



The influence of customer service skills and user interface on dana e-wallet user loyalty

Syarifah Fahira Sulaiman¹, Watikah Sururi², Sheila Galuh Syafira Siregar³, Aprilda Yanti⁴

^{1,2,3,4}Fakultas Ekonomi dan Bisnis, Universitas Satya Terra Bhinneka, Indonesia

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ABSTRACT

The development of digital technology has driven the increased use of digital-based financial services, one of which is the DANA e-wallet. User loyalty is a crucial factor in sustaining e-wallet usage, which is influenced not only by the technological features provided but also by the quality of service interactions and the ease of application use. This study aims to analyze the influence of customer service skills and user interface on the loyalty of DANA e-wallet users. This research employs a quantitative approach with a causal method and is analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) through SmartPLS software. The data were collected from active DANA e-wallet users who met the research criteria. The results indicate that the user interface has a positive and significant effect on user loyalty, with a path coefficient of 0.379 and a T-statistic value of 3.716. In addition, customer service skills also have a positive and significant effect on user loyalty, with a path coefficient of 0.366 and a T-statistic value of 3.595. These findings show that the user interface has a more dominant influence than customer service skills in enhancing the loyalty of DANA e-wallet users. Therefore, e-wallet user loyalty depends not only on the quality of the technological system but also on the quality of service and the ease of interaction perceived by users. This study is expected to contribute to the development of strategies for improving service quality and application interface design of e-wallets in Indonesia.

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Corresponding Author:

Syarifah Fahira Sulaiman,
Department of Digital Business,
Universitas Satya Terra Bhinneka,
Jl. Sunggal Gg. Bakul, Sunggal, Kec. Medan Sunggal, Medan, 20128, Indonesia
Email: syarifahfahira@satyaterrabhinneka.ac.id

1. INTRODUCTION

The development of digital technology has driven significant changes in the payment system in Indonesia, particularly through the emergence of financial technology (fintech)–based e-wallets. E-wallets enable people to conduct non-cash financial transactions more quickly, conveniently, and efficiently through mobile-based applications. The growth in e-wallet usage continues to increase along with the high penetration of internet and smartphone usage, as well as government regulatory support for digital payment systems. One of the e-wallets with a high adoption rate in Indonesia is DANA, which provides various digital payment services such as fund transfers, QRIS payments, mobile credit purchases, and integration with multiple digital platforms. Syafri & Ratnaningsih (2025) explain that e-wallets have developed in response to society's need for payment systems that are efficient, secure, and capable of being integrated into various digital economic activities. In the increasingly competitive e-wallet industry, the success of service providers is not determined solely by the completeness of technological features, but also by their

ability to create and maintain user loyalty. User loyalty reflects consumers' commitment to continuously use a service, engage in repeated transactions, and recommend the service to others. Oliver (2014) states that loyalty is not formed instantly, but rather is the result of repeated evaluations of user experiences over time. Febriansyah & Purwanto (2025), in their study on mobile wallets, found that user loyalty is influenced not only by technological convenience but also by the overall service experience, including the quality of interactions between users and service providers. This indicates that loyalty in digital services is multidimensional and cannot be explained solely from a technological perspective. Previous studies have shown that e-wallet user loyalty is influenced by various factors, including electronic service quality, user experience, and customer satisfaction (Mahendri & Azah, 2023; Syafri & Ratnaningsih, 2025).

