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Examining synergy on digital wallet transformation into super app: The case of Yape

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Abstract

As super apps become increasingly popular for consolidating diverse digital activities, understanding the factors that drive users to adopt new features within these platforms is essential. This study uses Synergy and Brand Extension Theories to analyze the factors influencing users' willingness to use Yape Compras, a new feature of Yape, a leading super app in Peru. The research introduces the concept of service synergy, which is shaped by crucial enabler factors (network externalities, system availability, compatibility, complementarity, and perceived fit), each contributing to an interconnected user experience. Survey results from 201 Yape users validate the proposed model, showing that these enablers contribute to service synergy and increase users' willingness to use Yape Compras. These insights offer valuable guidance for super app developers seeking to enhance user engagement and expand service offerings within digital ecosystems.

Keywords: super app, synergy, digital wallet, brand extension.

Introduction

Smartphone usage has surged globally, from 3.9 billion users in 2024 to a projected 6.1 billion by 2029 (Statista, 2024a). These devices—central to communication, internet access, and app use (Nawaz et al., 2024)—have become essential. In Peru, the number of users increased from 1.64 million in 2014 to 17.71 million in 2024, representing a 1,070% rise (Statista, 2024b), which drove app growth across various sectors, including social media, finance, and retail. Downloads reached 257 billion in 2023, up from 140.68 billion in 2016 (Statista, 2025).

This expansion has fueled the rise of digital wallets, enabling secure, app-based transactions (Hassan & Shukur, 2019). In Latin America, they made up 21% of e-commerce payments in 2023, projected to reach 28% by 2027 (WorldPay, 2024). In Peru, Yape and PLIN accounted for 14% of POS payments, expected to double by 2027, while A2A payments are expected to reach 31% of online spending (WorldPay, 2024). However, growing app usage raises concerns. Privacy issues persist—84% of users consider data risks before downloading apps (Google, 2016; Nevo & Wade, 2010). High usage can degrade hardware (Zhang et al., 2019), while screen time averages 4.8 hours daily, with reported anxiety and reduced attention (Nawaz et al., 2024).

Super apps offer a potential solution by integrating services into a single platform. Originating in Asia (Foo, 2021), they are expanding in Latin America through platforms like Rappi, Magalu, and Peru's Yape.

Created by Banco de Crédito del Perú, Yape serves 60% of the adult population (McKinsey & Company, 2023). Although PLIN had 13.8 million users in 2023 (BBVA, 2023), Yape leads in reach. These apps enhance convenience, loyalty, and financial inclusion.

This study examines how vertical, horizontal, financial, and strategic synergies affect adoption of Yape Compras, along with the influence of network externalities and service attributes. It provides insights into super app adoption in Lima, Peru.

Literature Review

Super apps, such as WeChat, LINE, Alipay, and Gojek, have transformed digital ecosystems by evolving from single-function apps into multifunctional platforms. WeChat, launched in 2011, rapidly expanded beyond messaging to include features like WeChat Pay and Mini Programs, becoming indispensable for communication and services in China (Plantin & De Seta, 2019). Similarly, LINE, introduced in Japan in 2011, diversified to include LINE Pay, LINE Shopping, and LINE Music, while enhancing security with end-to-end encryption (Espinoza et al., 2017). Alipay, initially a payment service for Alibaba Group, expanded into a comprehensive mobile wallet, driving widespread adoption due to its convenience (Liu, 2015), while Gojek, starting as a ride-hailing app, expanded into various services like food delivery and digital payments, becoming a leading super app in Indonesia (Prananda et al., 2020).

Research on these platforms has explored various aspects, including the impact of service synergies on user adoption, privacy concerns, and the role of digital wallets in expanding functionality. For instance, studies on WeChat have analyzed its role in areas like social support (Wang et al., 2019) and crime prevention (Li et al., 2024), while research on LINE has focused on vulnerabilities in its encryption system (Espinoza et al., 2017). In Alipay's case, studies have examined its influence on China's economy (Liu, 2015) and its role in promoting sustainability (Li et al., 2024). Gojek has been analyzed in terms of market dominance and its transformation into a super app (Hasselwander, 2024).

