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PAPER

Assessing the Impact of Mobile Technology on Fintech Enabled Payment Systems in Emerging Markets

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ABSTRACT

This study examines the influence of competitive innovation and ecosystem integration on customer loyalty and usage intensity within Indonesia's highly competitive mobile payment sector, focusing on the three leading providers: OVO, GoPay and DANA. A cross-sectional survey of 395 active users and analysis using partial least squares structural equation modelling (PLS-SEM) reveal that lifestyle embeddedness fully mediates the effects of both competitive innovation and ecosystem integration on customer loyalty. Both factors significantly enhance lifestyle embeddedness, which in turn strongly predicts loyalty and usage intensity. These findings shift the theoretical perspective from feature-based competition to the behavioural embedding of services into daily routines. For practitioners, the results highlight that long-term user retention in emerging-market FinTech is primarily achieved through seamless and pervasive ecosystem integration rather than isolated feature superiority. This study is the first to empirically identify lifestyle embeddedness as the central mediating mechanism in a saturated, triopoly-dominated mobile payment market.

KEYWORDS

fintech, mobile payments, lifestyle embeddedness, customer loyalty, Indonesia

1 INTRODUCTION

Indonesia has experienced significant growth in digital payments in recent years, driven by widespread smartphone adoption, enhanced Internet accessibility and a predominantly young, technologically adept population [1]. As the largest economy in Southeast Asia, Indonesia represents a crucial market for mobile wallet providers. OVO (Lippo/Tokopedia), GoPay (GoTo) and DANA have emerged as the leading competitors in this sector [2]. Following the introduction of the national quick response code Indonesian standard (QRIS) standard in 2020, these companies have continued to differentiate themselves by introducing new features and integrating their services with ride-hailing, e-commerce, food delivery and offline merchants.

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While the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT) have often been used to explain how people first adopt mobile payments [3–5], there are still important gaps in understanding what drives ongoing use and customer loyalty in mature, competitive markets. First, most research examines either technological features, such as perceived usefulness and ease of use, or single aspects of user experience, but often overlooks how these features become part of users' daily habits [6, 7]. Second, although some have suggested that lifestyle embeddedness the degree to which a payment platform becomes a seamless and routine part of daily life might be important, it has rarely been tested as a key mediating factor [8]. Third, only a few studies have compared multiple major platforms within the same market, limiting our understanding of how they compete [9].

This study addresses existing research gaps by proposing and empirically testing a framework that explains how two platform-level factors, competitive innovation and ecosystem integration, influence customer loyalty and usage intensity across Indonesia's three primary mobile payment platforms (OVO, GoPay and DANA). This study introduces a novel approach to measuring the integration of mobile payments into daily life. It investigates the influence of innovation and ecosystem integration on customer loyalty and usage frequency, both directly and through daily routines. By comparing leading mobile wallets in Indonesia, the research moves beyond feature-based analysis to examine how user habits shape loyalty, thereby providing a clearer understanding of user behaviour in a competitive, ecosystem-orientated market. These gaps are especially important in Indonesia, where strong private-sector competition coexists with regulatory efforts such as QRIS, and where cultural values, including convenience, social conformity and a preference for cashless payments, influence how people use mobile payments.

2 LITERATURE REVIEW

2.1 Competitive innovation features and ecosystem integration

Indonesian FinTech platforms incorporate innovative features that contribute to their success in highly competitive markets [7]. These features go beyond basic transactions and include a mix of capabilities that add value for users and set the platforms apart. Innovation is seen as a multi-dimensional concept, involving product, process, organisational, and marketing strengths. Together, these help companies deliver high-quality value [8]. For mobile payments, this means faster transactions, strong security, user-friendly design and ongoing development of new financial products. Companies pursue these qualities not just to match competitors, but also to attract and retain users in an industry where switching is easy and expectations are high [9]. At the same time, building integrated ecosystems has become a key strategy for long-term advantage. This means connecting payment systems smoothly with a wide network of merchants, online services and other financial tools, making the platform more useful and dependable for users. This close integration creates a strong connection with users, making the platform a regular part of their daily financial activities [10].

