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*Research Article*

# The Effects of Perceived Ease of Use and Security on User Satisfaction and Loyalty of DANA E-Wallet Users in Pontianak City

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## ABSTRACT

This study aims to analyze the influence of Perceived Ease of Use and Security on User Satisfaction and User Loyalty among DANA e-wallet users in Pontianak City. The research employs a quantitative associative approach using primary data collected from 100 respondents selected through purposive sampling and proportionally distributed across six districts. The instrument was measured using a five-point Likert scale, while data analysis was conducted using SEM-PLS with SmartPLS software. The evaluation of the measurement model indicates that all constructs meet the criteria for validity and reliability (with CR and AVE values exceeding the minimum thresholds). In the structural model, Security is proven to have a positive and significant effect on both satisfaction and loyalty, and satisfaction also has a significant effect on loyalty. In contrast, Perceived Ease of Use does not have a significant effect on satisfaction but is found to have a negative and significant effect on loyalty. This finding constitutes the main scientific contribution of the study, as it demonstrates that within a highly competitive e-wallet market, ease of use may function as a hygiene factor—being easy to use does not automatically foster loyalty and may even encourage switching behavior when users are more sensitive to promotions, features, or other perceived benefits. The mediation analysis shows that satisfaction mediates the effect of Security on loyalty but does not mediate the relationship between Perceived Ease of Use and loyalty. From a practical perspective, DANA should prioritize strengthening security, privacy protection, and fraud prevention as the foundation for building long-term satisfaction and loyalty, while selectively enhancing the user experience in core transaction processes. Future research is recommended to incorporate variables such as trust, perceived value, service quality, and switching intention to better explain the mechanisms underlying loyalty formation in digital payment services.

**Keywords:** Perceived Ease of Use. Security, User Satisfaction, User Loyalty

## 1. INTRODUCTION

The rapid expansion of digital technology has fundamentally altered the structure of financial systems and the way individuals interact with economic services. Beyond improving efficiency and accessibility, digital transformation has redefined how financial transactions are conducted, monitored, and evaluated by users. Within this transformation, digital payment systems particularly electronic wallets (e-wallets) have emerged as a central component of everyday financial activity. Octaviani et al. (2024) describe e-wallets as a modern financial innovation that facilitates electronic transactions such as payments, fund transfers, and digital savings. Likewise, Marhaendra & Mahyuzar (2023) explain that electronic money stores monetary value digitally and enables transactions with a broad network of merchants, reducing reliance on physical cash. However, the widespread diffusion of e-wallets also raises critical questions regarding user trust, system reliability, and long-term adoption sustainability.

The development of Financial Technology (FinTech) has significantly accelerated the adoption of digital payment instruments in Indonesia. One of the most prominent platforms within this landscape is DANA, an e-wallet developed by PT Elang Mahkota Teknologi Tbk (EMTEK) in collaboration with Ant Financial since 2018. Data from Bank Indonesia (2025) show that electronic money transactions reached IDR 245.62 trillion in December 2024, representing a 12.02% increase from the previous month. While these figures reflect a strong shift toward cashless transactions, they also suggest growing dependence on digital platforms whose performance and security are continuously tested by increasing transaction volumes and user diversity. Thus, transaction growth alone does not necessarily indicate user satisfaction or loyalty, but rather highlights the urgency of examining the qualitative dimensions of user experience.

Survey data from Populix (2024) further indicate that digital wallets have become the dominant payment method among Indonesian consumers, with GoPay (88%), DANA (83%), OVO (79%), ShopeePay (76%), and LinkAja (30%) ranking as the most frequently used platforms. This pattern has been reinforced by Bank Indonesia's implementation of QRIS, which enhances interoperability across payment providers. Nevertheless, intensified competition among e-wallet platforms has shifted user behavior toward greater selectivity. Users are no longer bound to a single platform and can easily switch services when expectations regarding convenience, security, or perceived value are not met. Consequently, user loyalty in the e-wallet ecosystem has become increasingly fragile and conditional.

