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Understanding digital wallet adoption and switching behavior in Peru: A multi-attribute conceptual framework

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Abstract

Digital wallets have become one of the most significant platforms in the contemporary transformation of payment systems, particularly in emerging economies, where they offer the promise of transactional efficiency, traceability, and financial inclusion. However, the rapid expansion of these solutions does not necessarily imply sustained adoption or homogeneous use across users and contexts. In markets like Peru, where high rates of informality, connectivity gaps, unequal access to financial services, and a fragmented payment ecosystem coexist, it is necessary to understand not only whether users adopt digital wallets but also digital wallets as multi-attribute systems, including the services they offer. Accordingly, this study proposes a conceptual framework of the internal attributes of digital wallets and service assortment that may impact intention to use and willingness to switch providers. Unlike traditional approaches focused on latent variables, this study adopts a multi-attribute perspective and develops a conjoint-based framework to understand user preferences. The proposed conceptual framework includes internal attributes such as wallet origin, bank account linkage, connectivity method, security mechanism, interoperability availability, and currency compatibility. It also offers a range of services, including international payments, promotions, e-commerce integration, investment services, utility payments, transportation, and foreign exchange. This research aims to contribute to theory by developing a multi-attribute conceptual framework of digital wallets. In addition, it aims to contribute to the design of policies and strategies to develop more interoperable, competitive, and inclusive payment ecosystems.

Keywords: Digital wallets, internal attributes, service assortment, conceptual framework, attribute-based analysis

Introduction

Over the past decade, digital wallets have become a central instrument in the global transformation of payment systems. By facilitating electronic transactions without the need for physical cash, they improve efficiency, traceability, and financial inclusion, especially in emerging economies (Klapper et al., 2025). Their adoption has accelerated within the broader context of the electronic payment transition, driven by technological innovation, regulatory initiatives, and changes in consumer behavior (Ramayanti et al., 2024). In this context, digital wallets have moved from a niche technology to an essential component of contemporary payment ecosystems.

In Latin America, this transformation has been particularly dynamic. In the period from 2021 to 2024, the proportion of digital wallet users increased from approximately 11% to over 40%, demonstrating a structural shift in financial behavior in a short period (Grupo Crédito, 2025). These tools have also gained significance in the e-commerce landscape, accounting for nearly 21% of online transactions, with projections of sustained growth in the coming years (Worldpay, 2024). However, this progress has been uneven across countries, reflecting structural limitations such as income inequality, informality, low trust in the financial system, and heterogeneity in digital literacy (Klapper et al., 2025). Consequently, the availability of digital wallets does not guarantee their sustained adoption or their effectiveness in promoting financial inclusion.

Within this regional context, Peru presents a particularly relevant case, characterized by a rapid expansion of digital payments alongside persistent structural constraints. The average number of digital transactions per adult increased from approximately 90 in 2021 to over 600 in 2025 (Banco Central de Reserva del Perú (BCRP), 2026), while nearly 75% of the population has used at least one digital wallet (Paysafe, 2025). However, this country faces significant gaps. First, regarding Internet access: while 80.3% of households in the capital had access, coverage in rural areas reached only 20.5% (Instituto Nacional de Estadística e Informática (INEI), 2025a). Second, the informal employment rate is high, at approximately 70% of the population (INEI, 2025b). This context limits financial inclusion and reinforces dependence on cash (Klapper et al., 2025).

In this environment, Peru's digital wallet ecosystem has grown rapidly, driven by initiatives from banks, telecommunications companies, and fintechs. While this expansion has increased payment options for users, it has also generated a fragmented ecosystem, characterized by differences in technological standards, security mechanisms, account structures, and services offered (Banco Central de Reserva del Perú (BCRP), 2025). This fragmentation restricts interoperability across platforms, forcing users to use multiple applications or to resort to cash, thereby limiting the expected efficiency gains. From a theoretical perspective, interoperability is a key enabler of network effects and facilitates frictionless transactions across different providers (Aguilar-Herreras & Libaque-Saenz, 2023). Still, its development in the Peruvian context is not yet mature.

Based on the above discussion, digital wallets not only differ in their internal characteristics, such as institutional origin, associated account type, transmission methods, security mechanisms, and compatibility with multiple currencies (Raithatha & Storchi, 2025), but also in the variety and sophistication of their service assortment. In particular, the incorporation of complementary services such as international transfers, currency exchange, promotional benefits, transportation services, utility payments, e-commerce integration, and access to investment can play a key role in generating user value and consolidating digital wallets as comprehensive financial platforms. However, to the best of our knowledge, no research has integrated this multi-attribute conceptualization of digital wallets and the potential impact of said attributes on adoption and switching behavior.

