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Determinants Of E Wallet Loyalty In Indonesia: The Mediating Role Of Satisfaction

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Abstract

This study examines the determinants of e wallet loyalty in Indonesia by testing the effects of service quality, ease of use, usefulness, cost, and security, with user satisfaction as a mediating variable. A quantitative cross sectional survey was conducted using a five point Likert questionnaire distributed through Google Form to 300 active e wallet users in Indonesia from 18 February to 1 March 2026. The data were analyzed with SmartPLS 4 using the PLS SEM approach. The measurement model met the requirements of convergent validity, discriminant validity, and reliability. The structural model explained 79.6 percent of the variance in satisfaction and 78.6 percent of the variance in loyalty. The results show that service quality, ease of use, usefulness, cost, and security each have a positive and significant effect on satisfaction. Service quality, ease of use, cost, security, and satisfaction also have a positive and significant effect on loyalty, whereas usefulness does not directly affect loyalty. However, satisfaction significantly mediates all antecedent relationships with loyalty. Security is the strongest direct predictor of loyalty, while ease of use is the strongest predictor of satisfaction. The findings indicate that loyalty in e wallet services is shaped not only by functional performance but also by a secure and satisfying user experience.

Keywords: *e wallet, customer satisfaction, customer loyalty, service quality, security, PLS SEM.*

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INTRODUCTION

The rapid diffusion of financial technology has reshaped payment behavior and placed e wallet services at the center of everyday transactions. In Indonesia, digital payment has become part of daily financial routines, supported by national payment system growth and a user base that increasingly prefers non cash transactions (Bank Indonesia, 2023; Khando et al., 2023; Kurniawati et al., 2023). Competition among providers such as DANA, GoPay, ShopeePay, and OVO is therefore no longer determined only by promotional intensity, but also by service experience, convenience, trust, perceived value, and transaction security (Populix, 2022; Sholikah & Wibowo, 2023; Wardani & Susanti, 2024). This matters because users evaluate digital payment services through repeated experience rather than through advertising claims alone (Sajidan et al., 2025; Uskono et al., 2025).

The Indonesian e wallet market also shows a pattern that makes loyalty strategically important. Users can switch quickly across platforms when a service becomes inconvenient, costly, or unsafe, which means that retention has become as critical as acquisition (Rizan et al., 2024; Lasmawati et al., 2024; Kumbara et al., 2023). In the present study, the broader field observations and the user review material collected in the thesis point to recurring issues involving transaction speed, customer service responsiveness, verification burden, fee transparency, and security assurance. These

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practical concerns make e wallet loyalty a meaningful topic for empirical analysis rather than a mere marketing slogan.

The present study is grounded in the Expectation Confirmation Model developed by Bhattacherjee (2001). ECM explains post adoption behavior by arguing that users continue to use a system when actual performance confirms expectations, strengthens perceived usefulness, and produces satisfaction. This framework is particularly relevant for e wallet services because most users in this context are not first time adopters. They already have sufficient experience to evaluate whether an application deserves continued use and recommendation (Al Okaily, 2023; Dang et al., 2023; Novira et al., 2024). Prior research also shows that continuance behavior in digital payment services is often shaped by a combination of perceived service attributes and satisfaction, rather than by technical functionality alone (Delvi et al., 2020; Malik et al., 2025; Al Okaily, 2023).

Prior research has produced mixed findings regarding the determinants of satisfaction and loyalty in digital payment services. Ajina et al. (2023) reported that service quality, cost, and usefulness significantly influence customer satisfaction and loyalty, while ease of use and security were not always significant in their setting. Ariffin et al. (2021) found that cost and ease of use are important determinants of e wallet satisfaction, and Rahi and Ghani (2019) emphasized that perceived cost remains a salient factor in technology based services. In contrast, other studies have shown that security and ease of use can become more important when trust and satisfaction are considered as bridging mechanisms (Nguyen & Khoa, 2024; Prawira et al., 2024; Faridah & Yuannita, 2024). These studies are useful, but they do not provide a single unified explanation for how multiple service attributes operate together in the Indonesian e wallet context.