2.2 Customer loyalty and usage intensity

Customer loyalty and usage intensity represent the primary dependent variables for evaluating the success and market penetration of mobile payment platforms [11]. In the context of digital wallets, loyalty is a multifaceted construct that extends beyond repeat purchases to include affective loyalty (emotional attachment and brand

identification), conative loyalty (behavioural intentions to repurchase), and action loyalty (active resistance to switching and willingness to recommend the platform) [12]. This comprehensive interpretation is particularly important in markets with multiple competitors and interoperable products, where a user's emotional connection and willingness to defend their chosen wallet are stronger predictors of retention than transaction frequency [13]. Intensive use serves as a behavioural indicator of this relationship, yet it is not fully captured by transaction frequency or volume, nor by the less tangible emotional and behavioural significance of the platform in users' daily financial activities and payment behaviours [14, 22]. Enhancing attitudinal loyalty can create a positive feedback loop that reinforces a platform's market position [15].

2.3 Mediating role of lifestyle embeddedness

Lifestyle embeddedness is the key factor that turns platform features into lasting loyalty and frequent use [16]. It has three parts: functional fit, which means fitting smoothly into daily routines; social-merchant linkage, which involves connecting through social interactions and merchant networks; and perceived switching costs or sacrifices [17]. Competitive innovation mainly improves functional fit [18], while ecosystem integration boosts social-merchant linkage [19]. These factors increase users' emotional commitment and consistent behaviour (loyalty) [20] and lead to more frequent use [21] by making platforms a bigger part of users' lives, rather than through direct influence. In this way, lifestyle embeddedness explains how technology and strategy investments help keep users over the long term [23]. Figure 1 shows the conceptual framework.

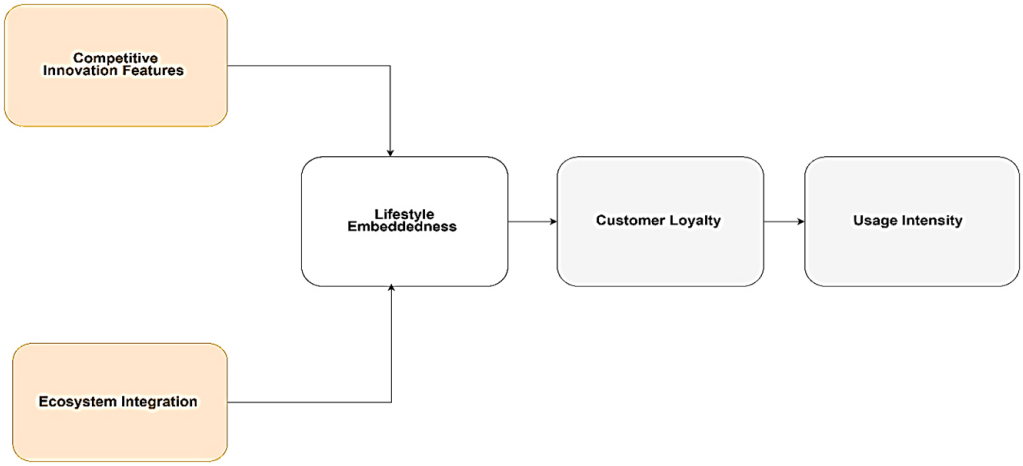

Fig. 1. Research conceptual framework

3 METHODOLOGY

3.1 Research design

A quantitative, cross-sectional, and causal research design was employed within a positivist paradigm. Data were collected at a single point in time using a structured online questionnaire to examine hypothesised relationships among competitive innovation, ecosystem integration, lifestyle embeddedness as a mediator, customer loyalty and usage intensity.

3.2 Population and data collection procedure

The target population comprised active users of OVO, GoPay and DANA in Indonesia who had completed at least one transaction during the preceding month. Data collection focused on urban residents in Jakarta, Makassar, Surabaya, Bandung and Medan, the cities with the highest levels of FinTech adoption. Non-probability purposive sampling was employed to verify that all participants were users of each platform.