This gap is particularly relevant, as misalignment between the functional design of digital wallets and user preferences can increase transaction friction, reduce trust, and limit their impact on financial inclusion (Kilani et al., 2023; Nikou et al., 2014). A comprehensive conceptual framework for the attributes of digital wallets that users, both structural and service-related, can assess is crucial for guiding public policy and private-sector strategies. Hence, this study aims to propose a conceptual framework that summarizes the internal attributes and service offerings of digital wallets, linking them to users' intention to use these platforms and their willingness to switch digital wallet providers. It is expected that future research can empirically assess this proposed conceptual framework.

Literature Review

This literature review is organized around the main determinants of user behavior in the context of digital wallets, aligning with this study's objective of analyzing both internal characteristics and service-related attributes. The literature is structured around axes that encompass initial adoption, post-adoption behavior, key technical attributes, and the evolution of digital wallets as service platforms.

The initial adoption of digital wallets has been extensively analyzed using theoretical frameworks such as the Technology Adoption Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which identify key determinants such as perceived utility, ease of use, trust, and perceived risk (Yang et al., 2021). Systematic reviews confirm the consistency of these factors across contexts and the persistence of a gap between intention and actual use (Liébana-Cabanillas et al., 2020). In emerging economies, including Peru, evidence suggests that adoption depends not only on individual perceptions but also on structural factors such as access to digital infrastructure and levels of financial inclusion (Aguilar-Herreras & Libaque-Saenz, 2023; Inciso-Vera & Libaque-Saenz, 2023). Furthermore, recent studies incorporate network dynamics and show that adoption is also influenced by the value generated on both sides of the market, that is, users and merchants (Libaque-Saenz et al., 2024, 2025). However, this literature is predominantly based on latent variables, which limits its ability to explain decisions grounded in concrete design attributes of digital wallets, thereby reducing its applicability in product design and policy contexts.

In the case of literature on post-adoption behavior, it has primarily focused on continuation intention, highlighting factors such as perceived usefulness, habit, trust, and value for money as determinants of sustained use (Kilani et al., 2023; Mombeuil & Uhde, 2021). However, these approaches do not adequately explain switching behavior between providers. To address this limitation, information systems (IS) and marketing studies have incorporated the concept of switching costs, which include procedural, financial, and relational components that can inhibit user migration (Burnham et al., 2003). Additionally, the Push-Pull-Mooring (PPM) framework explains switching as the result of evaluating a new technology alongside the previous or current technology (Bansal et al., 2005). In digital financial services, evidence suggests that switching decisions are influenced by the interaction between usability, perceived security, and technological innovation (Oliveira et al., 2016; Shin, 2009). However, change behavior continues to be poorly modeled as a dependent variable based on structured preferences.

As for research on technical attributes, interoperability is one of the few that have been analyzed in prior studies. This technical attribute is a fundamental element for the development of efficient digital payment ecosystems, as it enables cross-platform transactions and enhances network effects (Bianchi et al., 2023). From an economic perspective, its absence can limit competition and reduce economies of scale, while its implementation promotes network integration and the use of digital payments (Copestake et al., 2025; Rochet & Tirole, 2003). In the Peruvian context, empirical evidence shows that interoperability significantly influences merchant adoption, reinforcing its role as a valuable facilitator in two-sided markets (Libaque-Saenz et al., 2024). At a behavioral level, interoperability reduces friction and uncertainty, improving user perception of convenience. However, the literature provides limited evidence on how users value this attribute relative to other elements of digital wallet design within a comparative framework.

Security is another key technical attribute covered by prior studies. It plays a determinant role in the adoption and continued use of digital wallets, closely linked to trust and perceived risk (Oliveira et al., 2016; Shin, 2009). For example, within security initiatives, authentication mechanisms involve a trade-off between usability and control. Token-based methods tend to be perceived as more secure but generate friction, while biometric methods can reduce effort but raise privacy concerns (Mombeuil & Uhde, 2021). Despite their relevance, these mechanisms have been analyzed relatively little as comparable attributes within the same decision model.

Digital wallets have evolved into platforms that integrate multiple financial and non-financial services, in line with the logic of digital ecosystems (Arner et al., 2017; Frost et al., 2019). These services include transfers, bill payments, transportation, e-commerce, remittances, and investment options, thereby increasing user-perceived value (Evans & Schmalensee, 2016). Research using attribute-based approaches, such as conjoint analysis, enables us to model how users value different combinations of services based on explicit trade-offs, offering a more accurate alternative to models based on latent variables (Green & Srinivasan, 1978; Orme, 2010). However, existing literature tends to analyze services in general and rarely disaggregates them, and no studies have integrated them into a digital wallet ecosystem.

