The Critical Review of Social Sciences Studies

Online ISSN: 3006-7170
Print ISSN: 3006-7162
Volume 3, Number 3, 2025, Pages 2084 – 2100
Journal Home Page
https://thecrsss.com/index.php/Journal/about

Examining The Factors Influencing E-wallet Usage Continuity among Computer Sciences Faculty: A Theory of Planned Behavior Perspective

Mubashir Manzoor[1], Hina Saeed[2], Muhammad Ali Chaudhary[3] & Pirzada Junaid Ahmed[4]

[1]*MPhil Scholar, Faculty of Economics and Commerce, The Superior University, Lahore,*
Email: mubashirmanzoor7@gmail.com
[2]*MS Scholar, Faculty of Economics and Commerce, The Superior University, Lahore*
[3]*Lecturer, Faculty of Economics and Commerce, The Superior University, Lahore,*
Email: ali.ch@superior.edu.pk
[4]*Lecturer, Faculty of Economics and Commerce, The Superior University, Lahore,*
Email: junaid.sabri@superior.edu.pk

ARTICLE INFO

Article History:

Received:	*July*	*09, 2025*
Revised:	*August*	*12, 2025*
Accepted:	*August*	*24, 2025*
Available Online:	*September*	*02, 2025*

Keywords:

Perceived Usefulness, Peer Social Influence, Attitude toward Switching E-wallet, Intention toward E-Wallet Adoption, Perceived Security

Corresponding Author:
Mubashir Manzoor
Email:
mubashirmanzoor7@gmail.com

ABSTRACT

This study examines the most important determinants of faculty members and their sustained use of e-wallets based on the Theory of Planned Behaviour. The research addresses the influences of attitudes, perceived usefulness, perceived security, and social influence on people to adopt and to utilize e-wallets repeatedly. Using a quantitative research approach, the data was obtained using a structured questionnaire given to a sample of students in different universities in Pakistan. The number of questionnaires mailed was 400, and this gave 375 valid responses, which gave a high response rate. There was a convenience sample selection strategy, which focused on the faculty members of educational institutions. The results indicate that attitude towards e-wallets, perceived usefulness and perceived security possess a large positive effect on intention to adopt e-wallets. Peer social influence was, however, identified to have a negative influence on this intention. As well, the desire to use e-wallets is an excellent demonstration of sustained use, and the security perception is more conspicuous in the maintenance of utilization. Furthermore, the mediating role of intention between attitude, usefulness, and social influence in the adoption of e-wallet was identified. Perceived security was found to be a major moderator in the correlation between intention and continued use in the study. The findings help e-wallet companies, financial organizations, and policy-makers a lot. They can design better strategies to increase awareness and durable use of the payment system in academic experiences by considering the importance of social influence by addressing these major factors. Moreover, the research contributes to the existing literature on the topic of FinTech adoption in developing countries and provides helpful insights both to researchers and to practitioners.

Introduction

The situation in the financial services market has also changed drastically as people have phased out cash-based operations and adapted to digital and cashless solutions like online banking, e-commerce, and transactions via a smartphone (Kandpal et al., 2019). One of such inventions is e-wallets, a popular telecommunication device that one can use to upload money, make payments, perform online shopping, and transfer funds conveniently and safely (Sukaris et al., 2021). Their usage has become rampant across the world and more so during the COVID-19 pandemic when individuals were in need of contactless means of payment (Belmonte et al., 2024). In Pakistan, the success of digitalization of the state by implementing such initiatives as Raast and QR-based min-payments is a sign of progress, but the use of e-wallets is inconsistent. The impediments include a mistrust of the platforms, poor digital literacy, and perceived risk to limit the universal and long-term adoption (Supahan, 2024). Yet this is more so in the developing economies where the structure (infrastructure) and regulation, as well as consumer confidence are highly varied. The factors considered in e-wallet adoption include behavioral, technological and social factors. To gain insights on how perceived security (PS) and perceived usefulness (PU), attitude toward adoption (AWA), peer social influence (PSI), influenced the intention (IEW) and current use (CUW) of technology, there are two theories: Theory of planned behavior (TPB) and Technology Acceptance Model (TAM) (Salameh et al., 2025). It is known that positive attitudes and perceived usefulness can raise behavioral intentions, whereas concerns over the security can deter the initial and sustained usage (Lim et al., 2024). E-wallets have become popular globally (particularly Malaysia, China, and the Philippines) since they are easy to use, save the environment, and integrate with a developing cashless economy (Mohd Thas Thaker et al., 2023). There is however not much research on long term usages in developing nations, still less on the usage of educationists who are the consumers as well as agents of marketing the digital innovations. Despite the strong interest in the field of adoption, little is known about the post-adoption step, which is also an essential contributor to the long-term success of FinTech platforms (Abdul-Halim et al., 2022). In addition, the faculty members of Computer Science are technologically savvy and the ones who have the biggest influence in determining student behavior, which makes them an interesting demographic to study. Although Pakistan is increasingly becoming dependent on digital financial solutions such as e-wallets, the question is whether they will be used long term in the country. The faculty members of the private universities, especially the Computer Science departments, are a tech-savvy group which has the potential to create a broader adoption influence. Nevertheless, their longevity in the use of e-wallets is influenced by peer social influence (PSI), perceived usefulness (PU), attitude to switching (AWA), and the moderating quality of perceived security (PS).