From the user perspective, perceived ease of use remains a fundamental determinant in shaping acceptance and continued usage of digital financial services. Alifia et al. (2024) argue that ease of use reflects users' perceptions of whether a technology can be operated without excessive effort, thereby reducing cognitive and operational burdens. This view aligns with Jogiyanto (2011) in Abrilia & Sudarwanto (2020), who define perceived ease of use as the belief that a system can be utilized effectively with minimal effort. Sun & Zhang (2015) in Alifia et al. (2024) further emphasize that ease of use encompasses the ability to learn the system quickly, operate it smoothly, understand its features clearly, and develop proficiency over time. However, as e-wallet applications become more complex and feature-rich, perceived ease of use may decline, particularly among users in non-metropolitan areas who face different technological literacy levels.

Alongside usability, security concerns have become increasingly salient in the digital payment environment. Tuasamu et al. (2024) highlight that security is a critical component of information systems, as cybercrime risks can severely undermine user confidence. G. J. Simons (2015) in Tuasamu et al. (2024) notes that security mechanisms are designed to prevent and detect fraud related to data and transactions. Kumala (2020) in Widiastuti et al. (2024) further explains that digital security aims to reduce transaction risks to an acceptable threshold, while Widiartanto (2020) emphasizes the responsibility of service providers to ensure data confidentiality and transaction integrity. Despite these safeguards, increasing incidents of phishing, account breaches, and data misuse continue to pose serious challenges, suggesting that perceived security may vary significantly across user groups and regions.

Perceived ease of use and security are closely associated with user satisfaction, which in turn influences loyalty. Kotler and Keller (2012) in Priansa (2017) conceptualize satisfaction as an emotional response arising from the comparison between expectations and actual system performance. Similarly, Zeithaml & Bitner (2008) in Priansa (2017) argue that satisfaction emerges when perceived performance meets or exceeds expectations. Assauri (2018) further asserts that sustained satisfaction can foster loyalty, provided that service quality remains consistent. However, in digital payment contexts characterized by low switching costs, satisfaction alone may not guarantee loyalty, as users can easily migrate to alternative platforms offering better incentives or perceived advantages.

Customer loyalty, therefore, represents a complex outcome rather than a direct consequence of satisfaction. Tjiptono & Candra in Priansa (2017) define loyalty as a consumer's commitment to repeatedly use a particular service, accompanied by a favorable attitude toward the provider. Griffin (2009) and Reinartz and Kumar (2012) in Priansa (2017) emphasize that loyal customers contribute not only through repeat usage but also through advocacy behaviors. Dick and Basu in Priansa (2017) distinguish between behavioral loyalty and attitudinal loyalty, underscoring the importance of emotional attachment and trust. In the context of e-wallets, maintaining both dimensions of loyalty is increasingly challenging due to aggressive competition and frequent promotional campaigns.

Despite the rapid adoption of e-wallets in Indonesia, studies that explicitly examine user behavior in medium-sized cities such as Pontianak remain limited. Users in Pontianak may exhibit different behavioral patterns compared to those in metropolitan areas due to variations in digital literacy, risk perception, and reliance on digital financial services. Therefore, understanding how perceived ease of use and security influence satisfaction and loyalty in this context is crucial for providing a more nuanced explanation of e-wallet adoption beyond major urban centers.

Based on these considerations, this study aims to analyze the influence of Perceived Ease of Use and Security on User Satisfaction and Loyalty toward the DANA E-Wallet among residents of Pontianak City. Theoretically, this research seeks to deepen understanding of digital consumer behavior by clarifying the roles of usability and security within a non-metropolitan context. Practically, the findings are expected to inform FinTech providers in designing more user-centered and secure systems, while also offering insights for regulators and practitioners in strengthening a sustainable and trustworthy digital payment ecosystem in Indonesia.

## 2. RESEARCH METHOD

### Type of Research

This study employs a quantitative associative approach. According to Siregar (2017), associative research aims to identify the relationship between two or more variables. Based on this view, the present study was conducted to examine the relationship between Perceived Ease of Use ($X_1$) and Security ($X_2$) on User Satisfaction ($Y_1$) and User Loyalty ($Y_2$) among DANA E-Wallet users in Pontianak City.