Much of the research on super apps has focused on Asian platforms. There is growing interest in Latin American digital wallets, such as Yape, which has evolved into a super app from its original role as a financial app. Yape's expansion into bill payments, QR transactions, and small business solutions is indicative of how digital wallets can drive financial inclusion in regions with limited banking infrastructure. However, research on service integration within Latin American super apps is sparse, with most studies focusing on financial inclusion or user behavior rather than synergies between services (Diaz Baquero et al., 2021; Roa et al., 2022).

While Synergy Theory has been used in the context of IT-enabled value creation (Nevo & Wade, 2010), its application to digital platform ecosystems remains underexplored. We extend this line of research by illustrating how different types of synergy—horizontal, vertical, strategic, and financial—shape user engagement in super apps. This complements prior findings in studies on WeChat and Gojek (Fang et al., 2024; Hasselwander, 2024), where service bundling played a decisive role in user retention.

Despite extensive research on technology acceptance models like UTAUT2 and TAM, studies on post-adoption service synergies remain limited. While some studies have explored factors driving app adoption and retention, such as perceived usefulness and satisfaction (Duan & Deng, 2021; Weng et al., 2017), few have investigated the role of service synergies in sustained engagement within super apps. Recent studies on super app adoption, such as those by Zhu et al. (2023) and Fang et al. (2024), suggest that synergy and trust significantly affect adoption, yet more research is needed to understand how service synergies drive

engagement beyond the app's initial function. This study explores how Yape can leverage strategic service integration to enhance user engagement and retention in the Latin American market.

Traditional technology adoption models, such as TAM or UTAUT2, primarily focus on initial acceptance. However, super apps require an understanding of how value is co-created through inter-service dynamics post-adoption. Therefore, Synergy Theory and Brand Extension Theory are better suited to capture the mechanisms driving continued usage and cross-feature adoption in platforms such as Yape Compras.

Theoretical Framework

This paper explores Yape's transformation into a super app, guided by three key theories: Synergy Theory, Theory of Service Synergy, and Brand Extension Theory. Yape, initially launched as a digital wallet for peer-to-peer (P2P) payments in 2016, has evolved into a comprehensive platform that includes financial products, bill payments, and discounts, thereby promoting financial inclusion in Peru (Banco de Crédito del Perú, 2018; Yape Oficial, 2022). This transformation is analyzed through the lens of Synergy Theory, which emphasizes the added value created when various elements within a system work together. For Yape, service synergies such as network externalities and availability have been crucial to its growth and user adoption, particularly as regulatory frameworks enhance interoperability with other platforms (CIRCULAR No. 0013-2023-BCRP, 2023).