The current literature has been preoccupied with adoption and ignored the actions that helps maintain usage in the long term. Filling this gap, the present research investigates the impact of PSI, PU and AWA on the intention of using e-wallets (IEW) and the influence of IEW on the following continuous use (CUW). It also looks at the moderation effect of PS in the relationship between IEW and CUW. Based on the Theory of Planned Behavior, this study intends to gain knowledge about the behavioral and psychological inertia on the continuity of the usage of e-wallets among faculty members of Computer Science paving the way to the consideration of policies, FinTech developers, and institutions that intend to promote long-term adoption of digital payments.

Research Questions

1. What is the influence of peer social behaviour, perceived usefulness, and Attitude towards switching to E-wallet?
2. What is the impact of intention to adopt e-wallets on the continuous use of e-wallets?
3. Does perceived security moderate the relationship between of intention to adopt e-wallets on the continuous use of e-wallets?

The current study improves our knowledge because it closes a gap in the existing body of knowledge on behavioral and social determinants of the continuous use of e-wallets (CUW) among Computer Science faculty in the universities of the private sector. On the basis of the Theory of Planned Behavior (TPB) it examines the effect of the social influence by the peers, perceived usefulness of the e-wallets, switching to e-wallets attitude, and perceived security. Computer Science faculty seem like one of the most critical populations to study continued adoption of digital payments in an academic and societal setting as early adopters and the main influencers of the technology. To a theoretical degree, the study is important due to the extension of TPB by means of adding perceived security as a mediator between intention and sustained use. In the practical condition, it can be beneficial to e-wallet providers, policymakers, and academic institutions to create specific interventions to build on trust factors and long-term usage, including the improvement of the platform usability, the influence of peers, and the concerns of security. Finally, the study will promote larger financial inclusion, digitalization, and the introduction of FinTech to the academic sector of Pakistan, which follows the current trends in digital finance globally.

Literature Review

Theoretical Underpinning of the Study

Theory of Planned Behavior (TPB) provides a theoretical foundation of the study. It is an extension of Theory of Reasoned Action (TRA), which was initially advocated by Ajzen (1980). In contrast, TRA may be considered a model that explains behaviors that are under voluntary control (Ajzen, 1980). TPB is an extension of this model that takes into consideration non-volitional factors, which can cause or influence behavior. Ajzen (1991) asserts that three fundamental predictors of behavioral intentions in TPB have been identified as attitude toward the behavior, subjective norms (SNs), and perceived behavioral control (PBC). Particular belief systems predetermine all these elements: attitude is developed by behavioral beliefs, subjective norms by normative beliefs, and perceived behavioral control by control beliefs (Aziz et al., 2018). Attitude is described as the appraisal or evaluation by an individual of whether or not to perform a certain behavior, whereas the subjective norms are the perceived social pressure or the influence of significant others. Instead, PBC is perceived to show how easy or difficult an individual feels to execute the behavior, and this, as such, is normally associated with their confidence as well as their perceived control over the action. It is, however, reported that when individuals hold a positive attitude and good subjective norms, a low sense of control can diminish the chances of undertaking the behavior (Bhattacherjee, 2008). This is similar to what Bandura and other researchers, such as Hardly and Howells, explain by arguing that the belief an individual has in his capacity to regulate his own behavior influences his actual performance of the behavior to a great extent (Fen & Sabaruddin, 2008).