One of the key factors that plays an important role in shaping user loyalty is customer service skills. In digital services, customer service functions as a bridge between the application system and users, particularly when users encounter technical issues, transaction errors, or account security problems. Customer service skills include the ability of service personnel to communicate effectively, demonstrate empathy, and resolve user problems quickly and accurately (Wilson et al., 2020). Lutfiana et al. (2024) explain that service quality, especially in terms of communication and complaint handling, has a significant effect on user satisfaction. Users who feel that their issues are taken seriously tend to experience higher satisfaction, which in turn encourages the formation of long-term user loyalty. Liani et al. (2024) further deepen these findings by identifying empathy, responsiveness, and problem-solving abilities of customer service as the service aspects most strongly perceived by e-wallet users. When users receive clear and prompt solutions, their trust in the service provider increases. In line with Mahendri & Azah (2023), user loyalty is not determined solely by the completeness of application features but also by how companies build relationships with users through effective communication and problem resolution. Negative experiences with customer service can reduce users' intention to continue using the service, even when the application offers comprehensive features. These findings emphasize the importance of customer service skills as a strategic component in maintaining user loyalty.

In addition to customer service skills, the user interface (UI) represents a crucial system-related factor in shaping user experience and loyalty in e-wallet services. The user interface refers to the application's visual and functional design, including layout structure, navigation clarity, menu organization, and overall ease of use. From a theoretical perspective, the relationship between UI and loyalty can be explained through several mechanisms. First, a well-designed UI enhances perceived ease of use and usability, enabling users to complete transactions efficiently with minimal cognitive effort. Second, a clear and intuitive interface reduces the likelihood of user errors and transaction failures, which decreases frustration and increases perceived reliability of the service. Third, consistent visual design and smooth interaction flow contribute to positive emotional responses, fostering emotional attachment and comfort, which are important precursors of loyalty (Achyani & Widyana, 2024). Ramida et al. (2025) show that high-quality UI design improves user satisfaction through ease of navigation and clarity of information presentation, which subsequently encourages engagement and continued usage. Similarly, Irawati and Wijaya (2025) find that consistent and user-friendly mobile interface design strengthens user comfort and emotional connection with digital financial services.

Although numerous studies have examined factors influencing e-wallet user loyalty, most existing research emphasizes general electronic service quality or customer satisfaction as mediating variables. Studies that explicitly integrate customer service skills as a human interaction factor and user interface as a system interaction factor in a single framework remain relatively limited, particularly in the context of the DANA e-wallet. This represents an important gap, considering that the user experience in e-wallet services is formed through the interaction between human support systems (customer service) and application systems (user interface). Moreover, DANA operates within a highly competitive Indonesian e-wallet market characterized by mandatory QRIS usage, frequent promotional strategies, and diverse user demographics, which may shape loyalty formation differently compared to other e-wallet platforms.

Therefore, the novelty of this study lies in its integrated approach to analyzing user loyalty by simultaneously examining customer service skills and user interface quality as direct

determinants of loyalty in the specific context of DANA e-wallet users. By focusing on both human and system interaction dimensions, this study extends prior loyalty research that predominantly relies on general e-service quality or satisfaction constructs. This research is expected to contribute theoretically to the development of fintech loyalty literature and practically to provide insights for e-wallet providers, particularly DANA, in designing effective customer service strategies and user-centered interface designs to sustain user loyalty in the digital economy era.

2. RESEARCH METHOD

This study employs a quantitative approach using a causal research design. Causal research aims to analyze cause-and-effect relationships between independent and dependent variables. In this study, the independent variables consist of customer service skills and user interface, while the dependent variable is user loyalty. The quantitative approach is selected because it allows researchers to objectively measure the influence between variables through statistical analysis, particularly to test hypotheses that have been formulated in advance (Sugiyono, 2022).

The research location is focused on Medan City, considering the high level of digital payment usage and the diversity of DANA users in the region. The population of this study comprises all active DANA e-wallet users who are domiciled in or conduct transaction activities in Medan City.

The sampling technique employed in this study is purposive sampling, which involves selecting respondents based on specific criteria, namely: (1) respondents are active DANA users, (2) have conducted transactions using DANA at least once within the past three months, and (3) are domiciled in or conduct transactional activities in Medan City. In determining the sample size for this study, the researcher followed the guideline proposed by Hair et al. (2021), which recommends a minimum of five respondents for each question. The research questionnaire consisted of a total of 22 items. Therefore, the sample size used in this study was 110 respondents (22 items × 5 respondents).

