



THE EFFECT OF SERVICE QUALITY, EASE OF USE AND SECURITY OF PLN MOBILE APPLICATION TRANSACTIONS ON USER SATISFACTION

Nadia Desti Chaerunisa¹, Andala Rama Putra Barusman²

¹Universitas Bandar Lampung, Indonesia

²Universitas Bandar Lampung, Indonesia

Email : nadiadestichaerunisa@email.com

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Abstract :

The purpose of this study is to determine the effect of service quality, ease of use, and transaction security on user satisfaction of the PLN Mobile application. This study uses a quantitative approach with a survey method, conducted by distributing questionnaires to students of Universitas Bandar Lampung as users of the PLN Mobile application. The sample was determined using the Lemeshow formula and purposive sample technique, resulting in 128 respondents who met the research criteria. The data were analyzed using statistical calculations with the help of SPSS version 26. The results show that service quality, ease of use, and transaction security simultaneously have a significant effect on user satisfaction. Partially, each independent variable also has a positive and significant effect on user satisfaction. These findings show that improving service quality, ease of use, and transaction security can increase user satisfaction with the PLN Mobile application. This study can provide an indirect contribution to PLN (Persero) and application developers in improving digital-based service quality, ease of use, and transaction security, as well as a reference for future research related to this topic.

Keywords : PLN Mobile application, User Satisfaction, PT PLN (Persero)

INTRODUCTION

The development of digital technology in the last ten years has changed the way people interact with a service, including digital transactions and public services. The increase in internet users and mobile devices towards the mobile-first era, where service quality, ease of access, and security of digital transactions are essential for customer satisfaction (Firdaus & Rusdianto, 2025). This condition requires organizations or companies to adapt through the use of digital technology.

In the context of public services in Indonesia, digital transformation is also happening in the electricity sector. PT PLN (Persero) as a national electricity provider has developed the PLN Mobile application as a digital-based service platform so that users can independently act on services anywhere and anytime, such as bill payments and disruption reporting. The existence of this application is a form of effort to increase the efficiency and effectiveness of public services in line with the era of digital transformation and the development of smart utility systems.

However, along with the increasing reliance of people on digital applications, various challenges have arisen related to service quality, ease of use



applications, and transaction security. These three aspects are crucial factors that affect user satisfaction with digital services. Including in the PLN Mobile public service application.

Nationally, the use of the PLN Mobile application has shown a consistent increase since its first launch. PLN publication data shows that the number of users of this application has increased dramatically from 2021 to 2024 by 301.5%. This has led to high public acceptance of digital-based electricity services.

However, along with the increasing reliance of people on digital applications, various challenges have arisen related to service quality, ease of use applications, and transaction security. These three aspects are crucial factors that affect user satisfaction with digital services. Including in the PLN Mobile public service application.

On the other hand, user reviews on the Play Store platform show that there are still various complaints in the use of the PLN Mobile application, such as problems with the login process, slow system response, failure of electricity payment transactions and token purchases, as well as concerns about the security of personal data. This indicates that there is a gap between the expectations and the actual experience of users for PLN's digital services.

According to Brusman (2024), it is explained that user satisfaction with digital services is influenced by the ease of use of the system, the reliability of services, and the guarantee of data and transaction security. Compliance with these aspects plays an important role in creating a sense of security and comfort for users, which in turn shapes a positive experience and increases satisfaction levels.

In line with this, Wahid & Ratmono (2022) stated that the quality of service and ease of use of the PLN Mobile application have a significant effect on customer satisfaction in the PLN Metro customer service sector. However, these results have not comprehensively included the security aspect of transactions as an independent variable that may also affect the level of user satisfaction.

According to Zeithaml et al., (2019), service quality is the extent to which the services provided to users can meet or exceed user expectations. Service quality can be measured in the E-SERVQUAL Theory (Zeithaml et al., 2019), explaining that service quality is a key factor that affects customer satisfaction levels, where dimensions such as efficiency, fulfillment, system availability, privacy, responsiveness, compensation and contact. This dimension plays a very important role in determining users' positive perception of the services provided by PLN Mobile.

On the other hand, Liana & Fadli, (2023) stated that the perception of ease of use and quality of e-wallet services contributes positively to customer satisfaction. These findings show that similar variables are also relevant to be studied in public service applications such as PLN Mobile. However, the characteristics of public service application users are different from commercial application users because the motive for their use is driven more by the fulfillment of basic needs than lifestyle preferences.