## Data Collection Techniques

This research utilized two types of data sources: primary data and secondary data. According to Sugiyono (2017), primary data refers to data obtained directly from respondents by the researcher. In this study, primary data were collected through interviews and questionnaires. Siregar (2017) defines an interview as a process of obtaining information or data for research purposes through direct question-and-answer sessions. The interviews were conducted with residents of Pontianak City who actively use the DANA application to gain insight into their habits and perceptions regarding ease of use and transaction security. Furthermore, according to Sugiyono (2017), a questionnaire is a data collection technique conducted by distributing a set of written questions to respondents to be answered. The questionnaire used in this study consisted of closed-ended questions constructed based on the indicators of each variable and distributed to active DANA application users in Pontianak City. Secondary data were obtained from relevant literature such as academic journals, articles, theoretical references, and previous studies related to the research topic.

## Population and Sample

The population in this study consists of all users of the DANA e-wallet application residing in Pontianak City. According to Sugiyono (2017), a population is a generalization area comprising objects or subjects that possess certain characteristics determined by the researcher to be studied and from which conclusions are drawn. However, at the time this research was conducted, the exact number of DANA users in Pontianak City could not be determined with certainty. Therefore, the sample size was determined using the Lemeshow formula with a 95% confidence level (Z = 1.96), a proportion value (p) of 0.5, and a margin of error (d) of 0.1. Based on this calculation, a minimum sample size of 96.04 respondents was obtained, which was subsequently rounded up to 100 respondents. The sampling technique applied in this study is non-probability sampling using a purposive sampling approach, namely the selection of respondents based on specific criteria relevant to the research objectives (Sugiyono, 2019). This technique was chosen due to the limitations in obtaining accurate data regarding the exact number and distribution of DANA users in Pontianak City. To ensure regional representation, the sample was then proportionally distributed across six districts in Pontianak City, namely Pontianak Kota, Pontianak Barat, Pontianak Timur, Pontianak Selatan, Pontianak Utara, and Pontianak Tenggara. The distribution of respondents was carried out evenly, with approximately 16–17 respondents in each district, resulting in a total of 100 respondents. This approach aims to obtain a more geographically representative overview of DANA users' perceptions without applying probability sampling techniques. The criteria for respondents in this study are as follows: Aged at least 18 years, Have used the DANA application at least once within the past year and Reside in one of the six districts in Pontianak City.

## Research Variables and Measurement Scale

According to Sugiyono (2017), a research variable is anything determined by the researcher to be studied in order to obtain information and draw conclusions. The variables used in this study are classified as follows: Independent Variables (X): Perceived Ease of Use ($X_1$) and Security ($X_2$), Dependent Variable: User Loyalty ($Y_2$) and Intervening Variable: User Satisfaction ($Y_1$). A Likert scale was employed to measure the respondents' attitudes, opinions, and perceptions toward each statement in the questionnaire. Sugiyono (2017) explains that the Likert scale is used to measure individuals' attitudes or perceptions regarding a social phenomenon. Similarly, Siregar (2020) states that the Likert scale assesses the level of agreement with a given statement using five response categories. In this study, a score of 5 was assigned for "Strongly Agree (SA)" and 1 for "Strongly Disagree (SD)."

## Data Analysis Technique

Data analysis in this research was conducted using the Structural Equation Modeling (SEM) approach based on Partial Least Squares (PLS) with the aid of the SmartPLS software. According to Latan (2013), SEM is a second-generation multivariate analysis technique that combines factor analysis and path analysis, enabling simultaneous testing of relationships between multiple latent independent and dependent variables. The PLS-SEM approach was selected because it is predictive in nature and suitable for developing theoretical models (Latan, 2013). Model evaluation consisted of two stages: the Outer Model and the Inner Model. In the Outer Model, convergent validity and discriminant validity were assessed by considering a loading factor greater than 0.7 and an Average Variance Extracted (AVE) value of at least 0.5 (Latan, 2013). Reliability was tested using Composite Reliability and Cronbach's Alpha, with a minimum threshold of 0.7 as an indicator of good internal consistency. In the Inner Model, the analysis focused on the R-Square, Path Coefficient, and Q-Square values to evaluate the strength, direction, and predictive relevance among variables (Latan, 2013). The model is considered to have good predictive capability if the Q-Square value exceeds 0, indicating that the structural model possesses adequate predictive relevance and empirical validity.