The respondents' demographic profile includes gender, age group, education level, monthly income level, and frequency of DANA usage. These demographic characteristics are collected to provide a clearer description of the sample and to support the interpretation of the research findings. Gender and age profiles are relevant for understanding differences in digital service preferences and technology adoption behavior. Education and income levels are considered important because they may influence users' digital literacy, expectations toward service quality, and sensitivity to user interface design. In addition, the frequency of DANA usage reflects the intensity of interaction with the application, which is particularly relevant for interpreting perceptions of customer service skills and user interface quality, as users with higher usage intensity tend to have more experience with service encounters and system features. Thus, the demographic profile helps contextualize how different user groups perceive value and form loyalty toward the DANA e-wallet.

The research data consist of primary and secondary data. Primary data are collected through the distribution of questionnaires using Google Forms with a 1–5 Likert scale, covering the variables of customer service skills, user interface, and user loyalty. The questionnaire is designed based on variable indicators adopted from previous studies. Secondary data are obtained from books, academic journals, fintech research reports, and other literature sources relevant to the research topic.

The data analysis technique in this study uses Partial Least Squares–Structural Equation Modeling (PLS-SEM) with the assistance of SmartPLS software. The PLS-SEM method is chosen because it is capable of simultaneously analyzing relationships among latent variables and is suitable for predictive research models with relatively small sample sizes (Hair et al., 2021). Data analysis is conducted in several stages: (1) measurement model (outer model) evaluation to test the validity and reliability of the instruments, (2) structural model (inner model) evaluation to examine the relationships among variables, and (3) hypothesis testing using T-statistics and P-values. Hypothesis testing is based on the bootstrapping results of the PLS-SEM model with a significance level of 5% ($\alpha = 0.05$).

3. RESULTS AND DISCUSSIONS

Data analysis in this study employs the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method using SmartPLS software. The research model consists of two independent variables, namely customer service skills and user interface, and one dependent variable, user loyalty. The analysis results include an evaluation of the structural model (inner model), which aims to determine the magnitude of the influence among variables as well as the level of significance of the relationships formed.