The empirical gap is therefore still visible. Existing studies usually examine service quality, ease of use, usefulness, cost, and security in partial combinations, but fewer studies test all five antecedents simultaneously while positioning satisfaction as the central bridge to loyalty (Kurniawati et al., 2023; Rizan et al., 2024; Liana et al., 2023). The contextual gap is also important because Indonesian e wallet users operate in a highly competitive market with rapidly changing consumer expectations, broad application variety, and strong sensitivity to transaction security and price fairness (Wardani & Susanti, 2024; Uskono et al., 2025; Moksin et al., 2024). As a result, findings from other settings cannot simply be transferred without verification.

The novelty of this study lies in testing service quality, ease of use, usefulness, cost, and security simultaneously as antecedents of satisfaction and loyalty among Indonesian e wallet users, while examining satisfaction as a mediator. The study offers empirical evidence from a broad user base and clarifies which dimensions act directly on loyalty and which operate mainly through satisfaction. In addition, the model extends the ECM perspective into a digital payment setting where service attributes, value perceptions, and risk concerns interact at the same time (Bhattacherjee, 2001; Dang et al., 2023; Al Okaily, 2023). Therefore, this study aims to examine the effects of service quality, ease of use, usefulness, cost, and security on user loyalty through user satisfaction as a mediating variable among e wallet users in Indonesia. The results are expected to enrich the literature on continuance behavior and provide practical guidance for e wallet providers seeking to strengthen retention in a highly competitive market.

Literature Review and Hypothesis Development

a. Expectation Confirmation Model

Expectation Confirmation Model (ECM) is a post adoption framework that explains why users continue to use an information system after initial adoption. Bhattacherjee

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(2001) developed the model by adapting expectation confirmation logic from consumer behavior into the information systems domain. In ECM, satisfaction emerges when actual performance confirms or exceeds expectations, and this satisfaction becomes a central driver of continuance intention. Later studies on e wallet and digital payment continuance show that ECM remains useful because the post adoption stage is exactly where users evaluate whether a service is worth retaining (Al Okaily, 2023; Dang et al., 2023; Novira et al., 2024).

In the e wallet context, ECM is especially relevant because users are no longer evaluating only the promise of the application, but its repeated performance in everyday transactions. If an application is fast, reliable, secure, and worth its cost, expectations are confirmed and satisfaction grows. If it is slow, expensive, or difficult to access, disconfirmation appears and loyalty weakens (Kumar et al., 2024; Malik et al., 2025; Sholekhah et al., 2023).

b. E wallet

E wallet is a digital payment tool that allows users to store value and conduct cashless transactions through mobile applications. Studies on digital payment adoption indicate that e wallet use is influenced by convenience, perceived value, security, and the overall user experience (Khando et al., 2023; Kurniawati et al., 2023; Sholikah & Wibowo, 2023). In Indonesia, e wallet services have become important because consumers increasingly use them for retail purchases, transfers, utilities, and daily expenses (Bank Indonesia, 2023; Populix, 2022).

Customer loyalty in e wallet services therefore depends not only on whether the application can be used, but also on whether it consistently creates a positive experience. Studies report that loyalty is shaped by satisfaction, perceived usefulness, service quality, trust, and switching convenience (Kumbara et al., 2023; Rizan et al., 2024; Wardani & Susanti, 2024). This study treats e wallet as a service ecosystem in which usability, value, and security jointly influence user retention.

c. Service Quality

Service quality in e wallet applications refers to users' evaluation of reliability, responsiveness, transaction speed, support quality, and the overall professionalism of the service. Prior research shows that service quality strongly influences satisfaction in digital payment settings because users interpret stable performance and quick responses as evidence of platform competence (Ajina et al., 2023; Ighomereho et al., 2022; Moksin et al., 2024). Similar findings are reported by Putri and Wardhana (2021), Liana et al. (2023), and Feliciana et al. (2024), who show that service quality contributes to loyalty through satisfaction in digital and mobile banking contexts.

In the Indonesian e wallet market, service quality is also closely linked to customer service responsiveness and complaint handling. This makes it reasonable to expect that better service quality increases both satisfaction and loyalty because users reward applications that operate smoothly and solve problems quickly (Novyantri & Setiawardani, 2021; Aini et al., 2024; Liani et al., 2024).

d. Ease of Use

Ease of use refers to how simple, understandable, and effortless it is for a user to operate an application. Davis (1989) established this concept in technology acceptance research, and later UTAUT based studies reaffirmed that simplicity and low effort are central to adoption and continuance (Venkatesh et al., 2012; Saputra & Gürbüz, 2021). In e wallet studies, ease of use is repeatedly linked to higher satisfaction because users prefer applications that reduce friction, shorten transaction steps, and make payment

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information easy to access (Prasetyo et al., 2023; Utami & Widiyanto, 2023; Khomathy et al., 2024).