Perceived Usefulness and Intention toward E-Wallet Adoption

The Perceived Usefulness (PU) also plays a significant role in the intention of the users to adopt the e-payment system (Tan, 2025). It has been stated in numerous studies that it is effective to a certain degree (Khuram et al., 2022). Chen and Aklikokou (2020) have proposed a technology acceptance model (TAM) according to which PU reveals the belief of a person that applying a specific technology would involve minimum efforts. Within the scope of e-wallets and other digital financial services, PU includes the ideas of the users of ease of understanding, simplicity, and intuitiveness (Mohd-Yusof et al., 2024). The easier people perceive the system to learn and navigate, the more positive their attitude will be and an adoption is more likely. This would especially be applicable to technology heavy services such as e-wallets since they usually deal with users who may not be very techno savvy. Complexity reduction with an intuitive interface helps to reduce the psychologically-based entry barriers, build better confidence, and create willingness to use the service (Chuchuen et al., 2022). User-friendly experience also reduces the level of mental work and enables the user to concentrate on the gains of a service instead of the complicates of operations (Gyaisey, 2023). As an example, easy operations, e.g., speedily opening e-wallet, scanning a QR code, and making a transaction, can instill feelings of competence and satisfaction, and these two constructs positively influence user intention. Some acts undergo special attention as initial experiences; such characteristics as ease of installation, user-friendly instructions, and immediate validation increase trust and create further utilization (Kumar et al., 2025). This is all the more important in developing nations such as Pakistan where a large number of people are experiencing digital finance in their lives. In this case, inclusion of local language option, ease of registration initiative, much fewer steps can result in a significant adoption. (Effendy et al., 2021). That is why e-wallet providers should focus on a user-centered design and run usability tests to make the interface easily navigable, rely on bio-identification login, have clear transaction histories, and be able to support the users vigilantly (Kumar et al., 2025). Finally, PU can be seen as one of the critical determinants of the future adoption of e-wallets and boosting user satisfaction, as well as confidence. Nevertheless, in keeping up with the literature based on TAM, ease of use should become a strategic concern to FinTech ventures wishing to increase the scaling of adoption, particularly to the emerging digital economies. Indeed, empiral data on mobile financial services and digital finance research help substantiate the idea that ease of use with the minimal interfaces and easy-access functions have a direct relationship with the intention of use.

H1: "There is a significant relationship between Perceived Usefulness and Intention toward E-Wallet Adoption".

Peer Social Influence and Intention toward E-Wallet Adoption

The effect of peer social influence as the determinant of the intention to adopt digital technologies has also consistently been identified among individuals, including e-wallets (Aji et al., 2021; Chawla & Joshi, 2019; Chen & Aklikokou, 2020). Such influence could be direct and instantaneous, and users would later be enticed to follow along with mobile payment options when they would see a benefit in the form of convenience and speed. Perceived utility as affected by social interaction is another resultant factor that contributes to the desire to use such platforms. In the Unified Theory of Acceptance and Use of Technology (UTAUT), social influence means to what extent people feel that important others, that is, peers, family, friends, or employers, think that they ought to make use of a certain (Pratiwi & Lawita, 2024). It means that people tend to integrate technology in their lives not only on judgments but also over the expectations and external confirmation of society. It is in these cultures that the positive relationship between social influence and the behavioral intention has been consistently reinforced through empirical studies