Overall, the existing literature provides robust evidence on the determinants of adoption and some aspects of subsequent behavior. However, three key gaps remain in prior studies. First, there is a gap at the attribute level, as most studies focus on latent variables rather than evaluating specific design attributes. Second, vendor switching behavior is insufficiently modeled as a dependent variable, despite its relevance in fragmented ecosystems. Third, there is an integration gap, since few studies combine internal features and services into a single preference framework. Therefore, to address these limitations, the present study proposes a multi-attribute approach to define a conceptual framework of internal attributes and service assortment options.

Conceptual Framework Development

This section develops a multi-attribute conceptual framework for evaluating the adoption of digital wallets and user switching behavior across providers. Unlike traditional latent-variables-based approaches, this study adopts an attribute-based utility perspective, in which users make decisions by comparing alternative configurations of features. This approach is particularly relevant in contexts where multiple alternatives compete, as is the case with digital wallet ecosystems (Green & Srinivasan, 1978; Lancaster, 1966).

Conceptual Foundation: Utility and Trade-Off Decision-Making

This study is grounded in utility and consumer choice theory, which establishes that individuals derive utility from the attributes of a good, rather than from the good itself (Lancaster, 1966). In this framework, each alternative (i.e., a digital wallet configuration) comprises a set of characteristics that users implicitly evaluate and weigh. Since utility is not directly observable, it can be inferred from individuals' evaluations or choices among different configurations (McFadden, 1974). In this process, users make trade-offs among attributes, accepting certain characteristics in exchange for others they consider more valuable. As a result, a preference structure is configured that allows attributes to be ranked by relative importance.

This approach is particularly suitable for contexts where products can be decomposed into discrete, comparable attributes. In this sense, a conjoint-analysis framework allows us to estimate the utility associated with each attribute based on trade-off evaluations, providing a more realistic representation of the decision-making process (Green & Srinivasan, 1978; Orme, 2010). Unlike models such as TAM and UTAUT, this approach focuses on observable attributes, facilitating its application in the design of products and public policies (Lancaster, 1966; Rao, 2014).

Digital Wallets as Multi-Attribute Decision Systems

Digital wallets can be conceptualized as multi-attribute decision systems, in which users evaluate multiple dimensions simultaneously when forming their preferences (Lancaster, 1966; McFadden, 1974). Rather than being perceived as homogeneous products, these solutions are differentiated by specific combinations of technical and functional characteristics.

In this context, users do not base their decisions on a single dominant attribute, but rather on the joint evaluation of alternative configurations that maximize their overall utility (Green & Srinivasan, 1978; Orme, 2010). This logic is particularly relevant in fragmented ecosystems, where multiple providers offer differentiated proposals. Analytically, digital wallets can be categorized into two main categories. On the one hand, there are internal attributes, which define the wallet's operational and technological logic, including the type of provider, bank account linkage, connectivity method, security mechanisms, interoperability availability, and currency compatibility (Oliveira et al., 2016; Yang et al., 2021). On the other hand, service assortment refers to the variety of services offered, such as payments, e-commerce, and financial services (Arner et al., 2017; Frost et al., 2019). This distinction is consistent with the literature on digital platforms, which holds that value arises from both the infrastructure and the integration of complementary services (Evans & Schmalensee, 2016).

Selection of Internal Attributes

This study adopts an attribute-based approach grounded in Lancaster's theory (1966) and random utility theory (McFadden, 1974), conceptualizing digital wallets as sets of observable characteristics. The selection of internal attributes followed a two-stage process. In the first stage, a literature review identified a broad set of potentially relevant dimensions, including institutional trust, financial inclusion, technological infrastructure, security mechanisms, and interoperability (Aguilar-Herreras & Libaque-Saenz, 2023; Bianchi et al., 2023; Inciso-Vera & Libaque-Saenz, 2023).

Subsequently, in the second stage, a systematic filtering process was carried out based on four criteria: (i) observability, (ii) contextual relevance, (iii) variability among real-world solutions, and (iv) compatibility with discrete choice models (Green & Srinivasan, 1978; Orme, 2010). This process allowed for the exclusion of abstract or difficult-to-operationalize attributes, prioritizing those that can be represented using discrete levels. As a result, six internal attributes were selected: wallet origin, bank account linkage, connectivity method, security mechanisms, interoperability availability, and currency compatibility. These attributes capture key dimensions of the functioning and accessibility of digital wallets and reflect both structural conditions of the Peruvian context and observable differences between available solutions. The division of each attribute into discrete choices is displayed in Table 1.