Ease of use may also influence loyalty directly when users perceive that the application fits naturally into daily life. Studies on OVO and GoPay users show that easier applications can strengthen satisfaction and loyalty, although the effect may weaken if other platforms offer similar simplicity (Hasan et al., 2023; Suhendar & Putra, 2023; Kumala & Hartanto, 2022).

e. Usefulness

Usefulness, or perceived usefulness, is the extent to which users believe that using an application improves task performance, saves time, and makes transactions more effective. Davis (1989) and Venkatesh et al. (2012) positioned usefulness as a core determinant of technology acceptance, and recent e wallet studies confirm that usefulness often raises satisfaction and continuance intention (Malik et al., 2023; Ramadhan et al., 2024; Lee & Kim, 2024).

However, usefulness does not always translate directly into loyalty because functional benefits can become a baseline expectation in mature digital payment markets. When many applications provide similar efficiency, usefulness alone may not differentiate one platform from another. This is why some studies report indirect effects through satisfaction rather than a strong direct effect on loyalty (Delvi et al., 2020; Novira et al., 2024; Kumala & Hartanto, 2022).

f. Cost

Cost reflects users' perceptions of fees, charges, and the fairness of what must be paid to use a service. Rahi and Ghani (2019) and Ariffin et al. (2021) show that perceived cost remains an important consideration in digital payment adoption and continuance because users compare the benefits they receive with the money they spend. In e wallet settings, transparent and reasonable fees tend to increase satisfaction and loyalty, while unclear or excessive charges can undermine retention (Sari & Nugroho, 2023; Khan & Abideen, 2023; Kusuma & Santosa, 2021).

Cost also matters because users are highly sensitive to transaction fees, transfer charges, and reductions in promotional incentives. When a platform offers good value for money, it supports both satisfaction and loyalty (Raihani, 2024; Ariffin et al., 2021; Sari & Nugroho, 2023).

g. Security

Security refers to users' confidence that the system protects personal data, prevents unauthorized access, and safeguards transactions. Research in fintech and digital payment systems consistently identifies security as a decisive factor in user trust and intention to continue using e wallet services (Chen et al., 2022; Nguyen & Khoa, 2024; Prawira et al., 2024). Security is particularly important in emerging markets, where digital literacy varies and users are highly attentive to fraud risk and data protection (Putra & Arifin, 2022; Djaenudin & Prastowo, 2024; Uskono et al., 2025).

Security can work both directly and indirectly through satisfaction. When users feel protected, they are more comfortable continuing to use the application, and this comfort contributes to loyalty. Studies on DANA, GoPay, and other e wallet platforms show that security is often one of the strongest predictors of user retention (Amoroso & Lim, 2023; Kumbara et al., 2023; Wardani & Susanti, 2024).

Research Gap and Hypothesis Development

Existing studies show that service quality, ease of use, usefulness, cost, and security matter for e wallet satisfaction and loyalty, but the pattern is not always consistent across contexts (Ajina et al., 2023; Al Okaily, 2023; Rizan et al., 2024). Some studies find direct

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effects on loyalty, while others show that satisfaction is the mechanism that turns service evaluations into loyalty (Faridah & Yuannita, 2024; Hasan et al., 2023; Lasmawati et al., 2024). Therefore, this study positions satisfaction as the key bridge between service attributes and loyalty in the Indonesian e wallet market.

Based on ECM and the prior literature, the following hypotheses are proposed. H1: Service quality has a significant effect on satisfaction. H2: Ease of use has a significant effect on satisfaction. H3: Usefulness has a significant effect on satisfaction. H4: Cost has a significant effect on satisfaction. H5: Security has a significant effect on satisfaction. H6: Service quality has a significant effect on loyalty. H7: Ease of use has a significant effect on loyalty. H8: Usefulness has a significant effect on loyalty. H9: Cost has a significant effect on loyalty. H10: Security has a significant effect on loyalty. H11: Satisfaction has a significant effect on loyalty. H12: Satisfaction mediates the relationship between service quality and loyalty. H13: Satisfaction mediates the relationship between ease of use and loyalty. H14: Satisfaction mediates the relationship between usefulness and loyalty. H15: Satisfaction mediates the relationship between cost and loyalty. H16: Satisfaction mediates the relationship between security and loyalty.