(Adiani et al., 2024).The psychological roots of this influence are related to such set of theories as Theory of Reasoned Action whose subjective norms occupy a central place, indicating that people are likely to conform to the expectations of important others (Binti et al., 2024). Technology adoption behaviors are, therefore, highly dependent on peer pressure, informational cues or social reinforcement. As an example, the more the users receive information about the advantages or comfort of using the e-wallets provided by people already using them, the more likely they will choose the technology as reliable and useful (Bakria et al., 2023). Nevertheless, this impact is not always as strong and even depends on the personal characteristics of autonomy, technological literacy, and demographic characteristics. Smaller users or those who are new to a certain app might be easier to convince by the peer advice, but more expert people would operate based on what they think is safe and useful (Khan & Abideen, 2023). Moreover, peer influence is consistent with the Diffusion of Innovations Theory, where the adoption of a new financial technology is most of the time part of a social learning activity. When their peers in the social or professional networks adopt the new technologies first, people are inspired by the success stories of the pioneers and welcome the introduction of new technology such as e-wallets more readily.

H2: "There is a significant relationship between Peer social influence and Intention toward E-Wallet Adoption".

Attitude toward switching to E-wallet and Intention toward E-Wallet Adoption

A strong direct relationship exists between lifestyle compatibility and the intent of a person to use such digital technologies as an e-wallet and this has been confirmed to be a significant factor (Nordhoff et al., 2021). It is also regarded as the initial predictor of the user tendency to accept e-wallets implying a rather close association between compatibility and the intention to use. Attitude which refers to a general evaluation, emotional response or perspective by a person towards a certain kind of behavior (e.g. using an e-wallet) is a very important aspect in the adoption of technology (Mtetwa, 2023). This self-evaluation is determined by former events and how they are perceived by an individual, or the thought-processes they have, as well as beliefs that comparisons will end up fruitful. Even more closely connected is the construct of behavioral intention, which is used as a measure of motivation and power of individuals to repeat a certain behavior. The attitude and behavioral intention collectively are major predictors of the use of technology as a reality. The Theory Acceptance Model (TAM) postulated by Mohanty (2024) suggests that there is a role of attitude mediating the perception of the users with regard to the benefit of technology and ease of use, and problem adoption. This model has obtained empirical confirmation in many industries, such as banking, m-health, education, and e-commerce (Kınış et al., 2022). As an example, the researchers focused on the population of patients who had positive perceptions of mobile health services and reported that the latter strongly affected the intent of patients to use the former (Abdul-Halim et al., 2022). Along the same line, that positive attitude towards mobile payment system, especially those viewed as innovative and reliable boosted adoption.

H3: "There is a significant relationship between Attitude towards switching to E-wallet and Intention toward E-Wallet Adoption"

Intention and Continuous Toward E-Wallet Adoption

The low rate of adoption of mobile payment among merchants in Malaysia has been due to the barriers presented by lack of adequate support and training, low promotion, and infrastructure constrains (Moghavvemi et al., 2021). Within different contexts, intention has been found as a powerful indicator of continued use of technology. As an example, according to Alsyouf and Ishak (2018) the intention to use such systems as electronic health records grows when users feel like

they have enough resources and support. Applying the concepts of digital finance, specifically mobile payment and e-wallets, both long-term intention and ongoing behavior of usage are also key determinants of long-term success. The Unified Theory of Acceptance and Use of Technology (UTAUT) hypothesizes that effort expectancy- the perception that a certain technology will be simple to use- affects the use intention and continued use of technology positively among its users (Supahan, 2024). Effort expectancy in the context of the current study is connected to the usability of the e-wallet applications, convenience in the navigation and convenience in carrying out transactions. Systems that are seen to be low-effort and lending themselves to easy learning develop more positive and enduring intentions among the user. A research conducted by Rahmayanti et al. (2021) revealed that effort expectancy has a substantial effect on continuous usage intention on digital governments. In case of e-wallets, user retention rate is much higher in case the interface is easy-to-understand, transactions are smooth, and the whole experience is convenient. Attitude is also an important component when it comes to sustained behavior by the user. The authors mentioned before, confirmed that simple design of a system that causes satisfaction to the user results in repetition of use and loyalty particularly in digital competitive markets where consumers can easily move to another provider (Bakria et al., 2023). Although the perceived benefits such as speed, integration, and convenience encourage adoption the intention is not enough to promote the long-term involvement. The constant usage indicates more trust and incorporation into the routine of the users. The connection between intention and habitual use may be mediated by effort expectancy as claimed Phan and Long (2024) Research on the mobile apps also helps to assist on that. Systems that are seen as easy to understand will cause satisfaction and the consistent use of the system. Features that increase the loyalty of the users in the case of the e-wallet are the ease of checking their balance, the ease of performing smooth transactions or account management and the ease of receiving timely confirmation (Ariffin et al., 2021). After all, the long-term posterity of e-wallet usage is directly associated with feelings of convenience and accuracy. By making the choice less complex, simplifying the processes, and improving user experience, there is a possibility to increase the adoption and retention tremendously. Thus, the service providers have to focus on user-centric design and easiness to enhance long-lasting relationships with the digital wallets.