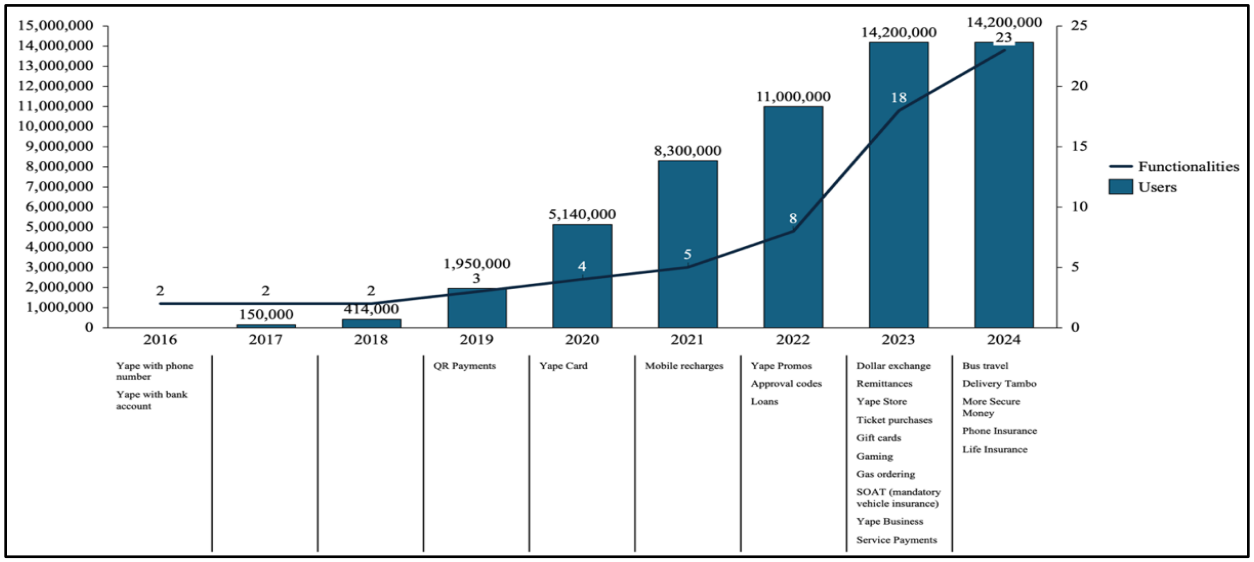

Figure 1. Yape Users and Functionalities per Year

Synergy Theory, as proposed by del va (2014), explains how cooperation among different elements leads to outcomes greater than the sum of individual contributions. For digital wallets like Yape, synergy is driven by factors such as network externalities—where the value of the service increases as more users adopt it—and availability, which ensures users can access the service anytime (Kraiwanit et al., 2024). Yape's success relies on these enablers, along with its integration of services that encourage user engagement and retention. For instance, Yape's partnerships with businesses and government entities help increase its value, benefiting both users and the platform itself.

The Theory of Service Synergy, proposed by Ahuja & Novelli (2017), identifies horizontal, vertical, strategic, and financial synergies. Yape benefits from horizontal synergies by sharing resources across

different services, such as bill payments and mobile recharges, thus reducing costs and improving user retention. Vertical synergies are evident as Yape integrates financial products like loans and insurance, ensuring smooth coordination between services. Strategic synergies arise from coordinating strategies across markets, enhancing user experience and financial inclusion. Finally, financial synergies help stabilize revenue across various services, ensuring Yape's sustainability in a competitive market (Ahuja & Novelli, 2017).

Brand Extension Theory, as described by Aaker (1990), explains how established brands leverage their reputation to introduce new products in related categories. Yape has extended its brand by adding features that align with its core values of convenience and reliability. The success of brand extensions depends on the strength of brand associations and the ability to reinforce the core brand's image. Yape's ability to introduce new services under the same brand umbrella has minimized the risks associated with launching entirely new brands, enhancing its position as a trusted digital financial solution in Peru (Aaker, 1990; Yang et al., 2013).

Unlike prior studies that focused on synergy within enterprise systems (e.g., Ferratt et al., 2012), our study contextualizes service synergy in consumer-facing mobile ecosystems. Specifically, we examine how synergy manifests through perceived compatibility, availability, and network externalities within a digital wallet platform expanding into retail services.