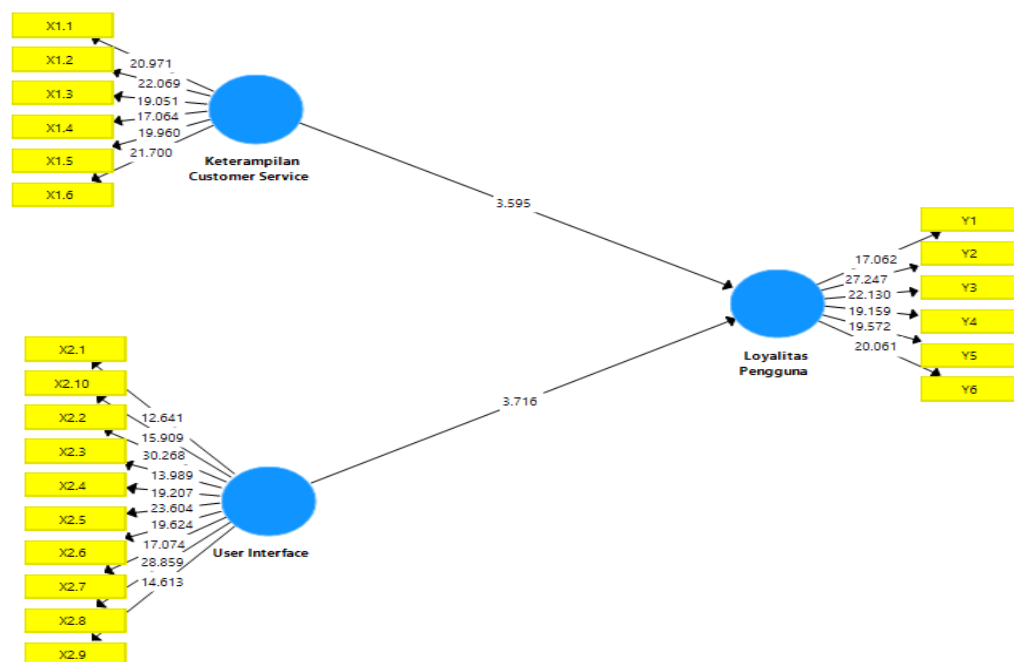


Figure 1. Bootstrapping test results

Table 1. Path coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
Customer Service Skill -> User Loyalty	0,366	0,371	0,102	3,595	0,000
User Interface-> User Loyalty	0,379	0,384	0,102	3,716	0,000

Source: Data Processing, 2025

The direct effect analysis indicates that both customer service skills and user interface have positive and statistically significant effects on the loyalty of DANA e-wallet users. The results confirm that user loyalty is shaped not only by functional service performance but also by the emotional and experiential value generated through interactions with both human support systems and application interfaces.

Beyond their functional roles, customer service skills and user interface quality generate emotional value, which plays a crucial role in forming user loyalty in digital financial services. In the context of e-wallet usage, the dominant forms of emotional value are psychological security, comfort, and self-confidence in using digital financial technology.

Customer service skills primarily create emotional value through reassurance and trust-building. When users receive empathetic communication, clear explanations, and reliable solutions, they experience a reduction in anxiety related to transaction failures or security risks. This emotional relief fosters a sense of psychological safety, which encourages continued usage and loyalty. Similarly, the user interface generates emotional value through ease, enjoyment, and

perceived control. A clear, intuitive, and consistent interface reduces cognitive effort, minimizes errors, and allows users to feel competent and confident when conducting transactions. This sense of control and comfort strengthens emotional attachment to the application.

From a marketing strategy perspective, these emotional values can be translated into measurable actions, such as improving response tone consistency in customer service communication, implementing proactive in-app guidance, simplifying transaction flows, and designing interface elements that emphasize clarity and reassurance (e.g., confirmation feedback, error prevention cues). These strategies reinforce emotional bonds between users and the service, which ultimately enhance loyalty.

The Influence of Customer Service Skills on User Loyalty

Based on the hypothesis testing results, the path coefficient (original sample) is 0.366, indicating that customer service skills have a positive effect on user loyalty. The T-statistic value of 3.595, which exceeds the critical value of 1.659, and a P-value of 0.000 (< 0.05) indicate that this effect is statistically significant. These findings suggest that the quality of service interactions experienced by users plays an important role in shaping their decision to continue using the service over time. Customer service skills include the ability to communicate clearly, demonstrate empathy in understanding user complaints, and provide accurate solutions. Service delivery that addresses user needs professionally creates a sense of comfort and trust, thereby fostering user loyalty. These findings are consistent with Sukardi et al. (2023), who explain that service quality is not assessed solely based on response speed, but also on the ability of service personnel to provide clear explanations and solutions that align with customer problems. Their study shows that customers become loyal when they experience consistent and satisfying service interactions. Furthermore, Putri & Junaidi (2022) found that service skills contribute to building long-term relationships by creating a sense of security and trust between customers and service providers. This finding is consistent with the study conducted by Hutagaol et al. (2025), which indicates that e-service quality has a positive and significant effect on customer loyalty.

In the context of digital-based services, a study by Febriansyah & Purwanto (2025) on mobile wallet users shows that the effectiveness of customer service in handling user complaints influences reuse intention. Users feel more confident in continuing to use the service when technical or transaction-related issues are resolved clearly and promptly. This indicates that customer service functions as a primary bridge between the digital system and the user experience. Manacika & Pramudana (2024) explain that the quality of service interactions enhances customer satisfaction, which subsequently becomes a key factor in the formation of loyalty. This satisfaction arises when customers feel understood and adequately assisted in every service interaction. Similar findings are also demonstrated in a study of the online transportation sector by Lusiah et al. (2019), which states that service responsiveness and empathy create user commitment to continue using the service, even in the presence of numerous alternative service providers.