An online survey was administered over a four-week period and distributed through online platforms such as WhatsApp groups, Facebook, Instagram social media groups and online communities in Indonesia. All constructs were measured using the Likert scale 5, and items were adopted from the literature. It commenced with an informed consent page that highlighted the academic purpose, voluntary participation and anonymity of responses. Completion of the survey was contingent upon obtaining participant consent.

3.3 Data analysis techniques

Data screening and descriptive statistics were performed in SPSS. Hypothesis testing used partial least squares structural equation modelling (PLS-SEM) in SmartPLS 4. The analysis followed two stages: first, measurement model validity was evaluated using indicator reliability, composite reliability, average variance extracted (AVE), the Fornell-Larcker criterion, and the heterotrait-monotrait ratio (HTMT). Second, the structural model was assessed by examining path coefficients, calculating R^2 values and conducting mediation analysis.

4 RESULTS AND DISCUSSION

Table 1 represents the profile of the survey participants. The sample was comparatively equal in terms of gender, with the majority of them being younger adults (18–35 years old), and the usage of OVO (35.9%), Go Pay (34.2%) and DANA (29.9%) being almost equal, which is a good sample to conduct a comparative study. Moreover, most participants (75.9%) indicated that they use a mobile payment application over five times a month, which proves a rather active user base.

Table 1. Demographic information of respondents (N = 395)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	210	53.2
	Female	185	46.8
Age	18–25 years	148	37.5
	26–35 years	167	42.3
	36–45 years	68	17.2
	Above 45 years	12	3
Primary Payment App	OVO	142	35.9
	GoPay	135	34.2
	DANA	118	29.9

(Continued)

Table 1. Demographic information of respondents (N = 395) *(Continued)*

Demographic Variable	Category	Frequency	Percentage (%)
Monthly Usage Frequency	1–5 times	95	24.1
	6–10 times	157	39.7
	More than 10 times	143	36.2

Table 2 presents the main research variables. Overall, respondents provided positive ratings for all constructs, with mean scores at or above the midpoint of the scale. Ecosystem Integration received the highest mean score (M = 4.25, SD = 0.61), while Usage Intensity had the lowest (M = 3.87, SD = 0.75). The standard deviations indicate a moderate dispersion of responses, suggesting a range of opinions within the sample.

Table 2. Descriptive statistics of research constructs

Construct	Number of Items	Mean	Standard Deviation
Competitive Innovation Features	25	4.12	0.58
Ecosystem Integration	15	4.25	0.61
Lifestyle Embeddedness	15	3.98	0.67
Customer Loyalty	10	4.05	0.72
Usage Intensity	8	3.87	0.75

4.1 Measurement model

The measurement model was evaluated to ascertain the reliability and validity of constructs applied in the research. This included measuring the internal consistency, convergent validity and discriminant validity of the multi-item scales to ascertain whether the scale had been measuring what it was intended to measure in the latent variable before hypothesis testing was carried out on the structural model.

Table 3. Measurement model assessment

Construct	Dimension	Number of Items	Outer Loadings Range	Composite Reliability (CR)	Average Variance Extracted (AVE)
Competitive Innovation Features		25		0.92	0.61
	Product Innovation Capability	5	0.72–0.85	0.89	0.62
	Process Innovation Capability	4	0.75–0.88	0.91	0.71
	Organisational Innovation Capability	4	0.70–0.82	0.87	0.63
	Marketing Innovation Capability	5	0.74–0.86	0.90	0.65
	Innovation Culture	4	0.71–0.84	0.88	0.64
	Innovation Resource	3	0.76–0.89	0.90	0.75

(Continued)

