populated area with an estimated total population of 9,882,993. souls (BPS 2025). If referring to the coverage of national insurance participants in the East Java province area reaching approximately 95.83% of the total population, the estimated number of JKN participants in the Tapal Kuda region is estimated to reach 9,471,217 people (BPS 2025). However, assuming that only 8.4% of JKN participants actively use the JKN Mobile Application, the number of active users of the JKN Mobile application in the Tapal Kuda region is estimated to be only 830,171 users (BPS 2025). Table 2 below shows population data, estimated JKN participants and estimated JKN Mobile users in the Tapal Kuda region of East Java.

Table 2. Estimated data on JKN participants and Mobile JKN users

Region	Resident	JKN participants (95.83%)	JKN Mobile Users (8.4%)
Pasuruan	1,680,862 people	1,610,815 people	141,193 Users
Probolinggo	1,193,272 people	1,143,676 people	100,235 Users
Lumajang	1,152,264 people	1,104,372 people	96,790 Users
Jember	2,615,874 people	2,506,707 people	219,733 Users
Banyuwangi	1,764,540 people	1,691,010 people	148,221 Users
Bondowoso	791,838 people	758,828 people	66,514 Users
Situbondo	684,343 people	655,809 people	57,485 Users
Total	9,882,993 people	9,471,217 people	830,171 Users

Source: Central Statistics Agency (2025)

The data shows that the adoption rate of digital health technology in the Horseshoe region remains low, despite the region's significant potential for optimizing the use of the Mobile JKN application in terms of infrastructure and number of participants. The Horseshoe region is also known for its diverse social and geographic characteristics, ranging from coastal areas and mountainous areas to rapidly developing urban areas. These differences lead to variations in digital literacy levels, internet access, and utilization of health technology. Residents in some areas still face challenges accessing conventional health services, including long queues, long distances to health facilities, and limited medical personnel.

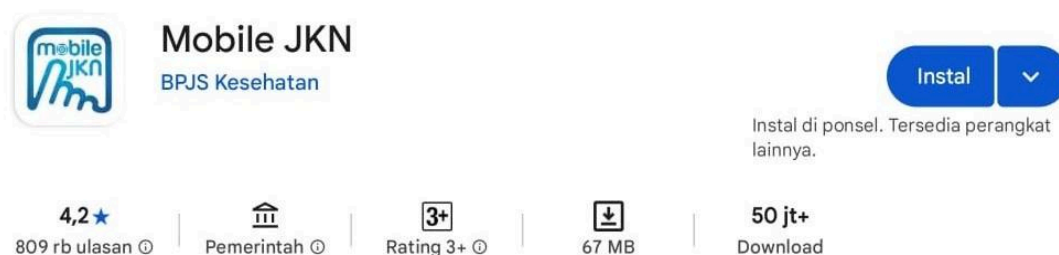


Figure 1. JKN Mobile Application in the Apps Store

Source: Googleplay.com

Based on Figure 1, data from the Google Play Store above, as of May 2025, the JKN Mobile Application had been downloaded more than 50 million times, with a rating of 3+ out of 5 stars. Meanwhile, on the App Store (iOS), this application has a rating of around 3.4 out of 5 stars, indicating that iOS user satisfaction is also not very high. The number of downloads is quite large, but user reviews from both platforms show many complaints, especially related to login difficulties, not receiving OTP codes, the application often exits by itself (crashes), and an unintuitive interface design. Sentiment analysis of these reviews also shows that negative sentiments dominate compared to positive sentiments, indicating that the level of satisfaction with the JKN Mobile Application is still low. Words such as "difficult," "failed," "slow," and "cannot be opened" are the words most frequently appearing in user reviews on the Play Store and App Store. If digital technology in public services does not provide real benefits and a good user experience, then users are likely to return to conventional methods, because it hinders the main goal of digitalization, namely efficiency and ease of access to health services for the public.

The JKN Mobile Application supports the transformation of healthcare services to be faster, more practical, and transparent. Users can utilize features such as service registration, bill checking, online queuing, and online consultations with doctors. However, the existence of digital applications such as Mobile JKN does not guarantee successful utilization if it does not foster loyalty from users. The variety of public service applications that initially attract users' attention, but are then rarely used again, because they do not provide an increase in performance or productivity (Perceived Usefulness), and are not easy to use (Perceived Ease of Use), the impact will arise the phenomenon of low loyalty. Loyalty can be understood as user behavior demonstrated through repeated use of the same application, continuing to choose digital services from the same provider, and sharing positive experiences related to satisfaction obtained (Yulisetiari et al., 2024). Low loyalty in the context of public services can hinder the initial goal of digitalization, namely to achieve efficiency, effectiveness, and improve the quality of services for the community. In the context of information technology, understanding user behavior is very important so that the development of digital-based applications can be on target. One theory that explains the behavior of technology adoption and use is the Technology Acceptance Model (TAM).

Technology Acceptance Model (TAM) is a theory about the use of information technology systems that is considered very influential and generally explains individual acceptance of the use of information technology systems (Tiara et al., 2025). The TAM model, there are two key variables that influence user attitudes and intentions towards technology, namely Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). According to Yulisetiari et al., (2024) Perceived Ease Of Use (PEOU) is the user's perception or belief that an application or technology is easy to use, does not require much effort, provides a simple and practical user experience, the level of one's belief that technology is easy to understand, using an information technology system will not be troublesome or require great effort when used (free of effort). While Perceived Usefulness (PU) according to Yulisetiari et al., (2024) is the user's perception or belief that the use of a system or technology provides real benefits, helps complete tasks more effectively, and improves user performance in certain activities. two components of Perceived Ease Of Use (PEOU) and Perceived Usefulness (PU) which will later foster loyalty (Fajar, 2025).