METHODS

1. Research design

This study employed a quantitative cross sectional design. The aim was to test the direct effects of service quality, ease of use, usefulness, cost, and security on user satisfaction and loyalty, as well as the indirect effect of satisfaction as a mediator. A survey design was selected because it is suitable for measuring perceptions and behavioral intentions from a relatively large number of respondents within a limited period (Creswell, 2014; Sekaran & Bougie, 2016).

The population comprised active e wallet users in Indonesia. Since the exact population size could not be identified with precision, purposive sampling was used to select respondents who met the following criteria: they were Indonesian residents, they actively used DANA, ShopeePay, GoPay, or OVO, and they had used e wallet services in daily transactions. A total of 300 valid responses were obtained and used for analysis. Data were collected through Google Form between 18 February and 1 March 2026.

The questionnaire used a five point Likert scale ranging from 1, strongly disagree, to 5, strongly agree. The instrument was adapted from Ajina et al. (2023) and operationalized seven constructs. Service quality was measured through professionalism, customized service, connection speed, and payment variety. Ease of use covered clarity of use, low effort, few transaction steps, and accessible payment information. Usefulness measured faster payments, payment utility, time saving, and payment management. Cost captured reasonable fees, competitive pricing, and value for money. Security measured payment safety, state assurance, privacy protection, and protection from fraud and financial loss. Satisfaction was measured through expectation fulfillment, transactional satisfaction, and positive feelings. Loyalty was measured through future use intention, recommendation, and positive word of mouth.

The data were analyzed using SmartPLS 4 with a two stage PLS SEM procedure. The outer model was assessed through convergent validity, discriminant validity using the Fornell Larcker criterion, and reliability using Cronbach alpha, composite reliability, and average variance extracted. The inner model was assessed using R square, adjusted R square, predictive relevance, NFI, and SRMR, followed by bootstrapping to test direct and indirect effects. The model was treated as adequate when the relevant validity and

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reliability thresholds were satisfied and when the structural paths were significant at p less than 0.05 (Hair et al., 2017).

Table 1. Variable measurement and reliability summary

Construct	Indicators	Source	AVE	CR / Alpha
Service quality	4	Ajina et al. (2023)	0.732	CR 0.783; Alpha 0.935
Ease of use	4	Ajina et al. (2023)	0.721	CR 0.801; Alpha 0.928
Usefulness	4	Ajina et al. (2023)	0.700	Alpha 0.894
Cost	3	Ajina et al. (2023)	0.714	CR 0.789; Alpha 0.902
Security	4	Ajina et al. (2023)	0.738	CR 0.825; Alpha 0.934
Satisfaction	3	Ajina et al. (2023)	0.726	CR 0.798; Alpha 0.921
Loyalty	3	Ajina et al. (2023)	0.719	CR 0.806; Alpha 0.927

2. Population and sample

The population comprised active e wallet users in Indonesia. Since the exact population size could not be identified with precision, purposive sampling was used to select respondents who met the following criteria: they were Indonesian residents, they actively used DANA, ShopeePay, GoPay, or OVO, and they had used e wallet services in daily transactions. A total of 300 valid responses were obtained and used for analysis. Data were collected through Google Form between 18 February and 1 March 2026.

3. Measurement of variables

The questionnaire used a five point Likert scale ranging from 1, strongly disagree, to 5, strongly agree. The instrument was adapted from Ajina et al. (2023) and operationalized seven constructs. Service quality was measured through professionalism, customized service, connection speed, and payment variety. Ease of use covered clarity of use, low effort, few transaction steps, and accessible payment information. Usefulness measured faster payments, payment utility, time saving, and payment management. Cost captured reasonable fees, competitive pricing, and value for money. Security measured payment safety, state assurance, privacy protection, and protection from fraud and financial loss. Satisfaction was measured through expectation fulfillment, transactional satisfaction, and positive feelings. Loyalty was measured through future use intention, recommendation, and positive word of mouth.

4. Data analysis

The data were analyzed using SmartPLS 4 with a two stage PLS SEM procedure. The outer model was assessed through convergent validity, discriminant validity using the Fornell Larcker criterion, and reliability using Cronbach alpha, composite reliability, and average variance extracted. The inner model was assessed using R square, adjusted R square, predictive relevance, NFI, and SRMR, followed by bootstrapping to test direct and indirect effects. The model was treated as adequate when the relevant validity and reliability thresholds were satisfied and when the structural paths were significant at p less than 0.05 (Hair et al., 2017).