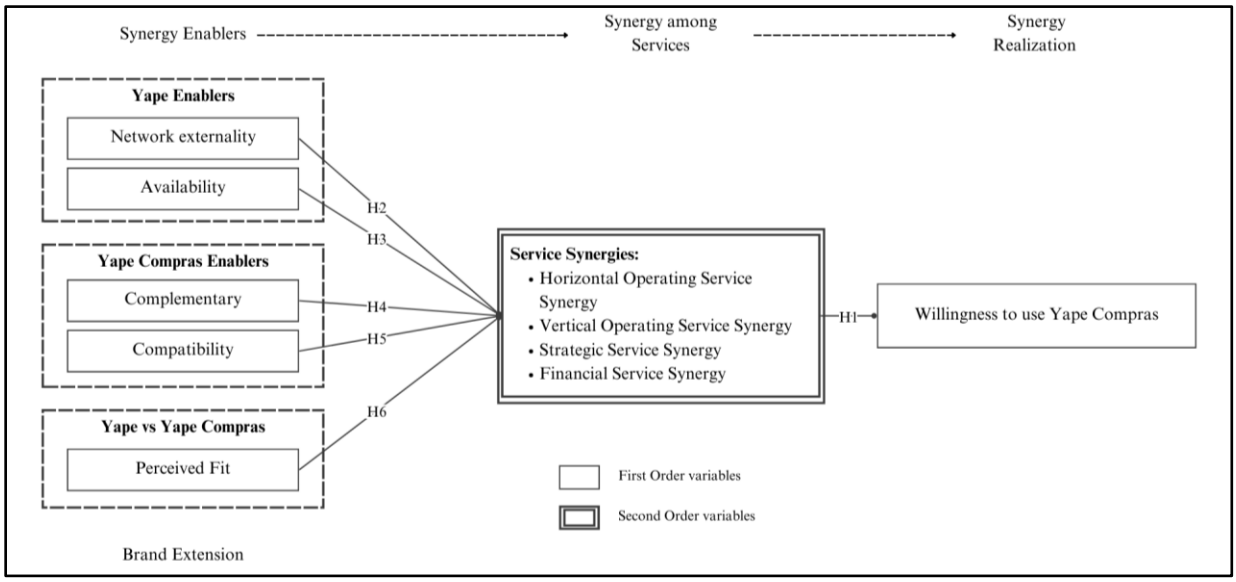

Figure 2. Research Model

Research Model

This study examines the role of factors such as network externalities, system availability, compatibility, complementarity, and perceived fit in fostering service synergy between Yape's core P2P service and Yape Compras.

Service synergy refers to the combined value generated when services within a platform work together (I. Someh et al., 2019; Weibl, 2019). In super apps like Yape, synergy between financial services and features

such as Yape Compras can enhance user experiences and encourage adoption (Zhu et al., 2023; Fang et al., 2024).
H1*: The expectation of service synergy is positively related to users' willingness to adopt Yape Compras.*