In addition, satisfaction factors also influence system acceptance. Satisfaction, according to Kotler and Keller (2016:153), is a person's feeling of pleasure or disappointment that arises after comparing perceived performance with their expectations. If the perceived performance is in accordance with consumer expectations, then a sense of satisfaction will arise from within the consumer. Consumer satisfaction needs to be considered as a form of response to the product offered. If the level of satisfaction is at the highest level, this can provide benefits for the company because consumers will continue to use the same product sustainably (Yulisetiari et al., 2024a).

Satisfaction is also often used as an important indicator in evaluating the success of information system implementation. If the system performance meets or even exceeds user expectations, then the level of satisfaction will be higher and encourage them to be loyal to the system. Conversely, if the system performance does not meet expectations, then users will feel disappointed and potentially leave the system, so that loyalty is difficult to form (Imannuela et al., 2025). According to (Yulisetiari et al., 2024b), loyalty is a strong commitment from someone to reuse a product or service in the future, and is not easily influenced by situations or marketing efforts that could potentially cause consumers to switch to other products or services. Research (Yulisetiari et al., 2021) states that high levels of satisfaction will provide benefits for the company and contribute to the formation of customer loyalty, because consumers will return to enjoy the same product or service.

Research Gap in previous research conducted by Makbul et al., (2025) showed that Perceived Ease Of Use has no effect on Loyalty, contrary to other studies which stated that ease of use is the main factor of Loyalty. Similar research also conducted by (Harianto & Ellyawati, 2023; Rani, 2020; Oxtavina & Noor, 2022) said that Perceived Usefulness has no effect on loyalty, while other studies emphasize that the benefits perceived by users should be the main driver of loyalty. Research by Meisari et al., (2024) and research by Luo et al., (2025) showed that Perceived Ease of Use and Perceived Usefulness have a significant effect on user attitudes, but do not have a direct effect on loyalty, even though, in various studies in the field of information technology, user satisfaction has been shown to play an important role in bridging this influence and increasing loyalty. Furthermore, research related to Mobile JKN is still limited in exploring user perceptions of the application's features, particularly whether ease of access and the benefits provided are truly able to increase satisfaction and loyalty. Empirical studies that specifically examine the role of satisfaction as a mediator in the adoption of Mobile JKN technology in Indonesia are lacking. This study can address this gap by clarifying the influence between Perceived Ease of Use, Perceived Usefulness, satisfaction, and loyalty in the context of Mobile JKN.

Based on the phenomenon that occurs, there is a research gap related to the influence of Perceived Ease Of Use and Perceived Usefulness on the loyalty of the JKN Mobile Application with satisfaction as a mediating variable, further research is needed, understanding the influence between these variables will help Application managers at BPJS Kesehatan identify existing weaknesses, this research is focused on the Tapal Kuda area of East Java, The area is a regional area consisting of seven districts with diverse local backgrounds, both in terms of geographical character, urbanization level, regional economic structure, and community social activity patterns. This area has a large population and a significant level of National Health Insurance (JKN) Participation, this reflects the intensity of community interaction with public health services. The availability of health service facilities in this area is relatively evenly distributed, but the use of digital-based services is not yet fully optimal, this area is considered relevant in measuring the perception of ease, benefits, and satisfaction with the digital services of Mobile JKN. The research is expected to provide a more comprehensive picture of the factors influencing the loyalty of Mobile JKN users in the Tapal Kuda area.

2. LITERATURE REVIEW

2.1.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a concept of whether an information system is acceptable to users. TAM is a model that explains how technology users adopt and apply it in the workplace and methodically anticipate what will happen in the future based on historical data (Davis & Granic, 2024:3). The Technology Acceptance Model (TAM) is an adaptation of the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen. The purpose of TAM is to provide an explanation of the determinants of various end-user computing technologies and user populations (Davis & Granic, 2024:3).

2.1.2 Customer Satisfaction Loyalty Theory

Customer Satisfaction–Loyalty Theory views customer satisfaction as the result of a user's evaluation after comparing the perceived performance of a product or service with their expectations. This satisfaction plays a strategic role because it is the main foundation in building customer loyalty. Kotler and Keller (2016:153) define satisfaction as a feeling of pleasure or disappointment that arises after consumers compare perceived performance with their expectations. Kotler and Keller (2016:154) state that a high level of satisfaction will increase the tendency of customers to maintain use, reuse, and build long-term engagement .

2.1.3 Perceived Ease of Use

According to Susanti & Wulandari, (2024) the perception of ease of use (Perceived Ease of Use) describes the extent to which a technology is believed to be able to provide benefits to its users. Meanwhile, according to Pokhrel, (2024) emphasized that Perceived Ease of Use is related to the level of one's belief that the technology is easy to understand. Referring to these two views, Perceived Ease of Use can be understood as an individual's belief that technology is easy to operate, does not require great effort, and is able to provide benefits to users (free of effort). A person's decision to use technology is highly dependent on the perception of ease, when a technology feels easy to understand, presents information clearly, and is not difficult to learn, individuals will tend to be interested in using it.

2.1.4 Perceived Usefulness

Perceived Usefulness is the extent to which an individual anticipates that adopting a technology will improve their performance in the workplace (Maharani & Sundari, 2024) . Meanwhile, according to Akhsan (2024) , Perceived Usefulness refers to an individual's or organization's belief in a system's ability to assist in performing their work. If they are not convinced that the system provides benefits, they are likely not to use it. Perceived Usefulness refers to the extent to which a person believes that using a technology can increase effectiveness or productivity in carrying out their activities. This concept describes an individual's perception that the technology used can provide convenience in completing certain tasks.

2.1.5 Satisfaction

According to Kotler & Keller (2016:154) customer satisfaction is a feeling that arises from customers due to an assessment of the expectations and performance of a product or service, Karaman et al., (2024) emphasized that satisfaction is the level of user feelings that arise after evaluating whether the product performance is in accordance with initial expectations. Overall, user satisfaction is formed through their experience in using a system or technology, especially when its performance meets or exceeds expectations, which are influenced by ease of use, performance quality, feature relevance, emotional experience, and quality of service provided.