Table 3. Measurement model assessment *(Continued)*

Construct	Dimension	Number of Items	Outer Loadings Range	Composite Reliability (CR)	Average Variance Extracted (AVE)
Ecosystem Integration		15	0.74–0.87	0.94	0.59
Lifestyle Embeddedness		15		0.91	0.60
	Functional Fit	6	0.73–0.86	0.90	0.61
	Social-Merchant Links	5	0.71–0.83	0.88	0.60
	Sacrifice/Investment	4	0.75–0.85	0.89	0.67
Customer Loyalty		10		0.93	0.64
	Affective Loyalty	5	0.78–0.88	0.92	0.70
	Conative Loyalty	2	0.85–0.89	0.90	0.82
	Action Loyalty	3	0.80–0.86	0.89	0.73
Usage Intensity		8		0.89	0.59
	Transactional Intensity	4	0.72–0.84	0.87	0.63
	Emotional & Behavioural Salience	4	0.74–0.82	0.86	0.61

Table 3 showed that the constructs and their dimensions were all reliable and valid. All first-order dimensions and higher-order constructs had composite reliability (CR) scores above the recommended 0.70, indicating high internal consistency. In addition, the AVE for each construct exceeded 0.50, indicating sufficient convergent validity: the items, as a set of measurements, accounted for over half of each construct's variance. All the loadings of the retained measure items that pertained to the outer measuring dimension were significantly higher than the required value of 0.70 and thereby indicated each indicator was adequately covering its known dimension, as shown in Figure 2.

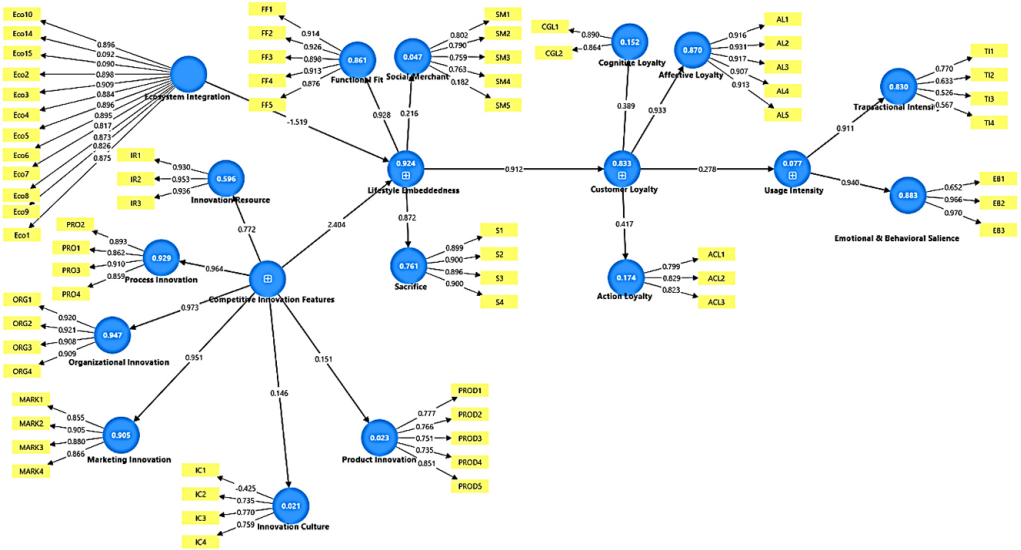

Fig. 2. Path model using PLS-SEM

Table 4 presents discriminant validity assessed through the Heterotrait-Monomethod (HTMT) ratio, demonstrating that all constructs in the measurement

model are distinct. The HTMT values ranged from 0.59 to 0.81, remaining below the conservative threshold of 0.85. These results indicate that each construct exhibits greater variance among its indicators than with other constructs in the model. The highest correlation was observed between lifestyle embeddedness and customer loyalty (0.81), which aligns with established theoretical perspectives regarding the mediating role of lifestyle integration in the development of loyalty.