**Table 1**. Variable Indicators

| Variable | Indicators | Source |
|---|---|---|
| Perceived Ease of Use | Easy to Learn | Davis (1989) |
| | Easy to Use | |
| | Timeliness | |
| | Clear and Understandable | |
| | Become Skillful | |
| Security | No Concern in Providing Personal Information | Waspada (2012) |
| | Belief that Personal Information is Secure | |
| | Belief in the Security of Stored Funds during Transactions | |
| User Satisfaction | Expectation Fulfillment | Tjiptono (2014) |
| | Revisit Intention | |
| | Willingness to Recommend | |
| User Loyalty | Repurchase Behavior | Hasan (2014) |
| | Customer Commitment to the Product/Service | |
| | Recommendation and Word-of-Mouth | |

## 3. RESULTS AND DISCUSSION

### 3.1 Test Research Instruments

#### *3.1.1 Convergent Validity*

Convergent validity was assessed by examining construct validity through the outer loading values of each indicator in relation to its respective construct. An indicator is regarded as valid when it demonstrates a loading factor greater than 0.70 and an Average Variance Extracted (AVE) value of at least 0.50. The outcomes of the convergent validity assessment for all variables are presented in **Table 2.**

**Table 2.** Convergent Validity Test Results

| Variable | Indicators | Loading Factor | Description |
|---|---|---|---|
| Perceived Ease of Use (X1) | X1.1 | 0.791 | Valid |
| | X1.2 | 0.839 | |
| | X1.3 | 0.799 | |
| | X1.4 | 0.804 | |
| | X1.5 | 0.784 | |
| | X1.6 | 0.748 | |
| | X1.7 | 0.712 | |
| Security (X2) | X2.1 | 0.787 | Valid |
| | X2.2 | 0.834 | |
| | X2.3 | 0.790 | |
| | X2.4 | 0.721 | |
| | X2.5 | 0.805 | |
| | X2.6 | 0.858 | |
| | X2.7 | 0.855 | |
| | X2.8 | 0.779 | |
| | X2.9 | 0.784 | |
| | X2.10 | 0.819 | |
| | X2.11 | 0.739 | |
| | X2.12 | 0.807 | |
| User Satisfaction (Y1) | Y1.1 | 0.714 | Valid |
| | Y1.2 | 0.773 | |
| | Y1.3 | 0.789 | |
| | Y1.4 | 0.854 | |
| | Y1.5 | 0.846 | |
| | Y1.6 | 0.855 | |
| | Y1.7 | 0.882 | |
| | Y1.8 | 0.824 | |
| | Y1.9 | 0.843 | |
| User Loyalty (Y2) | Y2.1 | 0.871 | Valid |
| | Y2.2 | 0.890 | |
| | Y2.3 | 0.888 | |
| | Y2.4 | 0.891 | |
| | Y2.5 | 0.860 | |
| | Y2.6 | 0.898 | |

Source: Processed Data, 2025

The results displayed in **Table 2** indicate that all indicators associated with the constructs of Perceived Ease of Use, Security, User Satisfaction, and User Loyalty exhibit outer loading values exceeding the recommended threshold of 0.70. This suggests that each indicator adequately represents its corresponding latent construct, thereby meeting the criteria for convergent validity.

### 3.1.2 Discriminant Validity

Discriminant validity was evaluated using the Fornell–Larcker criterion to determine the extent to which each construct is empirically distinct from other constructs in the model. A construct is considered to satisfy discriminant validity when the square root of its AVE value is greater than its correlations with other constructs. The results of this assessment are summarized in **Table 3.2**.

**Tabel 3.** Discriminant Validity Test Results

| Variabel | **Perceived Ease of Use** | **Security** | **Satisfaction** | **Loyalty** |
|---|---|---|---|---|
| Perceived Ease of Use | 0.783 | 0.799 | | |
| Security | | 0.906 | 0.821 | |
| Satisfaction | | 0.902 | 0.932 | 0.884 |
| Loyalty | | 0.583 | 0.625 | 0.532 |

Source: Processed Data, 2025

Based on **Table 3** the diagonal values representing the square roots of AVE for each construct are higher than the inter-construct correlation values. This indicates that each construct shares stronger variance with its own indicators than with other constructs, confirming that the measurement model satisfies the discriminant validity requirement.