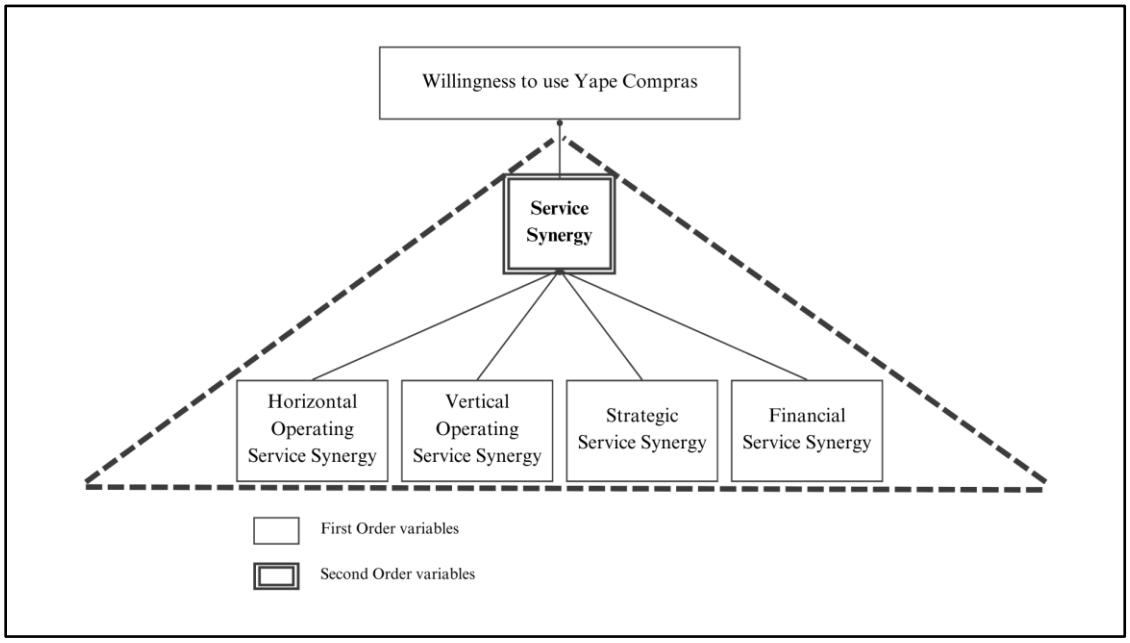

Figure 3. Second Order Variable

Network externalities increase platform value as more users adopt it (Qasim & Abu-Shanab, 2016). In Yape's case, a growing user base improves ecosystem utility and encourages engagement with features like Yape Compras. This larger network supports synergy by amplifying the platform's overall value (Libaque-Saenz et al., 2024).
H2*: Network externalities are positively related to service synergy.*

System availability, or the platform's reliability, is crucial for trust and satisfaction (Rita et al., 2019). Reliable access to core and new features fosters smoother user experiences and enhances service synergy (Libaque-Saenz et al., 2024; Inciso-Vera & Libaque-Saenz, 2023).
H3*: Availability is positively related to service synergy.*

Compatibility measures how well a new feature aligns with user habits and infrastructure. High compatibility lowers adoption barriers and reinforces synergy by integrating with existing services (Liebowitz, 2002; Rogers, 1983; I. A. Someh & Shanks, 2013; Sutticherchart & Rakthin, 2023).
H4*: Compatibility is positively related to service synergy.*

Complementarity refers to how additional features enrich the core offering. Yape Compras complements financial services by adding promotions that enhance the user experience (Fang & Tang, 2017; Li et al., 2023; Zhu et al., 2023).
H5*: Complementarity is positively related to service synergy.*

Perceived fit reflects users' perception of coherence between a platform and its new features. A strong fit increases trust and smooth adoption, reinforcing synergy between services (Aaker, 1990; Zhu et al., 2023; Fang et al., 2024; Arnett et al., 2010).
H6*: Perceived fit is positively related to service synergy.*

Methodology

This section presents the methodology used in the study, covering the measurement instrument, data collection, analysis, and sample methods employed to investigate synergy in Yape. The latent variables, including perceived fit, compatibility, complementarity, network externalities, and availability in Yape, were measured using a Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Additionally, there is a formative variable, service synergy, composed entirely of four dimensions: horizontal operating synergy, vertical operating synergy, financial synergy, and strategic synergy. The questionnaire was structured into six sections: confirming Yape usage, measuring Yape enablers, determining Yape Compras enablers, assessing Yape vs. Yape Compras enablers, evaluating service synergy, and collecting demographic data. The questionnaire design shown in Appendix 3, was based on validated literature, particularly studies by Fang et al. (2024) Inciso-Vera & Libaque-Saenz (2023), and Oghuma et al. (2015).

Data collection took place in October 2024, using a Spanish-language Google Forms survey. The survey was distributed through social media. Participation was voluntary, restricted to individuals aged 18 and above, and no personal data was collected, thereby maintaining privacy and anonymity. Given that all data were collected via self-report in a single survey instrument, the risk of standard method bias (CMB) exists. While survey anonymity and item randomization help reduce such bias, we acknowledge the absence of procedural or statistical controls (e.g., Harman's single-factor test or marker variable approach). Future studies should consider these techniques to ensure robustness against CMB effects.

Structural Equation Modeling (SEM) was employed for data analysis to investigate the cause-effect relationships between synergy and new functionalities within Yape. This technique enabled a comprehensive understanding of the factors influencing user behavior and allowed for examining complex relationships between the measured variables.