At the local level, postgraduate students at the University of Bandar

Lampung are a group of active digital users and have a relatively high level of technological literacy. This group utilizes the PLN Mobile application for daily needs, such as household electricity payments, so that it is considered representative in evaluating user perceptions of service quality, ease of use, and security of application transactions.

From a theoretical perspective, this research is rooted in the Technology Acceptance Model (TAM) by Davis (1989), explaining that the perception of ease of use and quality of the system affects user satisfaction and the sustainability of the use of the system in the long term. In this context, the model can provide a conceptual basis to explain the relationship between research variables.

The perception of security includes users' trust in the system in safeguarding their personal data and financial information. According to Pavlou (2003), transaction security includes the perception of users that the system is able to protect personal data and all risks of misuse, and plays a crucial role in building user trust and satisfaction with digital services. In line with research by Cheah et al., (2021), it is emphasized that the perception of security plays an important role in increasing trust and satisfaction of digital payment application users.

With cyber risks and data leaks increasing, security factors are becoming an important element in building loyalty and a positive image towards government digital services. In the context of the PLN Mobile application, ease of use generally includes an application that is easy to understand in running a service information system, so that it can increase the user's sense of comfort and confidence. Therefore, this reinforces the importance of transaction security variables in this study.

Empirically, research examining the simultaneous relationship between service quality, ease of use, and transaction security on user satisfaction in public service applications in Indonesia is still limited. According to Yamawati et al., (2023), most previous studies have focused on commercial sectors such as e-wallets and e-commerce, while studies on government public service applications have been relatively rare.

The research gap is also seen in the characteristics of the respondents used. Previous research has generally involved the general public, while the segment of academic users, such as postgraduate students who have a relatively high level of digital literacy, has not been explored much. In fact, this group has the potential to provide a more critical assessment of service quality, ease of use, and security of digital applications.

In terms of methodology, some previous studies tended to use a descriptive approach, so they did not optimally explain the causal relationship between variables. Therefore, a quantitative approach with a multiple regression model is considered relevant to analyze the simultaneous and partial effects of service quality, ease of use, and transaction security on user satisfaction of the PLN Mobile application.

The urgency of this research is getting stronger in line with the digital transformation of the public sector, which is a national priority in the Digital

Indonesia 2045 Roadmap. The success of the agenda depends on the level of public acceptance and satisfaction with public service applications. Based on this description, this study aims to analyze the influence of service quality, ease of use, and transaction security on the satisfaction of PLN Mobile application users in students of the postgraduate program of the University of Bandar Lampung.

RESEARCH METHOD

This research uses a quantitative approach with a type of verifiable research. Data was collected through the distribution of questionnaires to PLN Mobile application users, especially students of the graduate program at the University of Bandar Lampung. The research instrument was compiled using a five-point Likert scale to measure the variables of service quality, ease of use, transaction security, and user satisfaction.

The determination of the number of samples was carried out using the Lemeshow formula with a confidence level of 95% or 1.96 and a margin of error of 10% or 0.1, so that a sample of 100 respondents was obtained. The sampling technique used is non-probability sampling with the purposive sampling method, considering that the number of PLN Mobile application user population in this group cannot be known for certainty.

Data were analyzed using descriptive analysis and multiple linear regression analysis. Validity and reliability tests are carried out to ensure the feasibility of the research instrument. Furthermore, the classical assumption test including normality, multicollinearity, heteroscedasticity, and linearity tests was carried out before the regression analysis. Hypothesis testing was carried out through the F test and the t-test with a significance level of 5%.

FINDINGS AND DISCUSSION

Analysis

The characteristics of the 100 respondents on gender were dominated by men as many as 52 respondents with a percentage of 52% and some women as many as 48 respondents with a percentage of 48%. Meanwhile, based on the length of use of the PLN Mobile application, it was found that 54% of respondents had used the application for more than 1 year, 20% had a user duration of 6 months to 1 year, and 26% had less than 6 months.

In the service quality variable, the majority of respondents rated it good with an average value range of 3.41 - 4.20 as much as 45%, meaning that the quality of service provided met user satisfaction. The majority of respondents rated user satisfaction very well with an average score range of 4.21-5.00 of 54%. This shows that the majority of respondents rate the system used by users as easy to understand and operateable. In the transaction security variable, the majority of respondents rated it well with a value range of 3.41 - 4.20 as many as 49%, meaning that the transaction system used by users is quite secure. Meanwhile, the user satisfaction variable of the majority of respondents assessed well with a value range of 3.41 - 4.20 as much as 42%, meaning that the majority of respondents were satisfied with the services provided but there was still a gap

for improvement so that the level of user satisfaction could be more optimal.

