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Building Loyalty in a Cashless World: The Impact of Service Quality on E-Money Satisfaction

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ABSTRACT
This research explores the influence of five key service quality dimensions—ubiquity, application design, fulfillment, customer service, and privacy—on e-customer satisfaction, and how that satisfaction subsequently affects e-customer loyalty in the context of e-money users in Indonesia. The study seeks to understand the critical factors that contribute to customer experience and retention in digital financial services, an area that has grown rapidly with the increasing adoption of mobile payment systems. The respondent group comprises 118 Indonesian e-money users aged 18–60, including both male and female participants, representing a range of digital financial literacy levels. Using a quantitative research approach, data were analyzed through SPSS 20.0, with hypothesis testing conducted via t-tests. The results show that application design, fulfillment, customer service, and privacy have a statistically significant impact on e-customer satisfaction, while ubiquity does not. Furthermore, the analysis confirms a strong positive relationship between e-customer satisfaction and e-customer loyalty. These findings highlight the importance of user-centric design, reliable service performance, responsive customer support, and robust privacy protections in enhancing customer satisfaction and long-term loyalty. The results offer actionable insights for e-money providers aiming to improve user experience, retain customers, and remain competitive in the rapidly evolving digital financial landscape.

Keywords: *E-Customer Satisfaction, E-Customer Loyalty, Application Design, Privacy, E-Money Services, Indonesia.*

1. INTRODUCTION

Digital financial services have revolutionized the way consumers interact with money, and among the most transformative innovations is the rise of e-money. As more consumers turn to mobile wallets and electronic payment systems, understanding the factors that influence customer satisfaction and loyalty within this sector has become essential. Traditional service quality models often focus on physical interactions and tangible outcomes, but the digital nature of e-money services requires a nuanced understanding of what drives user satisfaction in virtual environments. In this context, variables such as ubiquity, application design, fulfillment, customer service, and privacy emerge as key determinants of the e-customer experience. Each of these elements plays a crucial role in shaping users' satisfaction and, ultimately, their loyalty to a particular e-money provider.

Ubiquity refers to the convenience and accessibility of the e-money service, enabling users to conduct transactions anytime and anywhere. In a fast-paced digital environment like Indonesia, where mobile penetration is high and e-commerce continues to rise, ubiquity becomes a competitive advantage. Consumers expect seamless integration of e-money services into their daily lives, and the more effortlessly they can make transactions, the more likely they are to feel satisfied. Prior research indicates that when services are readily available and frictionless, users are more engaged and likely to continue using the platform, making ubiquity a critical factor in building e-customer satisfaction (Chopra & Meindl, 2016). Therefore, this study proposes that ubiquity has a significant positive impact on e-customer satisfaction.

Application design is another essential component influencing user experience. The design, including user interface (UI) and user experience (UX), affects how intuitively and comfortably customers interact with the e-money application. A poorly designed app can lead to frustration, errors, and abandonment, while a well-designed application enhances usability and trust (Kim et al., 2011). In the Indonesian context, where digital literacy varies among users, a simple, clean, and responsive application design becomes even more important. This study thus hypothesizes that application design significantly affects e-customer satisfaction.

Fulfillment, in the context of e-money, refers to the accuracy, speed, and reliability of transactions. If customers experience delays, errors, or failed payments, their trust and satisfaction diminish. Prompt service and reliable performance are key to meeting customer expectations, especially in financial services where trust is paramount. E-money providers that ensure smooth processing and fulfill promises reliably are more likely to achieve higher levels of satisfaction from their users. Consequently, this research posits that fulfillment has a significant effect on e-customer satisfaction.

Customer service remains a cornerstone of customer satisfaction, even in digital platforms. In cases where users encounter issues with transactions, account security, or app functionality, responsive and helpful customer support can make the difference between satisfaction and frustration. In the Indonesian market, where users may need assistance navigating digital financial tools, efficient customer service helps reduce friction and build confidence in the system (Zeithaml, Bitner, & Gremler, 2018). Thus, the hypothesis is that customer service has a significant effect on e-customer satisfaction.