### 3.1.3 Average Variance Extracted (AVE)

Construct validity was further examined using the Average Variance Extracted (AVE) metric. A construct is considered valid when its AVE value exceeds 0.50. The AVE values for all constructs in this study are reported in **Table 4**.

**Table 4.** Average Variance Extracted (AVE)

| **Constructs** | **AVE** |
|---|---|
| Perceived Ease of Use (X1) | 0.638 |
| Security (X2) | 0.675 |
| User Satisfaction (Y1) | 0.781 |
| User Loyalty (Y2) | 0.614 |

Source: Processed Data, 2025

The AVE values shown in **Table 4** exceed the minimum threshold of 0.50 for all constructs. This indicates that each construct is able to explain more than half of the variance of its indicators, thereby satisfying the validity criterion.

### 3.1.4 Reliability Test

Reliability testing in this study employed Composite Reliability, as it is considered more appropriate than Cronbach's Alpha due to its higher estimation accuracy. A construct is deemed reliable when its Composite Reliability value is greater than 0.70 and its Cronbach's Alpha exceeds 0.60. The reliability test results are presented in **Table 5.**

**Tabel 5.** Composite Reliability & Cronbach's Alpha

| **Variable** | **Cronbach's Alpha** | **Composite Reliability** |
|---|---|---|
| Perceived Ease of Use (X1) | 0.948 | 0.955 |
| Security (X2) | 0.939 | 0.949 |
| User Satisfaction (Y1) | 0.953 | 0.961 |
| User Loyalty (Y2) | 0.895 | 0.917 |

Source: Processed Data, 2025

The results in **Table 5** show that all constructs meet the specified reliability thresholds. This indicates that the measurement items demonstrate internal consistency and can reliably measure the intended constructs.

### 3.1.5 Coefficient of Determination (R-Square)

In the SEM-PLS framework, the coefficient of determination ($R^2$) is used to evaluate the proportion of variance in endogenous variables explained by exogenous variables. Higher $R^2$ values indicate stronger explanatory power. The $R^2$ and

adjusted $R^2$ values obtained in this study are shown in **Table 6.**

**Table 6.** R-Square Values

| Endogenous Variable | R-Square | R-Square Adjusted |
|---|---|---|
| User Satisfaction (Y1) | 0.835 | 0.831 |
| User Loyalty (Y2) | 0.893 | 0.890 |

Source: Processed Data, 2025

Based on the R-Square test results in **Table 6**, the results can be interpreted as follows:

1. The adjusted $R^2$ value for User Satisfaction is 0.831, indicating that Perceived Ease of Use and Security jointly explain 83.1% of the variance in satisfaction, while the remaining 16.9% is influenced by variables outside the model. These values indicate a strong explanatory capacity of the proposed model.
2. The adjusted $R^2$ value for User Loyalty is 0.890, suggesting that Perceived Ease of Use, Security, and User Satisfaction collectively account for 89.0% of the variance in loyalty. These values indicate a strong explanatory capacity of the proposed model.

### *3.1.6 Goodness of Fit (GoF)*

Model fit was assessed using the Standardized Root Mean Square Residual (SRMR), where lower values indicate better model adequacy. The SRMR value obtained from the model estimation is presented in **Table 7.**

**Tabel 7.** Goodness of Fit Test Results

| | Model Estimasi |
|---|---|
| SRMR | 0.071 |

Source: Processed Data, 2025

Based on the Goodness of Fit test results in **Table 7**, the SRMR value of 0.071 falls below the recommended cut-off value of 0.08, indicating that the estimated model demonstrates an acceptable level of fit between the empirical data and the proposed structural relationships.

## 3.2 Hypothesis Testing

### *3.2.1 Direct Effec Test*

Direct effect analysis was conducted to examine the relationships between exogenous and endogenous latent variables. The results were derived from the bootstrapping procedure and are summarized in **Table 8**.