Table 1. Internal attributes and service assortment options

Attribute Category	Attribute	Discrete Choices
Internal attributes	Wallet origin	Bank, telco
	Bank account linkage	Required, not required
	Connectivity method	Internet-based, SMS/USSD-based
	Security mechanisms	Password, biometric authentication
	Interoperability availability	Interoperable, non-interoperable
	Currency compatibility	Local currency only, multi-currency
Service assortment	International transfers	Available, not available
	Foreign exchange services	Available, not available
	Promotions and rewards	Available, not available
	Transportation services	Available, not available
	Utility payments	Available, not available
	E-commerce integration	Available, not available

	Investment services	Available, not available
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Selection of Service Assortment Options

Digital wallets have evolved into platforms that integrate multiple services, thereby increasing their value by enabling users to meet diverse needs within a single environment (Arner et al., 2017; Frost et al., 2019). From a utility theory perspective, this value arises from both individual services and their combination (Lancaster, 1966). The selection of service attributes was developed using a two-stage approach. First, a benchmarking of super apps, considered the most advanced level of digital service integration (Evans & Schmalensee, 2016), was conducted. This analysis identified a broad set of potential services.

Second, a filtering process was applied using three criteria: (1) relevance to everyday financial behavior, (2) alignment with the core function of digital wallets, and (3) compatibility with conjoint analysis (Green & Srinivasan, 1978; Orme, 2010). This filtering is supported by evidence that adoption in emerging markets is primarily driven by services associated with frequent transactions, such as payments, transfers, and business activities (Demirguc-Kunt et al., 2022; Jack & Suri, 2014), as well as by integrated services such as e-commerce and mobility (Aguilar-Herreras & Libaque-Saenz, 2023). As a result, seven key services were selected: international transfers, foreign exchange, promotions, transportation, utility payments, e-commerce, and investment services (see Table 1).

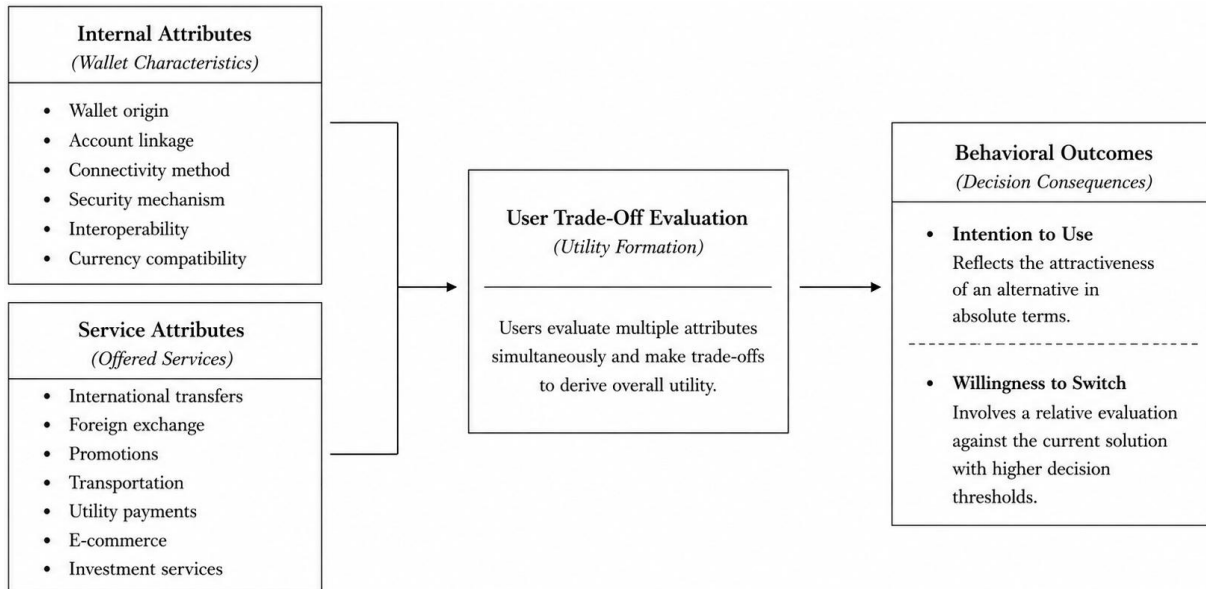
Integration of Attributes and Behavioral Outcomes

Within this framework, user behavior is understood as the result of evaluating alternative attribute configurations. This study distinguishes two behavioral outcomes: intention to use and willingness to switch. Intention to use reflects the attractiveness of an alternative in absolute terms, aligning with traditional adoption models (Venkatesh et al., 2003). In contrast, willingness to switch involves a relative evaluation against the user's current digital wallet, incorporating a higher decision threshold. This distinction is consistent with the literature on switching costs (Burnham et al., 2003) and with the Push-Pull-Mooring model (Bansal et al., 2005), which explains switching as driven by pull, push, and anchoring forces. Consequently, both outcomes share a common utility basis but differ in their evaluative contexts, enabling a more accurate capture of user behavior in fragmented markets.