Privacy is a growing concern for digital consumers, particularly in financial services where sensitive personal and financial data is stored and processed. Users are more likely to feel satisfied with an e-money service when they perceive their data is secure and protected against misuse or breaches. Inadequate privacy safeguards not only deter continued use but may also lead to reputational damage for providers. In emerging markets such as Indonesia, where cybersecurity awareness is increasing, perceived privacy protection plays a critical role in customer satisfaction. Therefore, this study proposes that privacy significantly affects e-customer satisfaction.

Finally, the relationship between e-customer satisfaction and e-customer loyalty is central to this study. Satisfied users are more likely to remain loyal, recommend the service to others, and continue using it over the long term. In digital financial services, where switching costs are low and competition is high, loyalty can be fragile. By understanding what drives satisfaction, providers can more effectively retain customers and foster brand loyalty. This leads to the final hypothesis: e-customer satisfaction has a significant effect on e-customer loyalty.

This research aims to explore how key service quality dimensions—ubiquity, application design, fulfillment, customer service, and privacy—affect e-customer satisfaction and how that satisfaction, in turn, influences e-customer loyalty in the context of e-money users in Indonesia. The findings are expected to provide valuable insights for digital financial service providers, product developers, and policymakers who seek to improve user experience, increase adoption rates, and ensure long-term customer retention in the increasingly competitive e-money landscape.

Ubiquity refers to the user's ability to access e-money services anytime and anywhere, enhancing convenience and flexibility in digital transactions. According to the Technology Acceptance Model (Davis, 1989), perceived ease of use increases technology acceptance and user satisfaction. Additionally, the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003) posits that access availability (ubiquity) influences behavioral intention through efficiency and performance expectancy. Research by Sefnedi and Alfarizi (2021) indicates that ubiquity significantly affects e-wallet user satisfaction in Indonesia.

H1: Ubiquity significantly influences e-Customer Satisfaction.

Application design encompasses aesthetics, ease of navigation, and user-friendly interfaces. A well-designed application can enhance user comfort and satisfaction (Park & Kim, 2003). The Expectation Confirmation Theory (Bhattacherjee, 2001) asserts that satisfaction occurs when actual outcomes meet or exceed user expectations. Furthermore, Human-Computer Interaction Theory suggests that intuitive and responsive design fosters positive user experiences and long-term loyalty. Lestari and Pratama (2020) demonstrate that application design significantly impacts e-money user satisfaction.

H2: Application Design significantly influences e-Customer Satisfaction.

Fulfillment refers to the extent to which services meet their promises, such as speed and accuracy in transactions (Zeithaml et al., 2002). The SERVQUAL Model (Parasuraman et al., 1988) identifies reliability as a crucial dimension in meeting customer expectations. The Expectancy Disconfirmation Theory (Oliver, 1980) states that satisfaction is achieved when performance exceeds expectations, including service fulfillment. Putri and Santoso (2022) find that fulfillment significantly affects e-money service user satisfaction.

H3: Fulfillment significantly influences e-Customer Satisfaction.

Customer service reflects the provider's ability to respond promptly and effectively to customer needs and complaints. The Disconfirmation of Expectations Theory (Oliver, 1980) emphasizes that discrepancies between expectations and service reality affect satisfaction. The Relationship Marketing Theory posits that positive interactions

between providers and customers build trust and long-term satisfaction. Rahmawati and Hidayat (2021) conclude that customer service significantly impacts e-wallet user satisfaction.

H4: Customer Service significantly influences e-Customer Satisfaction.

Privacy pertains to the protection of users' personal data in digital services. When privacy is maintained, users feel safer and more satisfied. The Perceived Risk Theory suggests that perceived risks from data breaches can decrease satisfaction and trust. The Trust-Based Decision-Making Theory explains that data protection enhances trust and customer satisfaction in digital services. Anggraeni and Sari (2021) find that privacy significantly affects e-payment customer satisfaction.

H5: Privacy significantly influences e-Customer Satisfaction.

e-Customer satisfaction is the overall satisfaction level of customers with their digital service usage experience. Oliver's Expectation-Confirmation Theory (1997) states that satisfaction occurs when services meet or exceed user expectations. The Loyalty Model (Anderson & Srinivasan, 2003) asserts that satisfied customers are more likely to be loyal to digital products. Nugroho and Widodo (2020) show that e-wallet customer satisfaction positively influences loyalty.