H4: "There is a significant relationship between Intention and continuous use of E-Wallet Adoption".

Perceived Security as Moderator

Perceived Security (PS) is the trust in users in the security of the digital exchange channels, which has a strong influence on technology acceptance. E-wallets implement the technology such as Near Field Communication (NFC) to support safe transactions (Almaiah et al., 2022),but it is still up in the air due to such threats as the loss of an item, theft, or data attack. E-wallets have better chances among users in cases when they feel that their personal and financial information is sufficiently secured (Hoque et al., 2024). One of the challenges of digital wallet use that is often mentioned is the PS factor, particularly in the case of developing economies with less-developed cybersecurity infrastructures where such risks as phishing, malware, and identity theft are more dominant (Joshi & Chawla, 2024). Although other research presents positive relationships between PS and adoption others document conflicting outcomes in situations depending on the context. According to the recent studies, there are also some data on the fact that PS can play a role of a moderator between intention and ongoing utilization (Maqableh et al., 2021) which is consistent with theories like protection-motivation, or trust-risk frameworks. Low perceived security can weaken the intention-usage relationship and therefore causes the abandonment of transactions, whereas, high level of perceived security can foster regular transactions (Khan & Abideen, 2023). Thus, creating

safe systems by adding such elements as encryption, multi-factor authentication, and real-time fraud alerts and clear response procedures is an important step. Such actions both develop trust and transform the intention of adoption into long-term use.

H5: "Perceived security significantly moderates the relationship intention and continuous use of E-Wallet Adoption."

Mediating role of intention toward E-wallets adoption

One of the factors that determine technology acceptance and subsequent usage is Perceived Usefulness (PU) and it forms the major part in the Technology Acceptance Model (TAM). As Park and Kim (2023) state, PU is the amount of belief that individuals have that the utilisation of a system makes them better performers. With regard to e-wallets, the PU is associated with the perceived ease of use, time and task management as well as the improved transaction ability. Research findings are constant to indicate that users tend to use e-wallet more when they perceive them to be useful in overcoming financial activities (Gómez-Hurtado et al., 2024). In the case of developing countries, the convenience of e-wallet money handling and transactions has emerged as a key factor in the continuous usage of e-wallets (Tanjung et al., 2025). Peer Social Influence (PSI) in the Unified Theory of Acceptance and Use of Technology (UTAUT) explains the effects of the social network upon the technology-based decisions of people. Such factors are felt more in collectivistic cultures, where peer actions have a greatly bearing on individual decisions (Salah et al., 2024). It has been found that the more people are perceived to be verifying and using e-wallets by peers, the more people become inclined and continuing to adopt its use (Soni et al., 2025). Faculty members who have seen the colleagues successfully using e-wallets are more likely to believe that they are reliable and helpful, which supports using e-wallets and diminishes the doubts about security or difficulty of use (Arora et al., 2023). Attitude Toward Switching to E-Wallets signifies a positive or a negative assessment of the usage of the technology by the individual. The Theory of Planned Behavior (TPB) identifies attitude as one of the major antecedents of behavioral intention. Past satisfaction, trust and perceived ease of use frequently leads to positive attitude. According to evidence, the propensity to use e-wallets significantly shows an impact on positive attitude regarding higher education settings where faculty members are intensively involved with technology ((Tan et al., 2024). These perceived usefulness and reliability are the functions of such attitudinal factors, so it works as a very powerful indicator of constant usage.

H6a: "Intention toward E-Wallet adoption significantly mediates the relationship between Perceived Usefulness and continuous use of E-Wallet"

H6b: "Intention toward E-Wallet adoption significantly mediates the relationship between Peer social influence and continuous use of E-Wallet."