Justification of the Attribute-Based Approach

The attribute-based approach addresses the limitations of traditional models such as TAM and UTAUT, which focus on binary decisions and latent variables (Davis, 1989; Venkatesh et al., 2003). These models do not adequately capture contexts where users choose among multiple alternatives, nor do they allow for the evaluation of specific attributes. Furthermore, they do not explicitly incorporate the trade-offs between attributes, which are fundamental to real-world decision-making. In contrast, the utility-based approach allows for the analysis of complete configurations through trade-offs, providing a more realistic representation of consumer behavior (Lancaster, 1966; McFadden, 1974).

Conjoint analysis operationalizes this approach by estimating the relative importance of attributes based on user evaluations (Green & Srinivasan, 1978; Orme, 2010). Therefore, this framework is particularly suitable for analyzing preferences, with direct implications for the design of products and public policies. As shown in Figure 1, this section conceptualizes digital wallets as multi-attribute systems. The figure summarizes the attribute-based approach and conjoint-analysis framework, differentiating between internal attributes and service assortment options. It also presents the behavioral outcomes evaluated, intention to use, and willingness to switch, and justifies the use of this approach to analyze comparative decisions between different digital wallet configurations. Figure 1 summarizes the proposed multi-attribute conceptual framework for this study.



Source: Developed by the authors based on Lancaster (1966), McFadden (1972), Green and Srinivasan (1978), and Venkatesh et al. (2003).

Figure 1. Proposed Multi-Attribute Conceptual Framework for Digital Wallets

Operationalization of the Contextual Framework

The operationalization of the abovementioned contextual framework is developed based on the rationale of conjoint analysis. Conjoint analysis is a statistical technique that reveals the degree to which consumers value specific product or service characteristics (Eggers et al., 2021). Conjoint analysis is useful when consumers are presented with a set of hypothetical product or service characteristics and asked to evaluate different profiles (De la Cuesta et al., 2022). These hypothetical characteristics are named attributes in conjoint analysis, and each attribute can have various levels. A level of an attribute is defined as a specific condition or variation of that attribute, and the levels of the same attribute should be mutually exclusive (Orme, 2002). Hence, a profile in conjoint analysis is a realistic description of alternative products or services that differ in their attributes (Green & Srinivasan, 1978). It is important to note that this approach derives the utility function from trade-off judgments, where respondents evaluate different combinations of attributes and express their preferences accordingly (Rao, 2014). Based on respondents' evaluations of each profile, the technique determines the relative importance of each attribute and level, estimating the associated utility (Garver et al., 2010).

Attributes and levels as independent variables

This study considered two sets of attributes corresponding to the two analyzed dimensions: internal attributes and service assortment. Each attribute was defined as a variable with two mutually exclusive levels. Table 2 describes this process. A full-profile approach would yield a large number of possible profile combinations. For instance, the internal attributes would generate $2^6 = 64$ profiles, while the service attributes would generate $2^7 = 128$ profiles. In order to use a smaller number, profiles were selected using an orthogonal array, as suggested by prior research (Johnson & Orme, 1996; Nikou et al., 2014). This technique is used to generate the minimum number of profiles for evaluation while preserving the statistical independence of the attributes. Accordingly, eight profiles for internal attributes and eight profiles for service assortment were created. These profiles are entirely independent of each other, ensuring no overlap in data representation; they are presented in Appendix A. In addition, Appendix B shows how Table 2 can be translated into mock-up representations of the profiles of evaluated attribute. It displays three figures: a

figure with all the options of Level 1 and a second figure with all the options of Level 2, in the case of internal attributes. The third figure shows the graphical representation of the service options presented in the service assortment conceptualization. Accordingly, for each profile in Appendix A, a mock-up should be generated combining these graphical representations based on its settings.