The target population consisted of Yape users residing in Lima, Peru, who were 18 years of age or older. Lima was selected due to its large population, representing 29.7% of the national total (Instituto Nacional de Estadística e Informática, 2020), making it a suitable context for examining Yape's adoption. A non-probabilistic sampling technique, combining snowball and convenience sampling, was employed to reach this population. Given Yape's widespread yet diffuse user base, probabilistic sampling would have required significant resources and access to private data, which was not feasible. Snowball sampling allowed initial participants to refer to others, while convenience sampling addressed logistical constraints, such as the two-month time frame for data collection.

The use of non-probabilistic snowball sampling may introduce selection bias, as it can disproportionately reflect specific user segments—such as digitally engaged individuals or younger demographics—potentially limiting the diversity of the sample. Nonetheless, this sampling method was selected due to practical constraints, including time, budget, and the unavailability of a centralized user registry. Lima was chosen as the study site because of its central role in Peru's digital and financial landscape. To strengthen the generalizability of the findings, future research should replicate the study using probabilistic sampling techniques and broader geographic coverage.

Following Cohen's (1992) recommendation on sample size and considering that nine arrows point to the variable Service Synergy, a minimum of 150 observations would be necessary to detect an R^2 value of at least 0.1. Therefore, our sample size of 232 meets this requirement. This sample is suitable for an exploratory study using Structural Equation Modeling (SEM). Of the 232 respondents, 201 met the inclusion criteria of being over 18 years of age and residing in Lima, making them valid for analysis. The

demographic breakdown of the valid sample shows that 63% of participants were aged between 18 and 35 years, 32% were over 35 years, and a smaller segment of 6% were under 18, which were ultimately excluded. Additionally, 95% of the respondents were from Lima, aligning with the study's focus on this geographic area, while only 5% were from other areas. This concentration in Lima ensures that the findings represent the primary target population within the study's geographic scope.

Results

The measurement model's validity was confirmed by examining construct reliability and convergent validity. The reliability of each item was assessed by evaluating its loading on the associated latent variable, with all item loadings exceeding the recommended threshold of 0.7, thereby demonstrating strong reliability in representing their intended constructs. The model's internal consistency was assessed through Cronbach's alpha (CA) and composite reliability (CR) for each construct (Hair et al., 2019). Cronbach's alpha ranged from 0.798 for Financial Service Synergy to 0.901 for Willingness to Use, while composite reliability values spanned from 0.872 for Service Availability to 0.938 for Willingness to Use. Both measures were above the 0.7 thresholds, indicating satisfactory internal consistency and suggesting that the indicators within each variable align well.

Convergent validity was evaluated by calculating each construct's average variance extracted (AVE). All AVE values were above the recommended threshold of 0.5, ranging from 0.630 to 0.834. This further supports the model's convergent validity, indicating that the indicators effectively capture the core concept of each construct. Discriminant validity was assessed by comparing the correlations between constructs with the square root of the AVE for each construct. (Hair et al., 2019), displayed on the diagonal of Table 2. According to Chin (1998), adequate discriminant validity is achieved when the square root of the AVE exceeds the inter-construct correlations. A review of Table 1 confirms that this criterion is met, as each diagonal value is consistently higher than the corresponding off-diagonal correlations.

The heterotrait-monotrait (HTMT) ratio was used to confirm further the discriminant validity of the constructs in the model. According to Kline's (2016) guidelines, HTMT values should be below 0.85 for conceptually distinct constructs. Reviewing the inter-construct correlations in Table 3, all values fall below the recommended threshold of 0.85, indicating that each set of indicators effectively measures its intended construct without significant overlap. These results confirm that the constructs in this study possess adequate discriminant validity, reinforcing the reliability of the measurement model.