The results of the validity test in this study for the value of service quality, ease of use, transaction security, and user satisfaction were declared valid by having a correlation value of r calculated that was significantly greater than r table at a significance level of 5% (r table = 0.195). Meanwhile, the realism results for service quality, ease of use, transaction security, and user satisfaction were declared realistic and able to produce consistent measurements, so that the data obtained was feasible for further analysis with a Cornbach's Alpha value of more than 0.70. This study is the result of the classical assumption test in the normality, multicollinearity, and heteroscedasity tests that have passed, so it can be said that the regression model has been well calculated, so that multiple linear regression analysis can be carried out.

Table : 1 Results of Multiple Linear Regression Analysis

Variable	B	t count	Sig.
Constant	-3.078	-1.377	.172
Quality of Service	.333	4.062	.000
User Convenience	.227	2.929	.004
Transaction Security	.605	4.293	.000

Based on the table above, the multiple linear regression equation is obtained, namely:

$$Y = -3,078 + 0,333X_1 + 0,227X_2 + 0,605X_3 + e$$

The test results showed that the service quality variable had a regression coefficient of 0.333 with a significance value of 0.000, so that it had a positive and significant effect on user satisfaction. The ease of use variable also showed a positive and significant influence with a regression coefficient of 0.227 and a significance value of 0.004. Furthermore, the transaction security variable has the largest regression coefficient, which is 0.605 with a significance value of 0.000, which shows a positive and significant influence on user satisfaction.

The coefficient of determination or R square value in this study was obtained 0.821, meaning that 82.1% of the variation in user satisfaction can be explained by the variables of service quality, ease of use, and transaction security. However, based on the Adjusted R Square value of 0.816, it means that this research model is able to explain the variation in user satisfaction. Meanwhile, the remaining 17.9% were explained by other variables outside the research model that were not studied. So, it can be concluded that the regression model used has a strong ability to explain user satisfaction.

Tabel : 1 Partial Test Analysis Results

Hypothesis	Statement	t count	Value Sig.	information
H ₁	Service Quality Variables have a Positive Effect on User Satisfaction	4.062	0,000	H _a Accepted H _o Rejected

H ₂	Ease of Use Variables Affect User Satisfaction	2.929	0,004	H _a Accepted H _o Rejected
H ₃	Transaction Security Variables Affect User Satisfaction	4.293	0,000	H _a Accepted H _o Rejected

The t-test was conducted to determine the influence of each independent variable on partial user satisfaction. Based on the test results, the Quality of Service variable has a calculated t-value of 4.062 with a significance level of 0.000 (< 0.05), so that the first hypothesis (H₁) is accepted. The Ease of Use variable shows a calculated t-value of 2.929 with a significance level of 0.004 (< 0.05), so that the second hypothesis (H₂) is accepted. Furthermore, the Transaction Security variable has a calculated t-value of 4.293 with a significance level of 0.000 (< 0.05), so that the third hypothesis (H₃) is accepted. These results show that Service Quality, Ease of Use, and Transaction Security have a significant partial effect on PLN Mobile Application User Satisfaction.

Tabel : 2 Model Fit Test Results (Statistics F)

ANOVA					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.955.516	3	1.318.505	147.080	.000 ^b
Residual	860.594	96	8.965		
Total	4.816.110	99			

These results show that the variables of Service Quality, Ease of Use, Transaction Security and User Satisfaction simultaneously have a significant effect on User Satisfaction. Therefore, the regression model used in this study is declared fit to explain the relationship between independent variables and dependent variables.

DISCUSSION

The Effect of Service Quality on User Satisfaction

Based on the results of multiple linear regression analysis, the Quality of Service variable has a positive regression coefficient of 0.333. This shows that there is a one-way relationship between Service Quality and User Satisfaction of the PLN Mobile Application. In addition, the results of the t-test showed that Service Quality had a significant effect on User Satisfaction with a significance value of 0.000 (< 0.05). Thus, the first hypothesis (H₁) that states that the Quality of Service has a positive effect on User Satisfaction is declared accepted.

These findings indicate that the improvement of the quality of services provided by the PLN Mobile Application, such as system reliability, response speed, and clarity of service information, is able to increase the level of user satisfaction. The results of this study are in line with the concept of E-SERVQUAL, which emphasizes that the quality of digital-based services is an

important factor in shaping the satisfaction of electronic service users. In addition, the results of this study support the findings of Akbar and Nurmahdi (2019) who stated that service quality has a positive and significant influence on the satisfaction of digital service users

The Effect of Ease of Use on User Satisfaction

Based on the results of multiple linear regression analysis, it was shown that the Ease of Use variable had a positive regression coefficient of 0.227, which indicates a one-way relationship between Ease of Use and User Satisfaction. Furthermore, the results of the t-test showed a significance value of 0.004 (< 0.05), so that Ease of Use was proven to have a significant effect on User Satisfaction. Thus, the second hypothesis (H_2) is declared accepted.