Table 2. Operationalization of Variables

No.	Attribute	Variable	Level 1	Level 2
Internal attributes				
1	Wallet origin	ORI	Bank-based	Telco-based
2	Bank account linkage	ACC	Linked to a bank account	Not linked to a bank account
3	Connectivity method	CON	Internet-based	SMS/USSD-based
4	Security mechanism	SEC	Dynamic token	Biometric authentication
5	Interoperability availability	INT	Interoperable with other digital wallets	Not interoperable with other digital wallets
6	Currency compatibility	CUR	Multi-currency (Peruvian soles, U.S. dollars, and other currencies)	Local currency only (Peruvian soles)
Service attributes				
7	Taxi service	TAX	Available (1)	Not available (0)
8	International payments	PAY	Available (1)	Not available (0)
9	E-commerce integration	ECO	Available (1)	Not available (0)
10	Investment services	INV	Available (1)	Not available (0)
11	Promotions and discounts	PRO	Available (1)	Not available (0)
12	Utility payments	UTI	Available (1)	Not available (0)
13	Foreign exchange services	FEX	Available (1)	Not available (0)

Dependent variable

The preference level is the dependent variable. In this study, two types of measurements were proposed. For the internal attributes conceptual framework, respondents should be asked to rate each profile on a Likert scale from 1 to 7, where 1 represents “strongly disagree” and 7 represents “strongly agree”. Two statements will be evaluated:

- “I would use this digital wallet as my primary payment method,” representing adoption intention.
- “I would be willing to switch from my current wallet to this one,” representing switching behavior.

For the service assortment conceptual framework, respondents should be asked to rank the eight profiles in order of preference, with the highest-ranked profile representing the most preferred configuration of services.

Discussion and Implications

As digital payment ecosystems in emerging economies become increasingly complex, there is a growing need for analytical frameworks that can explain how users evaluate competing technological alternatives beyond traditional adoption models. This study conceptualizes digital wallets as multi-attribute platforms whose value emerges from the interaction between technological infrastructure, institutional characteristics, and integrated digital services. From a utility-based perspective and grounded in conjoint analysis, this research provides a structured approach to understanding decision-making processes in fragmented digital ecosystems, where users constantly evaluate trade-offs across alternative configurations.

This conceptualization is particularly relevant in contexts such as Peru, where rapid expansion of digital payments coexists with persistent financial exclusion, high informality, unequal access to digital infrastructure, and fragmented payment ecosystems. In this environment, digital wallets increasingly function not only as transactional tools but also as mechanisms that facilitate participation in formal financial systems. Consequently, the proposed conceptual framework enables us to understand how users evaluate combinations of accessibility, interoperability, connectivity, institutional characteristics, and complementary services under heterogeneous technological and socioeconomic conditions.

Theoretical Implications

From a theoretical perspective, this study contributes to the information systems and fintech literature by shifting the analytical focus from latent perceptual constructs to observable, configurable attributes. Although dominant models such as TAM and UTAUT have traditionally emphasized variables such as perceived utility, ease of use, and behavioral intention, these approaches have limited explanatory power in contexts where users simultaneously compare multiple technological alternatives. In contrast, this study adopts a utility-based perspective grounded in Lancaster's (1966) consumer theory and McFadden's (1974) random utility theory, conceptualizing digital wallets as multi-attribute systems. This perspective broadens current understanding of technology adoption by incorporating structural and ecosystemic dimensions into decision-making. Specifically, attributes such as interoperability, institutional origin, security mechanisms, connectivity methods, and bank account linkage introduce assessment dimensions that are not fully captured by traditional approaches based on latent variables.

An additional theoretical contribution lies in distinguishing between usage intention and willingness to switch providers as distinct behavioral outcomes. Existing research on digital wallets has focused primarily on initial adoption or continued usage intention, while switching behavior remains relatively underexplored. By incorporating willingness to switch as a dependent variable, this study expands the literature on switching costs and post-adoption behavior. Within this framework, adopting a new digital wallet and abandoning a current provider are conceptualized as distinct decision-making processes, involving different utility structures, risk assessments, and behavioral thresholds.

This research also makes a methodological contribution by demonstrating the relevance of conjoint analysis for studying fintech adoption and digital payment ecosystems. Although conjoint analysis has been widely used in marketing research and product design (Green & Srinivasan, 1978; Orme, 2010), its application in digital wallet studies remains limited. The proposed framework demonstrates how this methodology enables the evaluation of internal technological attributes and complementary service dimensions through explicit trade-off judgments, providing a more detailed understanding of user preferences than traditional approaches based on regressions and latent variables.