H6: e-Customer Satisfaction significantly influences e-Customer Loyalty.

e-Customer loyalty refers to the customer's commitment to consistently using a particular e-money service over time, often driven by satisfaction, trust, and positive experiences with the service. According to Oliver's Loyalty Model (1999), loyalty develops when customers repeatedly choose a service or product due to positive post-purchase evaluations and satisfaction. The Commitment-Trust Theory (Morgan & Hunt, 1994) asserts that loyalty is fostered when customers perceive high levels of trust and commitment in the relationship with the service provider.

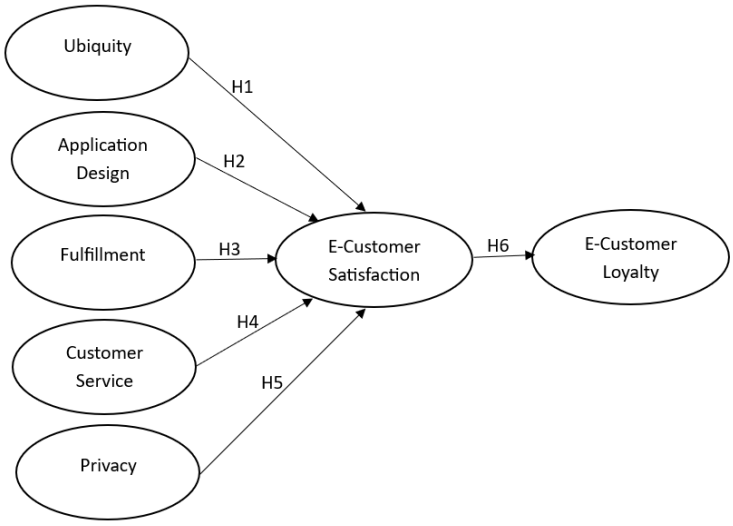

Figure 1. Research Model

2. RESEARCH METHODS

This research explores the effects of five service quality dimensions—ubiquity, application design, fulfillment, customer service, and privacy—on e-customer satisfaction, with a further examination of how satisfaction influences e-customer loyalty in the context of e-money services. These variables serve as independent factors, while e-customer satisfaction and loyalty are treated as dependent variables. The objective of this study is to determine which digital service attributes most significantly contribute to a user's satisfaction and continued usage of e-money platforms, particularly within Indonesia's growing digital finance ecosystem.

The study sample consists of 118 Indonesian e-money users between the ages of 18 and 60, with diverse demographic characteristics to ensure comprehensive insights. Gender representation includes 50 male respondents (42%) and 68 female respondents (58%). In terms of age distribution, the majority of participants fall within the 31–40 age group (40%), followed by 18–30 (35%), 41–50 (15%), and 51–60 (10%). Data were gathered via structured questionnaires, designed to capture user perceptions and experiences accurately. The results were analyzed using SPSS 20.0, enabling hypothesis testing through t-tests and regression analysis to assess the significance and strength of each variable's impact on satisfaction and loyalty.

3. RESULTS AND DISCUSSIONS

3.1. Validity and Reliability Test and Multicollinearity Test

As shown in Table 3, the results from the validity test demonstrate that all indicators for Ubiquity (UB), Application Design (AD), Fulfillment (FU), Customer Service (CS), Privacy (PR), E-Customer Satisfaction (CSA), and E-Customer Loyalty (CL) are valid, with all item-total correlation values surpassing the threshold of 0.196. This confirms that each indicator effectively measures the respective variable.

Regarding the reliability test, all variables exhibit strong internal consistency, as indicated by their Cronbach's alpha values, which are all above 0.60, confirming that the scales used in this study are reliable.

The multicollinearity test results reveal that tolerance values for all variables are above 0.1, and VIF values remain below the critical value of 10. This suggests that there are no concerns regarding multicollinearity, ensuring that each variable makes an independent contribution to the analysis and can be safely used in the regression models.