Dewani et al. (2024) emphasizes that clarity of information and certainty of solutions provided by customer service create a sense of security for customers. This sense of security serves as a psychological foundation for loyalty, as customers feel confident that the service provider is capable of handling potential issues that may arise in the future. Furthermore, Lihawa & Tunjungsari (2023) demonstrate that consistent and professional service quality builds customers' emotional attachment, making them less likely to switch to other service providers. Thus, customer service skills not only affect the technical aspects of service delivery but also play a role in shaping user satisfaction, trust, and emotional attachment. Therefore, the first hypothesis (H1), which states that customer service skills have a positive effect on the loyalty of DANA e-wallet users, is accepted.

The Influence of User Interface on User Loyalty

Based on the hypothesis testing results, the path coefficient (original sample) is 0.379, indicating that the user interface has a positive effect on user loyalty. The T-statistic value of 3.716, which exceeds the critical value of 1.659, and a P-value of 0.000 (< 0.05) indicate that this effect is statistically significant. These results suggest that the better the perceived quality of the user

interface, the higher the level of user loyalty in using the e-wallet application, reflected in reuse intention, consistency of use, and the tendency to recommend the application to others. The user interface serves as the initial point of interaction between users and the e-wallet system. A clear, consistent, and easy-to-understand interface design enables users to complete transactions more comfortably and with minimal obstacles. Ease of navigation, clarity of icons and menus, and informative visual displays are key factors in shaping a positive user experience. This experience indirectly fosters feelings of satisfaction, comfort, and emotional attachment to the application, which ultimately encourages long-term user loyalty. Silalahi (2022) demonstrates that user interface quality has a significant effect on e-wallet customer loyalty through ease of use and clarity of information presented in the application. A user-friendly interface increases user trust and encourages continued use of the same e-wallet service. This finding indicates that the user interface functions not only as an aesthetic element but also as a functional factor in retaining users.

The study by Irawati & Wijaya (2025) found that simple and easy-to-understand interface designs are able to enhance user comfort and engagement with digital financial applications. An attractive and intuitive interface makes users feel more at ease and motivated to continue using the application. These findings indicate that user interface quality can create a pleasant usage experience, which ultimately increases e-wallet user loyalty (Rahma & Zagladi, 2025). From the perspective of digital service quality, Syafri & Ratnaningsih (2025) emphasize that electronic service quality which includes user interface aspects plays an important role in shaping e-wallet user loyalty. A well-designed user interface enhances perceptions of system professionalism and reliability, thereby fostering trust and encouraging continued use. This finding is consistent with previous studies by Chang & Chen (2009) and Fathorrahman et al. (2024), which demonstrate that interface quality has a positive and significant effect on customer loyalty in the context of e-commerce.

Yudhantara & Putra (2025) found that the user interface has a significant effect on user satisfaction, which in turn has the potential to increase loyalty. An easy-to-use interface makes users feel more efficient and comfortable during transactions, thereby strengthening their intention to reuse the service. User interface aspects are a crucial part of system quality that influence user loyalty through satisfaction and trust. A consistent and easy-to-understand interface helps users feel secure and confident when conducting digital transactions, thus encouraging loyalty in e-wallet usage (Rahmawaty et al., 2021). Based on the empirical results of this study and the support of various previous studies, it can be concluded that the user interface plays an important and significant role in enhancing e-wallet user loyalty. Therefore, the hypothesis stating that the user interface has a positive effect on user loyalty (H2) is accepted.