Additionally, by integrating internal attributes and complementary services within a unified preference framework, this study addresses a significant gap in the literature. Existing research typically analyzes technological features and complementary services separately, limiting the understanding of how users evaluate entire digital wallet ecosystems. In contrast, this framework conceptualizes digital wallets as

integrated systems where technological infrastructure and complementary services jointly shape perceived value and behavioral outcomes.

Practical Implications

From a practical perspective, this study offers implications for digital wallet providers, financial institutions, fintechs, telecommunications operators, and policymakers involved in developing digital payment ecosystems. The proposed conceptual framework provides a structured basis for assessing which technological and service attributes have the greatest potential to shape perceived user value and competitive positioning within fragmented digital markets.

The study also highlights the growing importance of ecosystem-level competition within digital financial services. Rather than competing solely through isolated functionalities, providers are increasingly competing through interoperability, network integration, and ecosystems of complementary services. In line with the platform economics literature (Evans & Schmalensee, 2016; Van Alstyne et al., 2016), competitive advantage in digital wallet ecosystems increasingly depends on facilitating interactions between users, merchants, financial institutions, and third-party service providers.

Furthermore, the framework underscores the strategic importance of interoperability in emerging payment systems. In fragmented ecosystems, interoperability functions not only as a technical feature but also as a structural mechanism that reduces transactional friction, facilitates network effects, improves coordination among actors, and increases transaction efficiency. Consequently, the conceptual framework supports the view that interoperability is a critical infrastructure component for developing more integrated and inclusive payment ecosystems. These implications are particularly relevant for regulatory initiatives led by institutions such as the Central Reserve Bank of Peru.

On the other hand, the incorporation of services such as international transfers, currency exchange, e-commerce integration, utility payments, transportation, and investments reflects the evolution of digital wallets toward broader digital ecosystems and super-app environments. In this context, the framework emphasizes that the service assortment is not merely an added feature but a central mechanism through which digital wallets generate utility, strengthen user retention, and consolidate their participation in the ecosystem. This perspective contributes to understanding how complementary services influence the strategic positioning and long-term competitiveness of digital financial platforms.

Limitations and Future Studies

Although this study contributes by proposing a multi-attribute conceptual framework for understanding digital wallet adoption and provider switching behavior, it is important to acknowledge certain limitations. First, the framework deliberately emphasizes observable and configurable attributes over latent perceptual variables. Consequently, future research could complement the proposed framework by integrating behavioral and psychological dimensions alongside attribute-based assessments.

Second, this research develops a conceptual and operational framework based on conjoint analysis but does not empirically evaluate users' preferences for the proposed configurations. Consequently, future research could apply this framework to analyze how different user profiles value attributes such as interoperability, security, connectivity, and complementary services when choosing or switching digital wallets. Furthermore, future studies could compare differences between demographic, socioeconomic, or behavioral segments to understand how preferences vary within fragmented digital ecosystems.

Future research could also expand this framework by incorporating additional ecosystem dimensions associated with the evolution of digital financial platforms. These dimensions can include adoption dynamics from the merchant perspective (Libaque-Saenz et al., 2024), loyalty and reward mechanisms, AI-

powered personalization, embedded finance services, and governance structures within multi-sided ecosystems (Evans & Schmalensee, 2016; Van Alstyne et al., 2016). Similarly, longitudinal approaches could help understand how user preferences and switching behaviors evolve as interoperability initiatives mature and digital payment ecosystems become increasingly integrated.

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Appendix A. Proposed profiles for operationalizing the conceptual framework

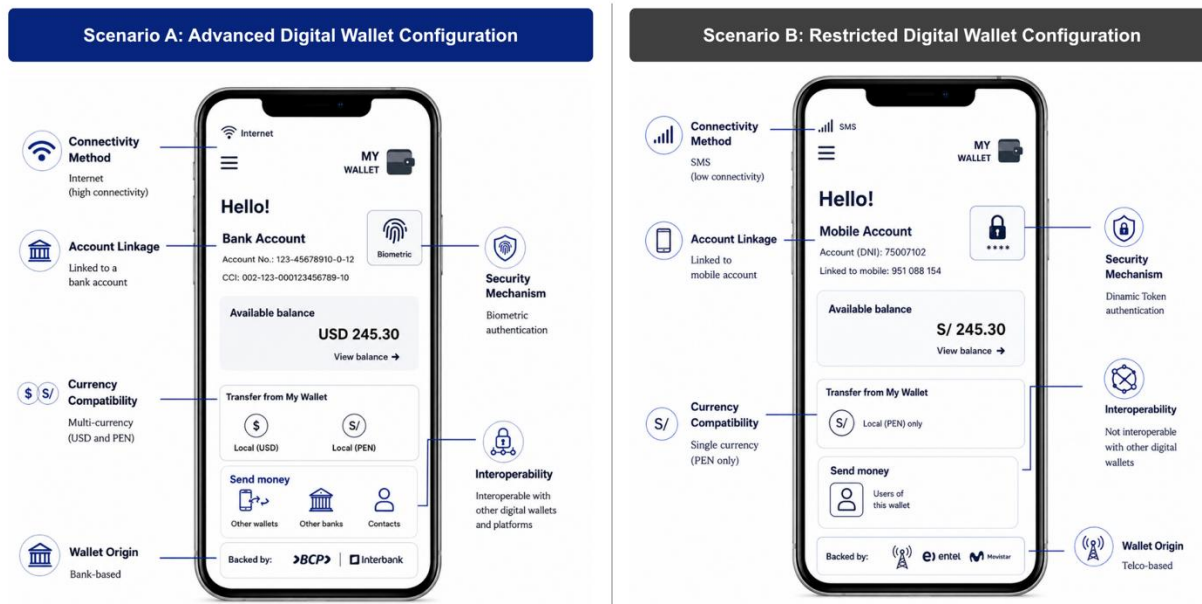
Table A1. Generated Profiles for Internal Attributes