Structural Model

The second-order formative variable, service synergy, is defined by four dimensions: horizontal, vertical, strategic, and financial service synergies, as shown in Table 4. To ensure that each dimension's contribution is distinct, multicollinearity was assessed using Variance Inflation Factor (VIF) values, which were within acceptable limits, confirming no multicollinearity issues. For service synergy, the weights of each of its components are significant, as shown in Table 4, which further validates the second-order variable. Nomological validity is partially established through significant relationships between theoretical constructs. However, future research should explore model comparisons with UTAUT2 or TAM to enhance theoretical robustness and better contextualize our synergy-based approach. To assess the explanatory power of the proposed structural model, we examined the R2 values of the dependent variables and the relationships between constructs. The R2 values indicate the extent to which the independent variables explain the variance in the dependent variables. For Willingness to Use, the model accounts for 30.4% of the variance (R2=0.304), suggesting a moderate explanatory capacity.

Table 1. Heterotrait-Monotrait Ratio (HTMT) – Matrix

	CMT	CPT	FIT	FSS	HSS	NE	SA	SSS	USE	VSS
CMT										
CPT	0.552									
FIT	0.457	0.536								
FSS	0.496	0.692	0.522							
HSS	0.643	0.748	0.545	0.621						
NE	0.326	0.444	0.387	0.363	0.339					
SA	0.279	0.394	0.271	0.339	0.357	0.376				
SSS	0.583	0.610	0.534	0.678	0.627	0.388	0.393			
USE	0.461	0.694	0.428	0.587	0.541	0.347	0.264	0.443		
VSS	0.594	0.753	0.67	0.602	0.813	0.404	0.298	0.783	0.533	

Table 2. Weights of the Components of Service Synergy

First Order Variables	Weights
Horizontal Service Synergy (HSS)	0.355*
Vertical Service Synergy (VSS)	0.283*
Strategic Service Synergy (SSS)	0.320*
Financial Service Synergy (FSS)	0.249*

Note: * $p < 0.001$

The beta coefficients and weights reflect the strength and direction of the relationships between each independent and dependent variable, as shown in Figure 4. All paths are statistically significant, with p-values below 0.05, supporting the associated hypotheses. This confirms that each variable contributes meaningfully to explaining Willingness to Use.

Discussion

This study aimed to identify the factors that positively influence the willingness to use Yape Compras, utilizing Synergy Theory and Brand Extension Theory as foundational frameworks. Additionally, Service Synergy Theory was applied to examine how integrating multiple functionalities could drive the adoption of new features within Yape. In this framework, all analyzed constructs—service synergy, network externalities, service availability, compatibility, complementarity, and perceived fit—were supported by the results, underscoring their positive impact on users' adoption of additional functionalities. Each hypothesis was validated, highlighting the essential role of these variables in enhancing user engagement and retention within Yape as a super app in the Peruvian market. The model explains 30.4% of the variance in willingness to adopt Yape Compras. While this is acceptable for behavioral studies, future work could consider additional predictors such as trust, user experience, or social influence. Testing against TAM or UTAUT2-based models may also provide useful benchmarks.

This study provides significant theoretical implications for the literature on service synergy and super app adoption, especially within the Latin American context. Prior research on super apps has predominantly focused on Asian markets, with platforms such as WeChat and Alipay, which have evolved from messaging

or e-commerce applications into comprehensive service ecosystems. In contrast, Yape offers a novel perspective as it began as a digital wallet, showcasing a different development pathway toward becoming a super app. Additionally, this study situates Yape within an emerging market, such as Peru, contributing to the Synergy Theory by demonstrating that service synergies can be a decisive factor in the adoption of financial super apps.

While previous studies have investigated super app adoption using models such as the Technology Acceptance Model (TAM), Diffusion of Innovations (SAM), Unified Theory of Acceptance and Use of Technology (UTAUT2), and even Artificial Neural Networks (ANN), there has been limited exploration into how synergistic effects between services might influence the willingness to adopt additional features within a super app. This study thus fills a crucial gap by emphasizing the unique role of service synergy in digital financial services, particularly in the emerging Latin American market.