**Table 8.** Direct Effect Test

| | Relationship Between Variables | Original Sample Estimate | T Statistic | P Value | Description |
|---|---|---|---|---|---|
| **H1** | Perceived Ease of Use —> User Satisfaction | 0.147 | 1.724 | 0.085 | Not Significant |
| **H2** | Perceived Ease of Use —> User Loyalty | -0.092 | 2.214 | 0.027 | Significant |
| **H3** | Security —> User Satisfaction | 0.820 | 14.050 | 0.000 | Significant |
| **H4** | Security —> User Loyalty | 0.327 | 3.102 | 0.002 | Significant |
| **H5** | Satisfaction —> User Loyalty | 0.694 | 6.233 | 0.000 | Significant |

Source: Processed Data, 2025

Based on the results of the Direct Effect test in **Table 8**, the Direct Effect results can be interpreted as follows:

1. The Perceived Ease of Use variable does not have a significant effect on User Satisfaction, as indicated by a t-statistic of 1.724 and a p-value of 0.085. This means that although users feel the DANA application is easy to use, this perception alone does not necessarily increase their satisfaction. Ease of use still needs to be supported by factors such as reliability,

responsiveness, and performance consistency.

2. The Perceived Ease of Use variable has a negative and significant effect on User Loyalty, with a coefficient value of –0.092, a t-statistic of 2.214, and a p-value of 0.027. This shows that ease of use does not automatically create loyalty. Users may perceive DANA as easy to use but still switch to other platforms that provide better offers, features, or rewards.
3. The Security variable has a positive and significant effect on User Satisfaction, with a t-statistic of 14.050 and a p-value of 0.000. This indicates that the higher the sense of security felt by users in making transactions, the more satisfied they become. Security aspects such as data protection, privacy assurance, and safe transaction systems are proven to play a major role in increasing user satisfaction.
4. The Security variable also has a positive and significant effect on User Loyalty, with a t-statistic of 3.102 and a p-value of 0.002. This finding means that users who feel safe and protected in using the DANA application are more likely to remain loyal. Transaction safety creates trust and emotional attachment, which encourages users to continue using the service in the long term.
5. User Satisfaction has a positive and significant effect on Loyalty, with a t-statistic of 6.233 and a p-value of 0.000. This shows that users who are satisfied with the performance and reliability of the DANA application tend to remain loyal, continue using the application, and recommend it to others.

### *3.2.2 Indirect Effect Test*

Indirect effect testing was performed to identify mediation effects involving User Satisfaction. The results of the specific indirect effects analysis are reported in **Table 9**.

**Table 9.** Indirect Effect Test

| H | Relationship Between Variables | Original Sample Estimate | T Statistic | P Value | Description |
|---|---|---|---|---|---|
| **H 6** | Perceived Ease of Use –> Satisfaction –> Loyalty | 0.102 | 1.618 | 0.106 | Not Significant |
| **H 7** | Security –> Satisfaction –> Loyalty | 0.569 | 6.188 | 0.000 | Significant |

Source: Processed Data, 2025

The results of the indirect effect analysis in **Table 9** shown two mediation relationships involving the variable of Satisfaction as an intervening factor between Perceived Ease of Use, Security, and Loyalty.

1. The indirect effect of Perceived Ease of Use on Loyalty through Satisfaction has a standardized path coefficient of 0.102, a t-statistic value of 1.618, and a p-value of 0.106. Since the p-value is greater than 0.05, this indicates that Satisfaction does not mediate the relationship between Perceived Ease of Use and Loyalty. In other words, ease of use alone does not significantly increase loyalty, even when users feel satisfied. This result suggests that users' sense of loyalty toward the DANA application is not determined solely by the ease of use but may be influenced more by other factors such as trust, security, and service consistency.
2. The indirect effect of Security on Loyalty through Satisfaction has a standardized path coefficient of 0.569, a t-statistic of 6.188, and a p-value of 0.000. These values indicate a positive and significant indirect effect, meaning that Satisfaction successfully mediates the relationship between Security and Loyalty. This shows that when users feel secure while using the DANA application, they tend to be more satisfied, and this satisfaction ultimately fosters a stronger sense of loyalty.

Therefore, it can be concluded that the higher the Security variable perceived by digital wallet users, the higher the level of satisfaction, which ultimately has a positive impact on Loyalty of digital wallet applications, one of which is the DANA E-Wallet application.