Profile	Wallet Origin	Bank Account Linkage	Connectivity Method	Security Mechanism	Interoperability	Currency Compatibility
1	Bank	Linked	Internet-based	Biometric	Yes	Multi-currency
2	Bank	Linked	SMS/USSD-based	Biometric	No	Local currency only
3	Telco	Not linked	SMS/USSD-based	Biometric	Yes	Local currency only
4	Telco	Not linked	Internet-based	Biometric	No	Multi-currency
5	Telco	Linked	SMS/USSD-based	Dynamic token	Yes	Multi-currency
6	Telco	Linked	Internet-based	Dynamic token	No	Local currency only
7	Bank	Not linked	SMS/USSD-based	Dynamic token	No	Multi-currency
8	Bank	Not linked	Internet-based	Dynamic token	Yes	Local currency only

Table A2. Generated Profiles for Service Assortment

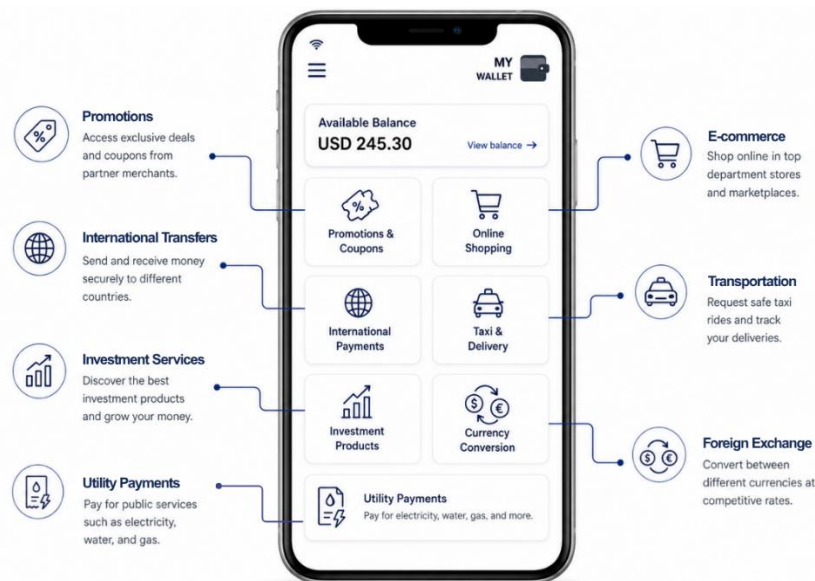
Profile	International Transfers	Foreign Exchange	Promotions and Rewards	Transportation Services	Utility Payments	E-commerce integration	Investment Services
1	Yes	Yes	No	No	No	No	No
2	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Yes	No	Yes	No	No	No	Yes
4	No	Yes	Yes	No	No	Yes	No
5	No	No	Yes	Yes	Yes	No	No
6	No	Yes	No	Yes	No	No	Yes
7	No	No	No	No	Yes	Yes	Yes
8	Yes	No	No	Yes	No	Yes	No

Appendix B. Mock-Up Representations of the Attribute Profiles



Note: The mock-ups were manipulated to reflect the internal attribute configuration associated with each profile.

Figure B1. Mock-Up Representations of Contrasting Internal Attribute Profiles



Note: The mock-up was manipulated to reflect the service attribute configuration associated with the evaluated profile.

Figure B2. Mock-Up Representation of the Service Assortment Profile