2.1.6 User Loyalty

According to Kotler and Keller (2016:150), loyalty is a deep commitment from consumers to make consistent repeat purchases in the future despite situational influences or marketing efforts from competitors. Yulisetiarni et al., (2021) also explain that loyalty is a form of consumer commitment to a product or service offered by a company, which encourages them to continue to make repeat purchases and recommend it to others. Overall, user loyalty is formed through emotional attachment and trust in a product or service, which arises from positive experiences, consistent satisfaction, perceived service quality, and the belief that the product or service can meet needs and provide sustainable benefits.

This conceptual framework provides a guide to research analysis, compiled based on theories and concepts from experts and support from previous research, the research framework is:

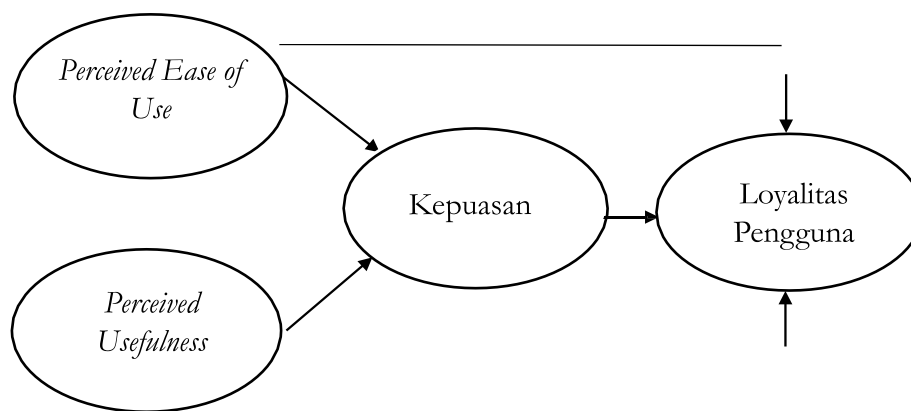


Figure 1. conceptual framework of the research

3. METHOD

The research used is explanatory research. According to Sugiyono (2024:37), explanatory research is a study that aims to explain the causal relationship between the variables studied through hypothesis testing. This study uses Partial Least Square (PLS). This study uses Smart PLS 4 software. This study uses explanatory research that aims to determine the effect of Perceived Ease of Use and Perceived Usefulness on the loyalty of the JKN Mobile Application with satisfaction as mediation, data collection is done by distributing questionnaires. This study is a quantitative type of research.

The population in this study was all users of the JKN Mobile Application in Tapal Kuda, East Java, which includes the Regencies of Pasuruan, Probolinggo, Lumajang, Jember, Banyuwangi, Bondowoso, and Situbondo. The sampling technique used in this study was non-probability sampling with the purposive sampling method. Purposive sampling is a sampling technique based on certain criteria set by the researcher (Sugiono, 2018:85), including:

- a. Respondents must be 18 years old, this age is the productive age range that dominates the users of the Mobile JKN application, this age can also understand, comprehend, and be able to fill out the questionnaire correctly.
- b. Respondents are active users of the JKN Mobile Application

The required sample is 400 respondents, proportional sample distribution in the horseshoe area which includes Pasuruan, namely 68 respondents, Probolinggo 48 respondents, Lumajang 47 respondents, Jember 106 respondents, Banyuwangi 71 respondents, Bondowoso 32 respondents and Situbondo 28 respondents.

The type of data in this study is quantitative. The data was obtained from respondents' answers through questionnaires distributed online and offline. The online questionnaire was distributed in the form of a Google Form that can be accessed via the link: <https://forms.gle/qHMh2UiehN5SXYj38>, then shared through various social media, such as WhatsApp, Instagram, and Telegram. Meanwhile, the distribution of the questionnaire offline was carried out directly to respondents who were users of the JKN Mobile Application in Tapal Kuda, East Java who were accessing health services at advanced referral hospitals. Data collection was carried out with a limited number in each district, namely 10 respondents per region, to ensure even representation of the research area and ensure the involvement of respondents who used the JKN Mobile Application.

The operational definition of variables is the factors or research variables. The operational definition is in Table 3 below:

Table 3. Operational Definition of Variables

No.	Variable Definition	Variable indicators
	Perceived Ease of Use (X_1): is the respondent's perception about Easy to learn, Easy to understand, Effortless, Easy to use	a. Easy to learn: how to use the JKN Mobile Application is easy for users to understand. b. Easy to understand: the appearance of the Mobile JKN application is easy for users to understand. c. Effortless: users can run the JKN mobile application easily d. Easy to use: the Mobile JKN application is designed to be easy to use by various user groups to suit their needs.
	Perceived Usefulness (X_2): is the respondent's opinion about Work quickly, Useful, Effectiveness, Easier, Performance	Yulisetiari et al., (2024) , there are five indicators of Perceived Usefulness , namely: a. Work quickly: Using the JKN Mobile Application helps users complete health administration needs more quickly. b. Useful: The JKN Mobile Application is useful for users because it helps with administrative and health information needs. c. Effectiveness: The JKN Mobile Application increases the effectiveness of users in achieving health service goals. d. Easier: The JKN Mobile Application makes it easier for users to fulfill various needs related to health services. e. Performance: The JKN Mobile Application supports improving user performance in managing health services efficiently.
	Satisfaction (Z): is the respondent's attitude regarding Overall satisfaction, Expectations, Experience	Yulisetiari et al., (2024), there are three indicators of satisfaction: a. Overall satisfaction: Users feel generally satisfied with the experience of using the JKN Mobile Application. b. Expectations: namely the benefits received by users according to expectations. c. Experience: real user experience while using the JKN Mobile Application provides ease in accessing services.
	User loyalty (Y): is the respondent's attitude to continue using the JKN Mobile Application consistently in the future.	User loyalty According to Yulisetiari et al., (2024) there are indicators: a. Saying positive things: customers give good testimonials after using the JKN Mobile Application. b. Recommend to someone who asks for advice: the customer suggests a close person to use the JKN Mobile Application. c. Making repeat purchases (continue purchasing): customers use the Application repeatedly to access JKN services.