These findings show that the easier the PLN Mobile Application is to understand and operate, the higher the level of user satisfaction will be. The ease of accessing features, understanding the flow of transactions, and the clarity of the interface are factors that contribute to a positive user experience.

The results of this study are in line with the Technology Acceptance Model (TAM), which explains that perceived ease of use plays an important role in shaping user attitudes and satisfaction towards an information system. In addition, these findings are also consistent with research by Berlianne and Koswara (2020) which states that ease of use has a positive and significant effect on the satisfaction of digital application users.

The Effect of Transaction Security on User Satisfaction

Based on the results of multiple linear regression analysis, the Transaction Security variable has a positive regression coefficient of 0.605, which is the largest coefficient compared to other variables. This shows that Transaction Security has the most dominant influence on User Satisfaction. The results of the t-test also showed a significance value of 0.000 (< 0.05), so that the third hypothesis (H_3) was declared accepted.

These findings indicate that the high level of transaction security on the PLN Mobile Application, such as personal data protection, payment system security, and minimal risk of transaction failure, is able to increase user security and trust. This sense of security directly contributes to increasing user satisfaction in using the application.

The results of this study are in line with the theory of trust and perceived security, which states that the perception of system security will build user trust and encourage satisfaction in the use of digital services. In addition, these findings also support Kenya's (2022) research which states that trust in transaction security has a significant effect on the satisfaction of digital application users.

The Effect of Service Quality, Ease of Use, and Security of PLN Mobile Application Transactions on User Satisfaction

Based on the test results, the variables of Service Quality, Ease of Use, and Transaction Security are proven to be predictors of User Satisfaction. This is proven through the model suitability test (statistical test F) has a significance value of less than 0.05, which is 0.000 ($0.000 < 0.05$), meaning that the regression

model is declared feasible to explain the relationship between independent and dependent variables.

In addition, the value of the determination coefficient (R^2) was 0.821 which means that the independent variables in this study had an influence on User Satisfaction by 82.1%, while the rest were influenced by other factors outside the research model. This shows that Service Quality, Ease of Use, and Transaction Security have a significant influence on the rise and fall of User Satisfaction on the PLN Mobile Application, so the fourth hypothesis is accepted.

These findings are in line with the theory of user satisfaction, which explains that the level of satisfaction is influenced by users' perception of service quality, ease of use, and perceived security while running a system. Thus, user satisfaction in using the PLN Mobile Application is in accordance with user expectations, as well as good service quality, ease of operating the application and guarantee of transaction security to meet user needs optimally.

The results of the study are also relevant to the research of Wahid & Sutormo (2022) which states that service quality and ease of use have a significant effect simultaneously, as well as research from Cheah, Isa & Yang (2021) that security has a significant effect simultaneously.

CONCLUSION

Based on the results of the research and discussions that have been conducted, it can be concluded that service quality, ease of use, and transaction security have a positive and significant influence on the satisfaction of PLN Mobile Application users in students of the Postgraduate Program at the University of Bandar Lampung. These findings show that improving the quality of digital services, ease of operation of applications, and ensuring data and transaction security are important factors in shaping the satisfaction of public service application users. Simultaneously, these three variables have been proven to be able to explain the level of user satisfaction significantly, so the success of the PLN Mobile Application is highly dependent on the synergy between system quality, ease of access, and transaction security felt by users.

Based on these conclusions, this study provides some practical advice. For PT PLN (Persero), it is hoped that dapay will be an evaluation material to continue to improve service quality through improving system reliability, speed of handling complaints, and strengthening transaction security policies and user data protection. In addition, the ease of use of the application needs to be a major concern by ensuring that the service features are easy to understand and operate so that it can increase user satisfaction on an ongoing basis. For PLN Mobile Application developers, it can be a reference to regularly optimize the system to improve the stability and performance of the application, as well as simplify the interface to make it more intuitive and user-friendly. Strengthening transaction security systems also needs to be improved to minimize the risk of data misuse and increase user security. Meanwhile, for the next researcher, it is recommended to add other variables that have the potential to affect user satisfaction, such as trust or system quality, as well as expand the objects and characteristics of

respondents so that the results of the study can be generalized more widely.

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