RESULTS AND DISCUSSION

1. Respondent profile

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Table 2 presents the demographic and usage characteristics of the respondents. The sample is concentrated in productive, digitally active groups, which is consistent with the profile of e wallet users in Indonesia. Most respondents were male, aged 26 to 35 years, held a bachelor degree, worked in the private sector, and reported middle income and middle expenditure levels. The sample also consisted of heavy users: 65 percent used e wallet services very frequently, and 61.7 percent used them primarily for payment. This profile suggests that the data capture experienced users who have already integrated digital payment services into everyday financial activity.

The concentration of users in the productive age group is consistent with previous findings that digital wallet adoption is strongest among consumers who are comfortable with app based payment routines and who value speed, convenience, and easy access (Kurniawati et al., 2023; Khomathy et al., 2024; Wardani & Susanti, 2024).

Table 2. Respondent characteristics

Characteristic	Category	n (%)
Gender	Male	176 (58.7)
	Female	124 (41.3)
Age	Under 18	3 (1.0)
	18 to 25	87 (29.0)
	26 to 35	189 (63.0)
	36 to 45	16 (5.3)
	Above 45	5 (1.7)
Education	Senior high school	50 (16.7)
	Diploma	45 (15.0)
	Bachelor	184 (61.3)
	Postgraduate	21 (7.0)
Occupation	Unemployed	5 (1.7)
	Student	19 (6.3)
	Public sector	56 (18.7)
	Professional	31 (10.3)
	Private sector	147 (49.0)
	Entrepreneur / MSME	42 (14.0)
Income	Below Rp3,000,000	21 (7.0)
	Rp3,000,000 to Rp4,999,999	73 (24.3)
	Rp5,000,000 to Rp7,999,999	168 (56.0)
	Rp8,000,000 to Rp10,000,000	38 (12.7)
Expenditure	Below Rp1,000,000	35 (11.7)
	Rp1,000,000 to Rp3,999,999	201 (67.0)
	Rp4,000,000 to Rp9,999,999	62 (20.7)
	Above Rp10,000,000	2 (0.7)
Usage frequency	Rare	26 (8.7)
	Frequent	79 (26.3)
	Very frequent	195 (65.0)
Main purpose	Payment	185 (61.7)
	Transfer	47 (15.7)
	Shopping	34 (11.3)
	Food and beverage	34 (11.3)

The sample is concentrated in productive, digitally active groups, which is consistent with the profile of e wallet users in Indonesia. Most respondents were male, aged 26 to 35 years, held a bachelor degree, worked in the private sector, and reported middle income

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and middle expenditure levels. The sample also consisted of heavy users: 65 percent used e wallet services very frequently, and 61.7 percent used them primarily for payment. This profile suggests that the data capture experienced users who have already integrated digital payment services into everyday financial activity.

2. Descriptive statistics and measurement model

Table 3 summarizes the average perception scores across the study variables. All means were above 3.80, indicating generally favorable views of e wallet services. Security received the lowest mean score, which suggests that users still pay close attention to risk and protection issues. Service quality was 3.96, ease of use 3.97, usefulness 3.95, cost 3.97, security 3.87, satisfaction 3.93, and loyalty 3.91. These scores indicate that respondents generally see e wallet services as useful and convenient, yet still leave room for improvements in protection and trust.

The measurement model was strong. The thesis reported convergent validity indicators above the recommended thresholds for all constructs, with AVE values of 0.732 for service quality, 0.721 for ease of use, 0.700 for usefulness, 0.714 for cost, 0.738 for security, 0.726 for satisfaction, and 0.719 for loyalty. Reliability was also satisfactory, with Cronbach alpha values of 0.935, 0.928, 0.894, 0.902, 0.934, 0.921, and 0.927, respectively. Composite reliability values also exceeded 0.70 for all constructs. The Fornell Larcker matrix further confirmed discriminant validity, since the square root of AVE for each construct was greater than its correlations with the other constructs. These results are consistent with measurement quality standards in PLS SEM studies (Hair et al., 2017).