Statistical data processing plays a crucial role in research because it forms the basis for scientific conclusions. This process includes calculations and analyses tailored to the research model. To ensure valid conclusions, the data must be thoroughly analyzed. In this study, all statistical analysis procedures were assisted by SmartPLS 4 software. Path analysis is used to estimate the causal influence between variables and to assess the position of each variable in the relationship path, both direct and indirect influences.

Hypothesis testing is used to determine whether a temporary assumption or statement (research hypothesis) can be accepted or rejected (Ghozali, 2018;86). Hypothesis testing is carried out: Furthermore, to answer/achieve the third objective, it is necessary to determine the magnitude of the direct effect (DE) and indirect effect (IE). Path calculations are used to explain the direct and indirect influence of Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) on User Loyalty through Satisfaction. To calculate the paths, researchers must first analyze the significance of each path. If a significant path is found, the Trimming theory is applied, which performs a significance analysis by removing insignificant paths. Based on these results, the magnitude of the direct and indirect effects will be determined. The more detailed path calculation process in this study is as follows (Ghozali 2021:245).

4. RESULT

4.1 General Description of Research Object

The JKN Mobile Application is a digital service system developed by BPJS Kesehatan, the organizer of the National Health Insurance (JKN) program. BPJS Kesehatan itself was established based on Law Number 24 of 2011 and officially began operating on January 1, 2014. The presence of this institution marks a major transformation in the social health insurance system in Indonesia, with the primary mandate of ensuring fair and equitable access to health services for all participants, including formal workers, informal workers, and Contribution Assistance Recipients (PBI). As the number of participants increases year after year, the burden and complexity of services also increases. These challenges demand a service system that is not only fast, but also efficient and transparent. In this context, digital transformation has become a strategic necessity, no longer just an option. Digitalization is seen as a solution to improve operational efficiency while expanding service access. As part of this transformation, BPJS Kesehatan launched the JKN Mobile Application. This smartphone-based platform allows participants to access various services independently without having to visit branch offices or health facilities. The application is available on Android and iOS operating systems, allowing for a wider user base. Its presence supports the digitalization of public services in the health sector. Mobile JKN is equipped with various important features, such as participant information and digital cards, changes to Primary Health Facilities (FKTP), online queue registration, billing and premium payment information, health service history, and self-health screening. These features are designed to provide easy access to services quickly, practically, and efficiently. Conceptually, this digitalization is expected to reduce physical queues, increase information transparency, and accelerate administrative processes that were previously carried out manually.

The success of digital service implementation depends not only on system availability or feature completeness. User acceptance and perception play a far more crucial role. In practice, a number of technical challenges are still encountered, such as login difficulties, delayed verification code (OTP) access, system disruptions, and interfaces that some users find unintuitive. These situations have the potential to impact perceived ease of use and perceived benefits, ultimately impacting satisfaction and loyalty with the application.

4.2 SEM-PLS Analysis Results

4.2.1 Outer Model

Validity testing was conducted in the research to determine whether the frequency distribution of respondent data from filling out the questionnaire was reliable or not as a measure of the accuracy of the variable indicator values.

a. Convergent Validity Test.

The loading factor is one of the factors that determines the validity of convergent validity. According to Duryadi (2021:61), a correlation value above 0.6 is considered valid. Convergent validity is shown in Table 4.

Table 4. Convergent Validity Results

Variables	Indicator	Loading Factor		Information
		Score	Rule of Thumb	
Perceived Ease of Use (X1)	PEOU 1	0.805	0.600	Valid
	PEOU 2	0.800	0.600	Valid
	PEOU 3	0.812	0.600	Valid
	PEOU 4	0.784	0.600	Valid
Perceived Usefulness (X2)	PU 1	0.792	0.600	Valid
	PU 2	0.766	0.600	Valid
	PU3	0.825	0.600	Valid
	PU 4	0.813	0.600	Valid
	PU5	0.753	0.600	Valid

Loyalty (Y)	LOY 1	0.847	0.600	Valid
	LOY 2	0.764	0.600	Valid
	LOY 3	0.792	0.600	Valid
User Satisfaction (Z)	KEP 1	0.823	0.600	Valid
	KEP 2	0.778	0.600	Valid
	KEP 3	0.801	0.600	Valid

Table 4. shows that the indicators for each variable have a loading factor value above 0.6, so they are declared valid.

b. Discriminant Validity.

Discriminant validity testing using cross-loadings and average variance extracted (AVE) values. The results are:

Table 5. Cross Loading Results.

Variables	Indicator	Perceived ease of use	Perceived usefulness	Satisfaction	User loyalty
Perceived ease of use (X1)	PEOU 1	0.805	0.290	0.264	0.366
	PEOU 2	0.800	0.309	0.283	0.447
	PEOU 3	0.812	0.321	0.269	0.398
	PEOU 4	0.784	0.285	0.259	0.365
Perceived usefulness (X2)	PU 1	0.265	0.792	0.378	0.360
	PU 2	0.267	0.766	0.365	0.367
	PU 3	0.338	0.825	0.356	0.304
	PU 4	0.296	0.813	0.349	0.346
	PU 5	0.332	0.753	0.303	0.335
Satisfaction (Z)	KEP 1	0.291	0.336	0.823	0.430
	KEP 2	0.280	0.380	0.778	0.438
	KEP 3	0.236	0.351	0.801	0.407
User loyalty (Y)	LOY 1	0.418	0.328	0.424	0.847
	LOY 2	0.396	0.350	0.398	0.764
	LOY 3	0.378	0.367	0.455	0.792

Based on Table 5, the cross-loading results for each variable are higher than the correlation values with other variable indicators. For example, the cross-loading factor value for variable X1 with indicator X1.1, which is 0.805, is higher than the cross-loading value for variable X2 with indicator X2.1, which is 0.792. Furthermore, the AVE is used to identify the achievement of discriminant validity requirements and is greater than 0.5 (Duryadi, 2021:62). The AVE results are:

Table 6. Results of Average Variance Extracted (AVE)

Variables	Loading factors		
	score	Rule of thumb	Information
Perceived ease of use (X1)	0.641	0.500	Valid
Perceived usefulness (X2)	0.643	0.500	Valid
Satisfaction (Z)	0.641	0.500	Valid
User loyalty (Y)	0.624	0.500	Valid

Table 6 The AVE value for each variable is higher than 0.5 so that all variables in this study are said to be valid. To determine the reliability of the variables, a reliability test was conducted. According to (Duryadi, 2021:63), a reliable variable must have a Cronbach's alpha and composite reliability values greater than 0.6. The results are

shown in Table 7:

Table 7. Reliability Test Results

Variables	Cronbach Alpha		Composite Reliability		
	Score	Score	Score	Rule of thumb	Information
Perceived ease of use (X1)	0.813	0.600	0.877	0.600	Reliable
Perceived usefulness (X2)	0.849	0.600	0.893	0.600	Reliable
Satisfaction (Z)	0.720	0.600	0.843	0.600	Reliable
User loyalty (Y)	0.721	0.600	0.844	0.600	Reliable

Table 7 shows that the variable values have Cronbach alpha and composite reliability of more than 0.6 so that all variables are declared reliable.

4.2.2 Structural model (inner model)

The inner model was tested using the R-square (R²) value or coefficient of determination, the effect size using f-square (f²), and the Q-square (Q²) for predictive relevance. The R-square results are shown in Table 8 below.

Table 8. R-Square Test Results

Variables	R-square	Information
Satisfaction (Z)	0.242	Weak
User loyalty (Y)	0.422	Moderate

Based on Table 8, the R2 value for the satisfaction variable (Z) is 0.242, indicating that the ability of the Perceived Ease of Use (X1) and Perceived Usefulness (X2) variables to explain the satisfaction variable (Z) is 24.2% (weak category). Meanwhile, the R2 value for the user loyalty variable (Y) is 0.422, indicating that the exogenous variables in the model are able to explain 42.2% of the variation in user loyalty (Y) (moderate category). The remainder is explained by other variables outside the model.

The next test is F-Square (F²), where 0.02 indicates a small effect, 0.15 indicates a moderate effect, and 0.35 indicates a large effect. The F-square is as follows:

Table 9. F-Square Test Results

Variables	F-Square	
	Satisfaction (Z)	User loyalty (Y)
Perceived ease of use (X1)	0.045	0.138
Perceived usefulness (X2)	0.165	0.028
Satisfaction (Z)		0.183

Based on Table 9, the results of the F2 test on the satisfaction variable (Z), the Perceived Ease Of Use variable has an F2 value of 0.045. This value indicates that X1 has a small influence on satisfaction (Z). Variable X2 has a moderate influence on the satisfaction variable (Z). Variable X1 has a nearly moderate influence on user loyalty (Y). Variable X2 has a small influence on user loyalty (Y). The Satisfaction variable (Z) shows that the satisfaction variable (Z) has a moderate influence on user loyalty (Y).

Next is the Q-Square (Q²). The assessment range is 0 < Q² < 1. The closer it is to one, the better the model is.

Q-Square calculation: $Q^2 = 1 - (1 - R^2_1) (1 - R^2_2)$
 $Q^2 = 1 - (1-0.242) (1-0.422) = 0.562$

The Q-Square calculation results were 0.562 and approaching 1, indicating that this research model has strong

predictive relevance. The model was able to explain information from the observational data well, amounting to 56.2%, with the remainder explained by other variables outside the model.

4.2.3 Path analysis]

Path Diagram Construction using SmartPLS 4.0 application, namely:

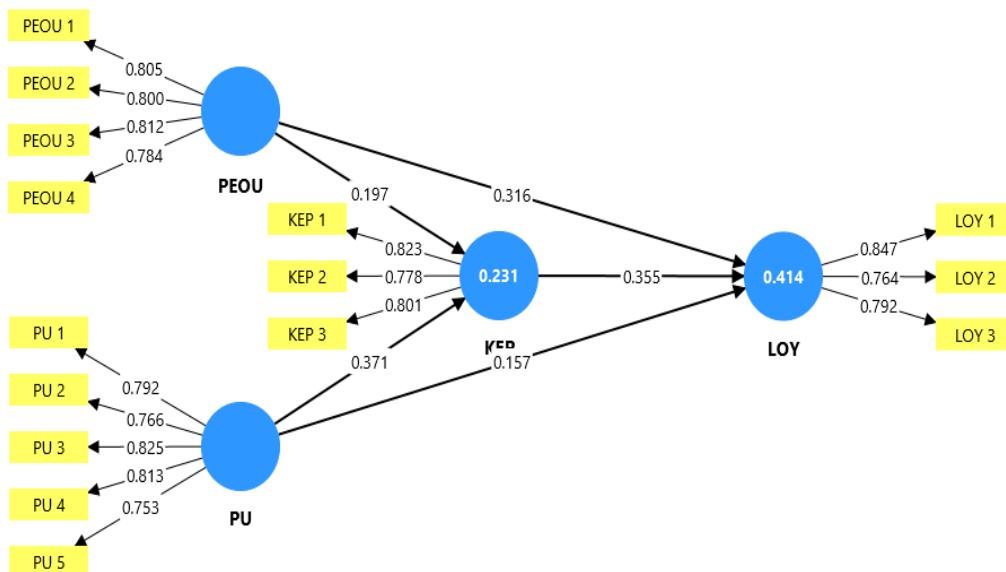


Figure 2. Path Diagram Construction

This research is a reflective model (arrows point from the construct to the indicators) because the indicators reflect the construct. In this context, for example, the Perceived Ease of Use (PEOU) variable is measured using four indicators (PEOU 1-PEOU 4) that reflect the perceived level of user convenience.