Table 4. HTMT ratio assessment

Construct	1	2	3	4	5
1. Competitive Innovation Features					
2. Ecosystem Integration	0.72				
3. Lifestyle Embeddedness	0.68	0.65			
4. Customer Loyalty	0.75	0.71	0.81		
5. Usage Intensity	0.63	0.59	0.77	0.69	

Table 5 presents statistical support for all six hypotheses. All direct effects (H1–H4) were significant at $p < 0.001$, with strong path coefficients and t-values well above the critical value of 1.96. Furthermore, the mediating role of Lifestyle Embeddedness was confirmed through bootstrapping, as both H5 and H6 were supported. These findings indicate that lifestyle embeddedness is a primary mechanism through which competitive innovation features and ecosystem integration enhance customer loyalty. The model accounts for substantial variability in the key endogenous variables, demonstrating its high predictive capability.

Table 5. Results of hypothesis testing

Hypothesis	Relationship	Path Coefficient (β)	t-Value	p-Value	Result
H1	Competitive Innovation Features → Lifestyle Embeddedness	0.38	6.45	< 0.001	Supported
H2	Ecosystem Integration → Lifestyle Embeddedness	0.41	7.12	< 0.001	Supported
H3	Lifestyle Embeddedness → Customer Loyalty	0.52	9.87	< 0.001	Supported
H4	Customer Loyalty → Usage Intensity	0.47	8.23	< 0.001	Supported
H5	C. Innovation → Lifestyle Embeddedness → C. Loyalty	0.2	4.95	< 0.001	Supported
H6	Ecosystem Integration → Lifestyle Embeddedness → C. Loyalty	0.21	5.18	< 0.001	Supported

5 DISCUSSION

This study identifies several novel findings that advance the understanding of FinTech-driven transformation in emerging markets. The most significant observation is the strong mediating role of lifestyle embeddedness, which serves as the primary mechanism by which both competitive innovation and ecosystem integration promote customer loyalty. Although technological characteristics and

business ecosystems are frequently regarded as direct antecedents of loyalty, the results suggest that their effectiveness ultimately depends on the degree to which they are incorporated into users' daily routines and social interactions. This insight addresses a key theoretical gap by moving beyond a utilitarian view of mobile payments and introducing a more nuanced, behaviourally grounded pathway to loyalty.

Additionally, this paper provides a detailed analysis of the relationship between innovation and loyalty. The findings indicate that innovation does not directly lead to loyalty; rather, it is mediated by lifestyle compatibility, thereby challenging the dominant narrative of feature-driven competition in the FinTech sector. The model's high predictive power, as validated by PLS-SEM, indicates that loyalty is not merely an affective preference but also a behavioural phenomenon, constrained by measurable usage intensity. The progression from innovation and integration, through embeddedness, to loyalty and ultimately usage, offers a more comprehensive framework for understanding user retention. The evidence indicates that the primary area of competition among OVO, GoPay and DANA is not the application interface but rather the extent to which these services are integrated into consumers' daily lives.

5.1 Practical implication

FinTech providers in Indonesia should shift resources from costly feature competition to strengthening lifestyle integration. Key strategies include forming exclusive or preferential partnerships with high-frequency merchants such as street food vendors, public transport operators and neighbourhood warungs. In a QRIS-interoperable market, ecosystem breadth and depth now offer the main source of sustainable competitive advantage, rather than isolated innovation.

6 CONCLUSION, LIMITATIONS AND FUTURE STUDIES

The findings indicate that lifestyle embeddedness is the primary mechanism influencing customer loyalty and usage intensity within Indonesia's mobile-payment triopoly. Competitive innovation and ecosystem integration indirectly affect these outcomes by positioning digital wallets as essential elements of users' daily routines and social-merchant interactions. Therefore, the long-term success of OVO, GoPay and DANA depends less on advanced application features and more on their integration into Indonesians' everyday lives. This study utilises cross-sectional, self-reported data from urban users, which may introduce common-method bias and limit both causal inference and generalisability to rural or non-Indonesian contexts. Future research should employ longitudinal designs and objective transaction logs to establish causality and evaluate the model's robustness across diverse cultural and regulatory environments.

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