The results of this study translate into valuable recommendations for entities involved in digital transformation and the promotion of financial services in Peru and other emerging markets. For fintech and super app companies, it is recommended that they consider integrating multiple services into a single platform to create synergies that strengthen user retention. The findings reveal that compatibility (the extent to which Yape aligns with users' lifestyles) was the most significant factor influencing their willingness to use the app. This highlights the importance of designing super apps that seamlessly integrate into users' daily routines and preferences, thereby enhancing engagement.

Following compatibility, perceived fit emerged as a critical factor, indicating that users are likelier to adopt and engage with the platform when they perceive a logical and cohesive connection between Yape's core services and new functionalities. Furthermore, network externalities, service availability, and complementarity positively influenced user adoption. Interoperability between digital wallets, such as the integration of Yape with other platforms in Peru, can amplify network externalities, increasing the overall utility of the platform as more people and businesses adopt it. Service availability ensures that users can access these features at any time, fostering trust and convenience. Complementarity—offering diverse yet interlinked services, such as promotions and discounts within the app—adds additional value that enhances user engagement. Developers should focus on integrating services that naturally complement users' daily routines, such as public transport or government payments. Embedding AI to offer personalized shopping recommendations and implementing interoperable payment gateways can increase engagement and perceived value.

These insights also guide policymakers and regulators. Policies that encourage interoperability among digital payment platforms can strengthen network effects, support the adoption of digital payments, and promote financial inclusion. Financial institutions and banks could benefit from adopting super app models that offer diversified services through a single platform, promoting financial inclusion and reducing reliance on cash within the economy. This approach enhances access to financial services, enabling institutions to collect valuable data for personalized offers, thereby improving customer loyalty and satisfaction.

Conclusion

This research successfully examined the factors that positively impact the willingness to use Yape Compras and understood how service synergy—comprising vertical, horizontal, financial, and strategic synergies—contributes to this adoption. By applying the Synergy Theory, the study provides an in-depth analysis of how interactions among various services within Yape enhance the adoption of new functionalities, with a specific focus on Yape Compras. This study offers empirical evidence on the development of super apps in

Latin America and highlights the positive role these platforms can play in promoting financial inclusion in Peru. Compatibility ($\beta = 0.35$, $p < 0.001$) emerged as the most influential factor, suggesting that seamless integration with existing user habits is critical for adoption. Perceived fit ($\beta = 0.29$) also indicates that users are highly responsive to coherence between existing and new services.

The findings indicate that the willingness to use Yape Compras is positively influenced by compatibility, perceived fit, network externalities, service availability, and complementarity. These results confirm that the study's objective was met, as they reveal how these factors drive user engagement and adoption of additional features within the super app. The theoretical and practical implications presented here provide a valuable framework for future research on the evolution of super apps in emerging markets, offering insights for designing public policies and business strategies that enhance financial inclusion and support digital transformation. Unlike Rappi, which began as a logistics app, or PLIN, which focuses on transfers, Yape leverages its banking affiliation to extend credit, insurance, and retail discounts. This vertical integration differentiates Yape's synergy model from competitors.

Study Limitations

This study presents some limitations. Firstly, the sample size is relatively small, as it was obtained through non-probabilistic snowball sampling, which may affect the representativeness of the results. Accordingly, future studies may collect larger sample sizes to validate these findings. Secondly, the sample comprises only Yape users from Lima; future research may include other types of platforms and expand the geographic scope to different countries to increase the external validity of these findings further. Additionally, the sample exhibits a concentration of younger users (63% aged 18–35), which may not fully reflect the diversity of Yape's user base, particularly among older or less digitally active populations. This demographic skew may affect perceptions of service synergy and digital feature adoption. Future studies should consider stratified sampling or segment-specific analysis to validate whether the model holds across age groups. The cross-sectional nature of the data collection limits the ability to draw causal inferences between service synergy and willingness to adopt new functionalities. Although SEM helps model theoretical relationships, a longitudinal or experimental design would provide more substantial evidence of causality. Future research could track user behavior over time or apply quasi-experimental interventions to validate these effects.

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