4.2.4 Hypothesis Testing

a. direct effects

Direct influence testing, where the exogenous variable directly influences the endogenous variable without another endogenous variable acting as a mediator. The test results are in Table 10 below:

Table 10. Results of Path Coefficients and Hypothesis Testing

Variables	t-statistic	p-value	Information
KEP -> LOY	5,877	0.000	Significant
PEOU -> KEP	3,570	0.000	Significant
PEOU -> LOY	7,472	0.000	Significant
PU -> KEP	7,626	0.000	Significant
PU -> LOY	2,688	0.007	Significant

Referring to Table 10, all independent variables have a significant effect on the dependent variable of Mobile JKN application users, so H1 _ H5 are accepted and H0 is rejected.

b. Indirect Effects

The indirect effect test shows the indirect effect of exogenous variables on endogenous variables through other

endogenous intermediaries. The test results are in Table 11 below.

Table 11. Indirect calculation results

Variables	t-statistic	p-value	Information
PEOU -> KEP -> LOY	3,168	0.002	Significant
PU -> KEP -> LOY	4,234	0.000	Significant

Referring to Table 11, all independent variables have a significant effect on the dependent variable through the mediating variable on Mobile JKN application users, so $H_6 - H_7$ are accepted and H_0 is rejected.

4.3 Discussion of Results

a. The Influence of Satisfaction on User Loyalty

Based on the results of the research analysis in Table 11, the effect of satisfaction on user loyalty has a p-value of 0.000 and a t-statistic of 5.877. This means that the satisfaction variable has a significant effect on the loyalty variable of Mobile JKN application users, so $H1_{is}$ accepted and $H0_{is}$ rejected. The findings of this study are consistent with a number of previous research studies with research (Yulisetiari et al., 2021 ; Yulisetiari et al. , 2024a ; Yulisetiari et al., 2024b; Yulisetiari et al., 2025), which show that satisfaction has a positive and significant influence on loyalty. Satisfied customers will be more encouraged to continue using, recommending, and maintaining their influence with the service. The higher the level of satisfaction felt by users, the greater the likelihood of users remaining loyal to the Mobile JKN application in the long term. The loyalty that is formed is not only evident in continued reuse, but also in user trust in the services provided and their willingness to make the Mobile JKN app their primary choice for meeting their healthcare needs. Therefore, satisfaction is a crucial factor in fostering sustained user loyalty among the Mobile JKN app.

b. The Influence of Perceived Ease of Use on Satisfaction

Based on the results of the research analysis in Table 11, the effect of Perceived Ease of Use on Satisfaction has a p-value of 0.000 and a t-statistic of 3.570. This means that the Perceived Ease of Use variable has a significant effect on the satisfaction variable of the Mobile JKN application, so $H1_{is}$ accepted and $H0_{is}$ rejected. The findings of this study are consistent with a number of previous research studies with research Yulisetiari et al., (2024), stated that perceived ease of use has a positive and significant influence on satisfaction. The easier it is to use, the higher the level of user satisfaction. The results of this study indicate that perceived ease of use not only plays a role in encouraging initial acceptance of technology but also has a direct influence on user satisfaction. When users feel the Mobile JKN application is easy to use, efficient, and does not experience many technical problems, positive assessments of service quality will increase. This condition makes users feel more comfortable, thus increasing satisfaction with the application.

c. The Influence of Perceived Ease of Use on User Loyalty

Based on the results of the research analysis in Table 11, the influence of Perceived Ease of Use on User Loyalty has a p-value of 0.000 and a t-statistic value of 7.472. This means that the Perceived Ease of Use variable has a significant effect on the Loyalty variable of Mobile JKN application users, so that $H1_{is}$ accepted and $H0_{is}$ rejected. Based on the results of the study regarding the influence of the perceived ease of use variable on the loyalty of Mobile JKN application users, it can be seen that perceived ease of use has a positive and significant effect on user loyalty. The findings of this study are consistent with a number of previous research studies with research (Chai & Wang, 2022 ; Yulisetiari et al., 2024 ; Keung et al., 2025) that the perception of Perceived Ease of Use has a positive and significant influence on Loyalty. In this process, Perceived Ease of Use (PEOU) plays an important role because when users assess that a technology is easy to use, they will tend to be more attached and willing to use it faithfully, which is in accordance with research. Meanwhile, research by Makbul et al., (2025) shows that Perceived Ease of Use has no effect on user Loyalty. The JKN Mobile Application, user-friendliness is a very important aspect because this application is used by people with diverse age backgrounds, education, and digital

literacy abilities.

d. The Influence of Perceived Usefulness on Satisfaction

Based on the results of the research analysis in Table 11, the effect of Perceived Ease of Use on User Loyalty has a p-value of 0.000 and a t-statistic value of 7.626. This means that the Perceived Ease of Use variable has a significant effect on the Loyalty variable of JKN Mobile application users, so that $H1$ is accepted and $H0$ is rejected. The findings of this study are consistent with previous research studies with research by Yulisetiari et al., (2024) in their research stating that perceived usefulness (Perceived Usefulness) has a positive and significant influence on satisfaction. However, in research (Harianto & Ellyawati, 2023; Rani, 2020; Oxtavina & Noor, 2022) obtained the opposite, namely Perceived Usefulness has no effect on loyalty. JKN Mobile Application, the perception of usefulness is a very important aspect because this application is used by people with diverse age, education, and digital literacy backgrounds, when users feel that the JKN Mobile application provides real benefits, increases effectiveness in accessing health services, makes it easier to complete and helps manage health services, the level of satisfaction will be higher, therefore perceived usefulness is one of the important factors in shaping the satisfaction of JKN Mobile application users.