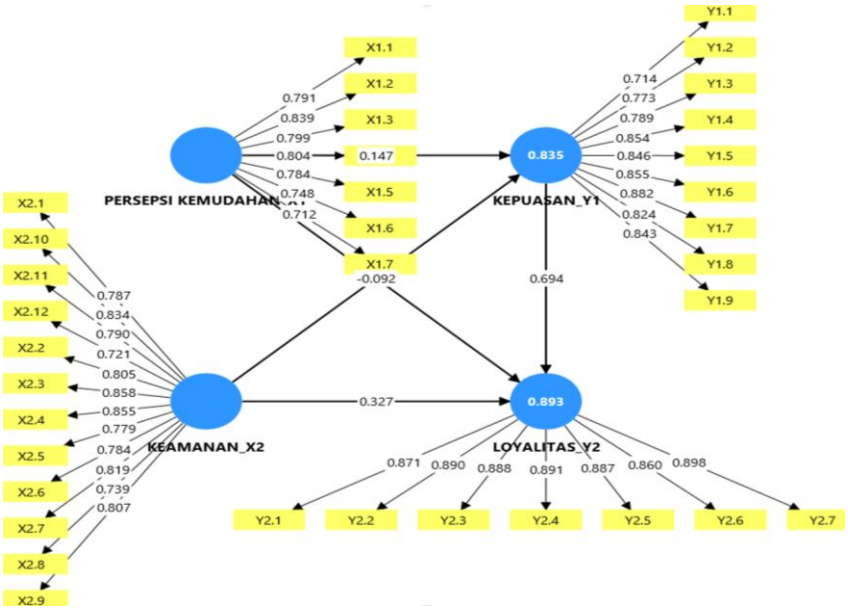


**Figure 1.** Inner Model Test Results
Source: SmartPLS output, 2025

## 3.3 Discussion

### The Effect of Perceived Ease of Use on User Satisfaction

The results of the analysis indicate that Perceived Ease of Use does not have a significant effect on User Satisfaction. This finding suggests that ease of use is no longer a primary factor determining the level of satisfaction among DANA e-wallet users. From a theoretical perspective, this condition can be explained through Expectation–Confirmation Theory, which emphasizes that satisfaction is formed when actual system performance exceeds users' initial expectations. In the current context of e-wallet usage, ease of use has generally become a basic attribute that is assumed to be available across almost all digital platforms. When this basic expectation is fulfilled, ease of use no longer generates sufficient positive disconfirmation to enhance user satisfaction. This finding is consistent with the study by Widiastuti et al. (2024), which shows that perceived ease of use does not always contribute significantly to e-wallet user satisfaction. Therefore, the satisfaction of DANA users is more likely to be influenced by other factors that are perceived as having higher levels of risk, such as transaction security and personal data protection.

### The Effect of Perceived Ease of Use on User Loyalty

One of the key findings of this study is that Perceived Ease of Use has a negative and significant effect on User Loyalty. This result contrasts with the findings of Wahyuningsih & Nirawati (2022), who reported that ease of use positively influences DANA user loyalty. This discrepancy indicates a shift in user behavior as competition among e-wallet service providers intensifies. From a theoretical standpoint, ease of use in this context can be classified as a hygiene factor, meaning an attribute that is essential but unable to create competitive differentiation. When all platforms offer relatively similar levels of ease of use, this attribute no longer fosters long-term emotional attachment. Instead, ease of use may reduce switching costs, making users feel freer to move to other applications that offer promotions, incentives, or additional features perceived as more attractive. This condition explains why ease of use not only fails to strengthen loyalty but is instead negatively associated with user loyalty. This finding aligns with the results of Pramita (2020) in the context of the Grab application, which concluded that ease of use does not play a significant role in shaping loyalty among users of application-based services.

### The Effect of Security on User Satisfaction

The results show that Security has a positive and significant effect on User Satisfaction. This finding is consistent with the studies of Marhaendra & Mahyuzuar (2023) and Widiastuti et al. (2024), which emphasize that security is a key element in forming satisfaction in digital financial services. From the perspective of risk reduction theory, security functions as a mechanism to mitigate risks inherent in digital transactions, particularly financial risk and data breach risk. When users believe that the system is capable of protecting their personal information and financial transactions, their level of anxiety decreases and trust in the platform increases. This sense of security directly contributes to higher user satisfaction. In the context of DANA e-wallet usage, security is not merely perceived as a technical feature but as a form of digital protection that influences users' comfort and confidence in conducting transactions.