The structural model explains a substantial portion of variance in user loyalty; however, a part of the variance remains unexplained, indicating the presence of other influential factors beyond the current research model. From a theoretical perspective, several mediating and moderating variables are logically relevant and may be incorporated in future studies to provide a more comprehensive explanation of loyalty formation.

Potential mediating variables include trust, user satisfaction, and perceived security, which may explain the mechanism through which customer service skills and user interface quality are translated into user loyalty. For example, effective customer service interactions may first enhance users' trust and satisfaction, which subsequently encourage continued usage and loyalty. Similarly, a user-friendly interface may strengthen perceptions of security and ease of use, thereby indirectly reinforcing loyalty. Potential moderating variables include digital literacy, usage intensity, and financial technology familiarity, which may influence the strength of the relationships identified in this study. Users with higher levels of digital literacy or more intensive usage experience may perceive greater emotional and functional value from interface quality and service interactions compared to less experienced users.

The remaining unexplained variance also reflects the multifaceted nature of loyalty in digital financial services, which is shaped not only by service and system quality but also by contextual factors such as promotional strategies, ecosystem integration, social influence, and competition

among e-wallet platforms. Therefore, these findings suggest that loyalty formation is a complex process involving functional performance, emotional value, and user-specific characteristics.

4. CONCLUSION

Based on the results of this study, it can be concluded that both customer service skills and user interface quality have positive and significant effects on the loyalty of DANA e-wallet users. These findings confirm that user loyalty in digital financial services is formed through the combined influence of system interaction quality and human service interaction quality.

The results indicate that the user interface has the most dominant influence on user loyalty. A clear, intuitive, and consistent interface enhances ease of use, reduces user errors, and creates a sense of comfort and control during transactions. These functional and emotional benefits encourage repeated usage and increase users' willingness to recommend the DANA application to others. This confirms that the user interface functions not only as a technical component but also as a key driver of emotional value and long-term loyalty in e-wallet services.

Customer service skills also demonstrate a significant positive effect on user loyalty. Responsive communication, empathy, and effective problem-solving contribute to users' sense of security and trust, particularly when they experience technical or transactional issues. Although its effect is less dominant than the user interface, customer service plays a crucial supporting role in sustaining long-term user relationships by reinforcing trust and satisfaction.

To further clarify the mechanism through which customer service skills and user interface influence loyalty, future research is strongly encouraged to incorporate mediating variables such as user satisfaction and trust. These variables may explain how functional and emotional values generated by service interactions and interface quality are translated into loyalty behavior. In addition, future studies may employ longitudinal or time-lag research designs to capture changes in user loyalty over time, as loyalty is a cumulative and dynamic construct rather than an instant outcome.

Further research may also consider experimental approaches, such as A/B testing of user interface designs, to directly measure the impact of specific interface elements (e.g., navigation flow, visual hierarchy, confirmation feedback) on user experience and loyalty-related outcomes. Such approaches would provide stronger causal evidence and practical insights for interface optimization.

From a managerial perspective, the findings highlight several operational priorities for improving customer service skills. First, empathy should be emphasized through structured training programs that enhance agents' ability to understand user emotions and respond with appropriate tone and reassurance. This can be measured through KPIs such as Customer Satisfaction Score (CSAT) and sentiment analysis of user feedback. Second, problem-solving effectiveness should be strengthened by improving agents' technical knowledge and decision-making authority, with measurable indicators including First Contact Resolution (FCR) and repeat complaint rates. Third, responsiveness and service reliability should be managed through clear Service Level Agreements (SLA), with KPIs such as average response time and resolution time compliance.

Overall, this study concludes that sustaining user loyalty in the DANA e-wallet requires a balanced strategy that prioritizes user-centered interface design as the main driver of loyalty, while simultaneously strengthening customer service skills as a relational support system. By integrating technological quality with high-quality service interactions, e-wallet providers can create functional and emotional value that supports long-term user loyalty in an increasingly competitive digital payment ecosystem.

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