e. The Influence of Perceived Usefulness on User Loyalty

Based on the results of the research analysis in Table 11, the influence of Perceived Ease of Use on User Loyalty has a p-value of 0.007 and a t-statistic of 2.688. This means that the Perceived Ease of Use variable has a significant effect on the Loyalty variable of Mobile JKN application users, so $H1$ is accepted and $H0$ is rejected. This finding is consistent with previous research by (Lintang et al., 2024; Huang & Liu, 2024; Yulisetiari et al., 2024) that the perception of Perceived Usefulness has a positive and significant influence on user loyalty. Users who feel that a system provides great benefits will be encouraged to continue using it and recommend the technology. Thus, the higher the perceived benefits of a system, the greater the likelihood of creating user loyalty to the system.

f. The influence of perceived ease of use on user loyalty through satisfaction

Based on the results of the research analysis in Table 12, the influence of the Perceived ease of use variable on user loyalty through satisfaction has a p-value of 0.002 and a t-statistic value of 3.168. This means that the Perceived ease of use variable has a significant effect on user loyalty through satisfaction with the Mobile JKN application so that $H6$ is accepted and $H0$ is rejected. In the Technology Acceptance Model (TAM) theory, the use of the Mobile JKN application is easy to use and does not require a lot of effort in accessing health services, therefore Perceived ease of use (perceived user convenience) will shape satisfaction with the Mobile JKN application users, and the higher the level of user satisfaction, the higher the loyalty of the Mobile JKN application users.

g. The influence of perceived usefulness on user loyalty through satisfaction

Based on the results of the research analysis in Table 11, the influence of the Perceived usefulness variable on user loyalty through satisfaction has a p-value of 0.000 and a t-statistic value of 4.234. This means that the Perceived usefulness variable has a significant effect on user loyalty through satisfaction on the Mobile JKN application so that $H7$ is accepted and $H0$ is rejected. The role of satisfaction in mediating the influence of Perceived usefulness on user loyalty is very important, the ability of a system to provide benefits to users, help users solve problems, increase user effectiveness, make it easier for users, and support performance improvements will result in user satisfaction in using a system, in the Customer Satisfaction-Loyalty Theory, satisfaction is the main foundation for the formation of user loyalty, in the context of the Mobile JKN application, user satisfaction is formed when the application's performance is assessed as being able to meet or even exceed user expectations, the formation of satisfaction will form users who say positive things about the Mobile JKN application, recommend the Mobile JKN application, and reuse Mobile JKN when accessing health services.

5. CONCLUSION

Based on the discussion about the influence of perceived ease of use and perceived usefulness on the loyalty of Mobile JKN application users through satisfaction as a mediating variable, the conclusion is: 1) Perceived Ease Of Use has a significant effect on satisfaction, meaning that the Mobile JKN application is easy to use and does not require hard effort when using it so that it supports satisfaction; 2) Perceived Ease Of Use has a significant effect on user loyalty, meaning that the Mobile JKN application is easy to use and does not require hard effort when using it so that it supports user loyalty; 3) Perceived usefulness has a significant effect on satisfaction, meaning that the Mobile JKN application provides great benefits for users in accessing health services, so that it can increase user satisfaction when using the application; 4) Perceived usefulness has a significant effect on loyalty, meaning that the Mobile JKN application is felt to be very helpful and useful for users, so that a desire to continue using the application arises; 5) Satisfaction with user loyalty, meaning that users feel satisfied with the services and features provided by the Mobile JKN application, so that they will become loyal users and are willing to provide positive recommendations to others; 6) Satisfaction is able to mediate Perceived Ease Of Use towards user loyalty, meaning that the ease of operating the Mobile JKN application will first create a sense of satisfaction in the user's risk, which then indirectly encourages the creation of user loyalty; 7) Satisfaction is able to mediate Perceived usefulness towards user loyalty, meaning that the benefits felt by users when using Mobile JKN are able to increase user satisfaction, this satisfaction is the main driving factor in strengthening the user's intention to remain loyal to using the Mobile JKN application.

References

1. Akhsan, K., & Deliyana Firmialy, S. (2024). Analysis of the Influence of Trust, Perceived Ease of Use, Perceived Usefulness, and Relative Advantage on Continuance Intention (A Case Study of Dana Applications). *Jurnal Ekuilnomi*, 6(2), 301–309. <https://doi.org/10.36985/v0yp0r87>
2. Chai, L., & Wang, Y. (2022). Exploring the Sustainable Usage Intention of BOPS: A Perspective of Channel Integration Quality. *Sustainability (Switzerland)*, 14(21), 1–16. <https://doi.org/10.3390/su142114114>
3. Davis, F.D., & Granić, A. (2024). *The Technology Acceptance Model: 30 Years of TAM*. Cham: Springer.
4. Dawn, A. (2025). The Effect Of Perceived Ease Of Use And Perceived Usefulness On Customer Loyalty Mediated By Customer Satisfaction: A Study Of Ovo Users In Bandung, Indonesia. *Journal of Economics, Business and Accounting*, 8(3), 1–23.
5. Dewi Noor Susanti, & Rahma Wulandari. (2024). The Influence of Perceived Usefulness, Perceived Ease of Use, Product Features, and Reference Group on the Decision to Use TikTok. *MASMAN: Master of Management*, 2(1), 133–146. <https://doi.org/10.59603/masman.v2i1.314>
6. Duryadi. (2021). *Empirical Research Methods of Path Analysis Model and Analysis Using SmartPLS*. Semarang: Prima Agus Teknik Foundation.
7. Ghozali, I. (2021). *Multivariate Analysis Application with IBM SPSS 26 Program*. Semarang: Diponegoro University Publishing Agency.
8. Harianto, EFE, & Ellyawati, J. (2023). The Influence of Perceived Usefulness, Trust, and Risk on Loyalty in the TikTok Shop: Test of Consumer Satisfaction as a Mediation Variable. *Journal of Entrepreneurship & Business*, 4(1), 13–23. <https://doi.org/10.24123/jeb.v4i1.5390>
9. Huang, F., & Liu, S. (2024). If I Enjoy, I Continue: The Mediating Effects of Perceived Usefulness and Perceived Enjoyment in Continuance of Asynchronous Online English Learning. *Educational Sciences*, 14(8), 1–13.
10. Imannuela, E., Darma, J., & Kholis, A. (2025). The Influence of Information Quality, Service Quality, and Perceived Benefits on User Satisfaction of the Dana Application among Students of the Faculty of Economics, State University of Medan. *Economics & Business*, 5(1), 518–528.
11. Karaman, J., Kumalasari, E., & Ponorogo, M. (2024). Level of satisfaction with the use of computer-assisted tests in the Kalianyar village apparatus test. *Creative Dynamics of Strategic Management*, 06(1), 1–11.
12. Keung, K.L., Lee, C.K.M., & Luk, K.-T. (2025). Determinants of Behavioral Intention in Augmented Reality Filter Adoption: An Integrated TAM and Satisfaction–Loyalty Model Approach. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(3), 1–41. <https://doi.org/10.3390/jtaer20030186>
13. Kotler, P., & Keller, K. L. (2016). *Marketing management* (15th ed.). Pearson Education.