Table 3. Descriptive statistics

Construct	Mean	Interpretation
Service quality	3.96	Positive perception
Ease of use	3.97	Highest mean among antecedents
Usefulness	3.95	Strong baseline utility
Cost	3.97	Good perceived value
Security	3.87	Lowest mean, but still favorable
Satisfaction	3.93	Satisfied overall
Loyalty	3.91	Willingness to continue

3. Structural model and hypothesis testing

Table 4 reports the direct path results. All antecedents significantly improved satisfaction, while usefulness was the only antecedent that did not directly improve loyalty. Service quality to satisfaction was 0.157, ease of use to satisfaction was 0.257, usefulness to satisfaction was 0.177, cost to satisfaction was 0.184, and security to satisfaction was 0.169. On the loyalty side, service quality was 0.168, ease of use was 0.214, usefulness was 0.097, cost was 0.200, security was 0.269, and satisfaction was 0.253.

The strongest predictor of satisfaction was ease of use with a coefficient of 0.257. The strongest direct predictor of loyalty was security with a coefficient of 0.269. Satisfaction itself had a substantial effect on loyalty with a coefficient of 0.253. These results show that loyalty in e wallet services is not driven by a single attribute, but by a combination of usability, value, reliability, and perceived safety.

Table 5 shows that the model explained 79.6 percent of the variance in satisfaction and 78.6 percent of the variance in loyalty. The additional fit statistics were acceptable, with Q square values of 0.569 for satisfaction and 0.55179 for loyalty, while the overall model achieved SRMR of 0.041 and NFI of 0.875. These values indicate strong

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explanatory power and acceptable model fit, which supports the use of the model for explaining e wallet loyalty in Indonesia (Hair et al., 2017).

Table 4. Structural path coefficients

Relationship	Coefficient	t statistic	p value	Decision
Service quality to satisfaction	0.157	2.255	0.024	Supported
Ease of use to satisfaction	0.257	3.902	0.000	Supported
Usefulness to satisfaction	0.177	2.611	0.009	Supported
Cost to satisfaction	0.184	2.399	0.016	Supported
Security to satisfaction	0.169	3.048	0.002	Supported
Service quality to loyalty	0.168	2.630	0.009	Supported
Ease of use to loyalty	0.214	2.897	0.004	Supported
Usefulness to loyalty	0.097	1.414	0.158	Not supported
Cost to loyalty	0.200	2.906	0.004	Supported
Security to loyalty	0.269	4.936	0.004	Supported
Satisfaction to loyalty	0.253	4.956	0.000	Supported

Table 5. Model fit and explanatory power

Construct	R square	Adjusted R square	Additional fit
Satisfaction	0.796	0.792	Q square 0.569
Loyalty	0.786	0.782	Q square 0.55179
Overall model			SRMR 0.041; NFI 0.875

The result for ease of use is consistent with ECM logic. A system that is easier to understand and requires fewer steps confirms user expectations more quickly and reduces friction in repeated use. In practical terms, users reward applications that are intuitive, fast, and low effort. This explains why ease of use emerged as the strongest driver of satisfaction in the present model. The result aligns with studies by Davis (1989), Prasetyo et al. (2023), Utami and Widiyanto (2023), and Khomathy et al. (2024), which all show that simplicity and low effort improve satisfaction in digital payment contexts.

Service quality also matters because users experience the application as a service ecosystem, not just as a technical interface. Fast transactions, stable system performance, responsive support, and smooth payment functions signal reliability. When these elements work well, users are more satisfied and more willing to stay with the platform. The finding supports the view that service quality is a concrete sign of platform competence rather than an abstract promotional claim. This interpretation is consistent with Ajina et al. (2023), Ighomereho et al. (2022), Moksin et al. (2024), Novyantri and Setiawardani (2021), and Feliciana et al. (2024).

Usefulness significantly improved satisfaction, but it did not directly translate into loyalty. This suggests that practical utility has become a baseline expectation in the e wallet market. Users appreciate efficient payments, time savings, and transaction convenience, but those benefits are not enough on their own to lock in loyalty. Usefulness becomes loyalty generating only when it is embedded in an overall satisfying experience. The pattern is consistent with Malik et al. (2023), Ramadhan et al. (2024), Lee and Kim

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(2024), and Novira et al. (2024), who found that perceived usefulness often works through satisfaction rather than through direct loyalty formation.