Table 1. Validity, Reliability, and Multicollinearity Test

Variable	Indicator	Validity Test	Reliability Test	Tolerance	VIF
Ubiquity (UB)	UB1	.680	0.801	0.341	2.935
	UB2	.614			
	UB3	.646			
Application Design (AD)	AD1	.611	0.801	0.303	3.302
	AD2	.729			
	AD3	.612			
Fulfilment (FU)	FU1	.492	0.735	0.345	2.900
	FU2	.613			
	FU3	.563			
Customer Service (CS)	CS1	.594	0.723	0.511	1.958
	CS2	.523			
	CS3	.513			
Privacy (PR)	PR1	.562	0.757	0.456	2.193
	PR2	.781			
	PR3	.424			
E-Customer Satisfaction (CSA)	CSA1	.573	0.788	-	-
	CSA2	.674			
	CSA3	.654			
E-Customer Loyalty (CL)	CL1	.616	0.763	-	-
	CL2	.630			
	CL3	.525			

3.2 T-Test and Coefficient Regression

The results from the significance tests presented in Table 5 indicate that all three hypotheses were supported, with no hypotheses rejected. Specifically, the p-values for DB*ID, RB*ID, and AB*ID are all below 0.05, signifying statistical significance and supporting the respective hypotheses. This suggests that the interactions between Disposition Bias (DB), Representativeness Bias (RB), Anchoring Bias (AB), and Investment Decision (ID) have a meaningful impact on the dependent variable, Investment Decision.

Table 2. T-Test

Variable	Sig.	Coefficient Regression	Information
UB*CSA	.147	.104	Hypothesis rejected
AD*CSA	.000	.331	Hypothesis accepted
FU*CSA	.039	.148	Hypothesis accepted

Variable	Sig.	Coefficient Regression	Information
CS*CSA	.001	.194	Hypothesis accepted
PR*CSA	.000	.267	Hypothesis accepted
CSA*CL	.000	.764	Hypothesis accepted

4. CONCLUSION

Based on the findings of this study, the following recommendations are provided to enhance each variable that influences customer satisfaction and loyalty in the context of e-money. First, Ubiquity (UB) was found to have no significant impact on customer satisfaction, suggesting the need for improvements in service availability. E-money service providers should expand their service coverage to more regions and enhance system reliability to ensure accessibility anytime and anywhere. This can be achieved by improving the quality of mobile applications to make them more user-friendly and ensuring system stability, especially during high transaction volumes.

Next, Application Design (AD) was shown to have a significant impact on customer satisfaction, highlighting the importance of an appealing and functional app design. E-money providers must continue to prioritize ease of use, interface simplicity, and visual aesthetics in their app design. Additionally, feedback from users should be incorporated to improve features that may be perceived as unintuitive, as well as ensuring that the app is compatible with a wide range of devices to reach a broader user base.

Fulfillment (FU), or meeting customer expectations, also showed a significant effect on customer satisfaction. Therefore, companies need to ensure that the services provided always meet the promises made, especially regarding transaction speed and processing certainty. Service providers could implement reporting systems or transaction status notifications to provide more trust to users and reduce potential errors or delays that could affect the user experience.

Customer Service (CS) demonstrated a significant relationship with customer satisfaction, emphasizing the importance of high-quality customer service. To improve this aspect, e-money providers should ensure that their customer support teams are always ready to provide quick and effective solutions, with excellent communication skills. The use of technologies such as chatbots to provide instant responses could also help improve service speed.

Privacy (PR) was found to significantly influence customer satisfaction. Therefore, it is crucial for e-money providers to maintain and enhance the protection of user data. Transparency in privacy policies and the use of stronger data encryption will increase users' sense of security. Service providers can also add features such as two-factor authentication to ensure that customer data is always securely protected.

E-Customer Satisfaction (CSA) significantly affects E-Customer Loyalty (CL), indicating that customer satisfaction plays a critical role in fostering loyalty toward e-money services. To improve satisfaction, companies must ensure consistency in delivering high-quality service and reward loyal customers through loyalty or reward programs. Regular satisfaction surveys and the implementation of customer feedback will also help tailor services to better meet customer expectations.

Overall, to enhance customer satisfaction and loyalty, e-money service providers must focus on improving service accessibility, app design, and strengthening the fulfillment of fast and accurate services. Additionally, maintaining high-quality customer support, protecting user privacy, and continually innovating with new features will ensure higher customer satisfaction, which will ultimately contribute to customer loyalty toward the e-money service. Therefore, this research is important as it not only helps e-money service providers to optimize their services based on customer expectations but also aids in shaping strategies that promote customer retention and business growth. By understanding and applying the findings of this study, companies can enhance their competitive advantage and ensure they remain at the forefront of the evolving e-money industry.

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