14. Lintang, D., Pradina, ET, Wiratama, JA, Murni, PN, & Prayudi, ZAA (2024). The Influence of Perceived Ease of Use and Perceived Usefulness on Customer Loyalty of Gopay Users Among Students at Jakarta State University with Trust as an Intervening Variable. *Journal of Economics and Business* , 2 (12), 2528–2542.
15. Luo, J., Zhang, K., Huang, Q., Jiang, S., & Pan, Y. (2025). From Acceptance to Dependence: Exploring Influences of Smart Healthcare on Continuous Use Intention of Mobile Health Services Among Older Adults with Chronic Illnesses in China. *Behavioral Sciences*, 15(1), 1–25. <https://doi.org/10.3390/bs15010019>
16. Maharani, SA, & Sundari, E. (2024). The Influence of Perceived Usefulness, Perceived Ease of Use, Trust, and Security on Behavioral Intention to Use BRI Mobile (Case Study: BRI Mo Users in Pekanbaru City). *Al Qalam: Journal of Religious and Social Sciences*, 18(1), 161–176. <https://doi.org/10.35931/aq.v18i1.2975>
17. Makbul, RS, Lukitaningsih, A., & Ningrum, NK (2025). Perceived ease of use and perceived usefulness in customer loyalty. *Journal of Management and Digital Business*, 5(1), 166–177. <https://doi.org/10.53088/jmdb.v5i1.1435>
18. Meisari, WA, Widyaningrum, N., & Prameswari, A. (2024). JKN Mobile User Attention with the TAM (Technology Acceptance Model) Approach. 7(2), 121–133.
19. Oxtavina, AS, & Noor, FA (2022). Analysis of the Use of the National Health Insurance (JKN) Mobile Application among BPJS Kesehatan Participants. *Economics & Business*, 1(1), 1–9.
20. Pokhrel, S. (2024). The Influence of Perceived Usefulness, Perceived Ease of Use, and Perceived Risk on Purchase Decisions Using Shopee Paylater Among Generation Z in DKI Jakarta. *Journal of Economics and Business*, 15(1), 37–48.
21. Rani, DM (2020). Analysis of the Technology Acceptance Model (Tam) on Mobile Application Usage. *Iqra' Journal of Library and Information*, 14(1), 1–21.
22. Sugiyono. (2024). *Quantitative, Qualitative, and R&D Research Methods* . Bandung: Alfabeta
23. Tiara, U., Dewi, P., Suci, A., Meylina, S., & Wijaya, AR (2025). Technology Acceptance Model (TAM) Perspective on the Use of DJP Online at the Public Works and Water Resources Department of Jember Regency. *Nusantara Research Journal*, 1(3), 44–52.
24. Yulisetiari, D., Dona, R., & Fauziyyah, S. (2025). The Effect of E-Trust, E-Service Quality, and EWOM Through Satisfaction on the Loyalty of Halodoc Application Users. *Journal of Sustainability*, 02(3), 129–137. <https://doi.org/10.61552/JSI.2025.03.003>
25. Yulisetiari, D., Farid, M., Nanda, E., Sudarsih, S., Prasetyaningtiyas, S., & Irawan, B. (2024a). the Influence of Product Quality and Service Quality on Customer Loyalty Through Consumer Satisfaction of Kentucky Fried Chicken (Kfc) in Jember. *Journal of Innovations in Business and Industry*, 2(4), 207–216. <https://doi.org/10.61552/jibi.2024.04.003>
26. Yulisetiari, D., & Subagio, A. (2024). The Effect Of Trust And Consumer Experience on Loyalty Through Consumer Satisfaction in Fashion Products on Lazada Indonesia. *Journal of Social Sciences*, 01(02), 45–50. <https://doi.org/10.61552/SJSS.2024.02.002>
27. Yulisetiari, D., Sukarno, H., & Ramadhani, R. (2024b). The Effect Of Brand Image, Service Excellence, And Promotion On Visitor Satisfaction And Loyalty Jember Mini Zoo. *Issue 6. Ser.* 26(6), 20–28. <https://doi.org/10.9790/487X-2606092028>
28. Yulisetiari, D., Suroso, I., & Owen, HK (2023). The Influence of Service Quality, Image and Facility of Hospital on Patient Loyalty Through Patient Satisfaction with BPJS Health at Type C Hospitals in Jember. *IOSR Journal of Business and Management*, 25(4), 11–16. <https://doi.org/10.9790/487X-2504021116>
29. Yulisetiari et al. (2021). The Influence of Service Quality, Brand Image, and Store Atmosphere on Customer Loyalty through Customer Satisfaction at Indomaret Plus Jember. *Journal of Management Systems*, 22(181), 101–104.
30. Yulisetiari et al. (2024c). The Influence Of Perceived Usefulness And Perceived Ease Of Use On Loyalty In Spot Online Trading Applications From Sucor Sekuritas Through Customer Satisfaction. *Journal of Innovations in Business and Industry*, 2(2), 73–78. <https://doi.org/10.61552/jibi.2024.02.003>