Cost influenced both satisfaction and loyalty. Transparent and reasonable fees matter because users are sensitive to perceived fairness. A service that offers competitive charges, visible cost structures, and value for money is more likely to retain users. This is consistent with the thesis evidence that respondents evaluated cost favorably, with a mean score of 3.97, but also remained attentive to fee clarity and transfer charges. The result is aligned with Ariffin et al. (2021), Rahi and Ghani (2019), Sari and Nugroho (2023), and Khan and Abideen (2023), which all show that cost fairness and transparency strengthen continuance.

Security emerged as the strongest direct predictor of loyalty. This is not surprising in a digital payment environment where privacy, fraud protection, account safety, and transaction assurance are constantly evaluated. When security is perceived as strong, users are more willing to continue using the service because trust reduces perceived risk. In the thesis, security still had the lowest mean among the constructs at 3.87, which means that providers have room to strengthen this dimension further. The finding is consistent with Chen et al. (2022), Nguyen and Khoa (2024), Amoroso and Lim (2023), Djaenudin and Prastowo (2024), Prawira et al. (2024), and Uskono et al. (2025).

Satisfaction played the central bridging role in the model. The direct effect of satisfaction on loyalty was positive and significant, and satisfaction also mediated the effects of service quality, ease of use, usefulness, cost, and security on loyalty. This means that technical and functional perceptions do not become loyalty automatically. They first need to create a satisfying experience. The implication for providers is straightforward: loyalty is not built by announcing features, but by ensuring that the service consistently feels worthwhile. This mediation logic is supported by Bhattacherjee (2001), Al Okaily (2023), Dang et al. (2023), Kumbara et al. (2023), Rizan et al. (2024), Lasmawati et al. (2024), and Faridah and Yuannita (2024).

Overall, the evidence confirms that satisfaction is the central mechanism through which multiple e wallet attributes are translated into loyalty. The model also fits the empirical data well, with substantial explanatory power for both satisfaction and loyalty. The combination of a strong measurement model and a strong structural model gives confidence that the findings are not accidental but reflect a coherent pattern of user evaluation in Indonesia. The results also reinforce prior evidence that loyalty in digital payment services is best explained through a combination of service quality, perceived value, usability, and security, rather than through a single dominant factor (Kurniawati et al., 2023; Rizan et al., 2024; Wardani & Susanti, 2024).

4. Theoretical and managerial implications

Theoretically, the study extends the Expectation Confirmation Model by showing that service quality, ease of use, usefulness, cost, and security function as important antecedents of satisfaction in the e wallet context. The findings also clarify that satisfaction remains the key bridge between service evaluation and loyalty, reinforcing the post adoption logic of ECM in digital payment services. This contributes to the literature because it integrates the major antecedents that have often been studied separately into a single model (Bhattacherjee, 2001; Ajina et al., 2023; Al Okaily, 2023; Dang et al., 2023).

Managerially, e wallet providers should prioritize service stability, interface simplicity, transparent pricing, and security enhancement. Investment in customer support responsiveness and fraud protection is especially important because users interpret these signals as evidence that the platform can be trusted over time. The findings

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suggest that improving one attribute in isolation is less effective than strengthening the whole service experience. For Indonesian providers, this means that loyalty strategies should be built around user experience, not only around promotional campaigns (Sholikah & Wibowo, 2023; Utomo & Rahman, 2023; Wardani & Susanti, 2024; Uskono et al., 2025).

CONCLUSION

This study examined the effects of service quality, ease of use, usefulness, cost, and security on user loyalty through user satisfaction among e wallet users in Indonesia. The findings show that all five antecedents significantly improve satisfaction, while service quality, ease of use, cost, security, and satisfaction significantly improve loyalty. Usefulness does not directly affect loyalty, but it contributes through satisfaction.

Security is the strongest direct predictor of loyalty, while ease of use is the strongest predictor of satisfaction. The model explains 79.6 percent of the variance in satisfaction and 78.6 percent of the variance in loyalty, which indicates strong explanatory power. These findings support the Expectation Confirmation Model and show that user loyalty in e wallet services emerges from a combination of practical utility, perceived value, and emotional assurance.

The study is limited to Indonesian respondents and a cross sectional design, so future research could use longitudinal data and broader cross country samples. Future studies may also examine additional variables such as trust, promotional value, perceived risk, and social influence to capture the dynamics of e wallet continuance more completely (Faridah & Yuannita, 2024; Wardani & Susanti, 2024; Uskono et al., 2025).

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