### The Effect of Security on User Loyalty

The Security variable is also proven to have a positive and significant effect on User Loyalty. This finding is in line with the results of Wahyuningsih & Nirawati (2022) as well as Deliyana et al. (2022), which position security as a primary determinant of loyalty in digital financial services. From the perspective of trust theory, security serves as the foundation for building long-term trust between users and service providers. Trust developed through perceived security encourages emotional attachment and user commitment to continue using the same service. Thus, loyalty is not solely influenced by functional aspects but also by users' confidence that the platform is capable of providing continuous protection against digital risks.

### The Effect of User Satisfaction on User Loyalty

The results indicate that User Satisfaction has a positive and significant effect on User Loyalty. This finding supports the studies of Siadari & Lutfi (2020) and Magdalena (2018), which emphasize that satisfaction is a critical prerequisite for the formation of user loyalty. Satisfaction reflects users' overall evaluation of their service experience, which subsequently develops into a commitment to continue using the same platform. In the context of e-wallets, satisfaction is not only determined by ease or transaction speed but also by perceived security, system reliability, and service consistency. When satisfaction is formed on a sustained basis, users tend to exhibit loyal behaviors, such as repeated usage and a willingness to recommend the service to others.

### The Effect of Perceived Ease of Use on Loyalty through Satisfaction

The mediation analysis shows that User Satisfaction does not mediate the relationship between Perceived Ease of Use and User Loyalty. This finding reinforces the argument that ease of use does not hold a strategic position in shaping loyalty, either directly or indirectly through satisfaction. This result is consistent with Pramita (2020), but contrasts with the findings of Yuningsih & Aprileny (2020), who found a significant effect of ease of use on loyalty in the banking sector. These differences are likely influenced by variations in industry context, levels of user involvement, and the characteristics of the services examined.

### The Effect of Security on Loyalty through Satisfaction

The mediation test results indicate that User Satisfaction significantly mediates the relationship between Security and User Loyalty. This finding confirms that security contributes to loyalty through the formation of satisfaction, whereby perceived safety first enhances user satisfaction, which subsequently drives loyalty. This result reinforces the findings of Wahyuningsih & Nirawati (2022) and supports theoretical approaches that position security and trust as key factors in building loyalty within digital financial services.

## 4. CONCLUSION

This research aims to answer the problem formulation regarding the influence of Perceived Ease of Use and Security on User Satisfaction and User Loyalty among DANA e-wallet users in Pontianak City. Based on the results of the SEM-PLS analysis, it can be concluded that Perceived Ease of Use does not have a significant effect on user satisfaction, but has a negative and significant effect on user loyalty. These findings indicate that in the context of increasingly competitive e-wallet use, ease of use is not necessarily a factor that forms satisfaction and loyalty, but can act as a basic factor (hygiene factor) that no longer provides a competitive advantage. On the other hand, the Security variable is proven to have a positive and significant effect on user satisfaction and loyalty, both directly and indirectly through satisfaction as a mediating variable. In addition, User Satisfaction has a significant positive effect on User Loyalty, which confirms the role of satisfaction as a post-usage evaluative mechanism in shaping the loyalty of digital financial service users. Thus, scientifically this research makes a contribution by confirming that the security aspect is the main determinant of e-wallet loyalty, as well as revealing the empirical phenomenon that ease of use does not always have a positive impact on user loyalty. This study has several limitations that need to be noted. First, the research uses a cross-sectional design so it is not able to capture the dynamics of changes in user behavior in the long term. Second, the variables tested are still limited to Perceived Ease of Use, Security, User Satisfaction, and User Loyalty, so they do not fully represent the complexity of psychological factors and behavior of e-wallet users. Third, the scope of the research area is only limited to Pontianak City, so generalization of research results to other areas needs to be done with caution. Based on these limitations, it is recommended that further research develop the model by including additional relevant variables, such as trust, perceived value, switching costs, as well as gamification and reward mechanisms in e-wallets, which have the potential to influence user loyalty. In addition, longitudinal research and expanding research objects to other regions or e-wallet platforms are also recommended to gain a more comprehensive understanding of the formation of satisfaction and loyalty in the digital payment ecosystem in Indonesia.

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