H6c: "Intention toward E-Wallet adoption significantly mediates the relationship between Attitude and continuous use of E-Wallet."

Theoretical Framework

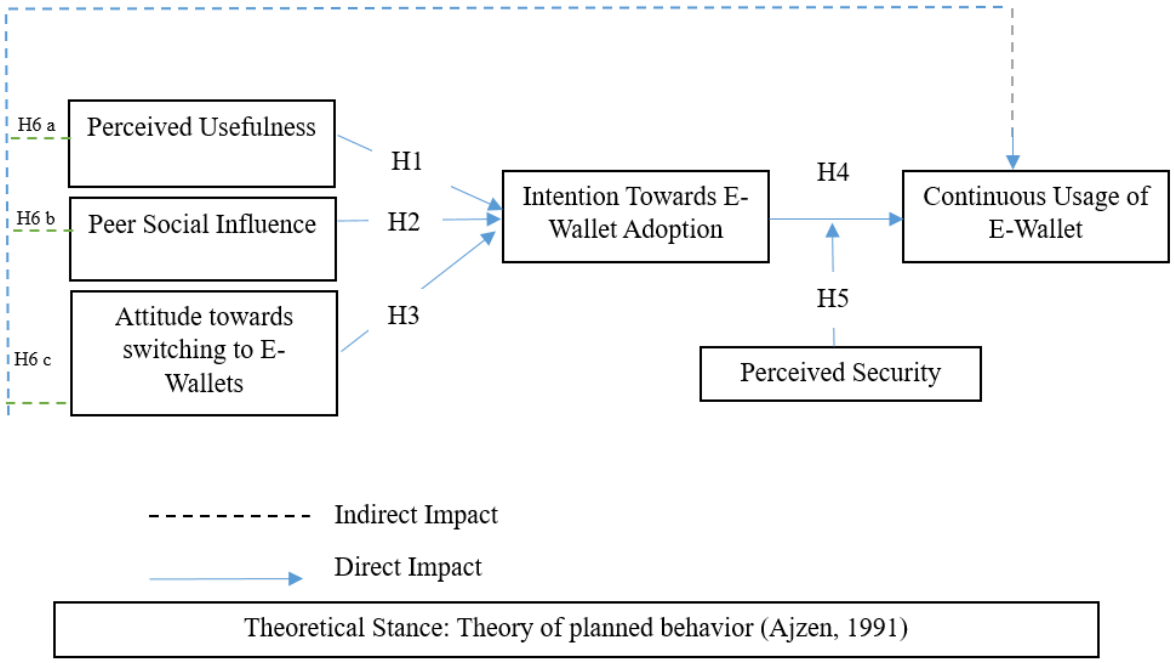

Figure 1: Theoretical Framework

Methodology

The research under consideration has a deductive research approach, which implies the use of the theories that exist with the aim of testing the hypotheses regarding the perceived usefulness, attitude, intention, security, and social influence in the sphere of the application of e-wallet. A structured survey research approach was used since it is more quantitative, as it allows a large sampling of data, and objective measures that are appropriate in investigating behavioral patterns. The mono-method design with a positivist philosophy was used to collect the data, and the results will be consistent, replicable, and statistically valid. The survey was carried out in a cross-sectional way, which means that it measured the attitudes and behaviors of faculty members only at one time. Computer Science faculty in the Lahore region of Pakistan were selected as the target population because of their technological orientation and influence as a faculty in the academic setting of the area in several private universities in Lahore (Khuram, 2024). A convenient sampling method was used to collect the answers of 375 out of a target sample of 400 participants through self-administered online questionnaires using tools such as Google Forms and institutional emails. The tool incorporated demographic questions and construct-specific ones, with the scale amounting to a 5-point Likert. The study used Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS, which is viable in complex models and non-normal data to conduct data analysis. The measurement model was examined based on Cronbach's alpha, composite reliability, AVE, and Fornell-Larcker on the one hand, and the structural model using the path coefficient and bootstrapping (5,000 resamples) to test the significance of the proposed relationship on the other hand. This comprehensive method gives better results, and the information obtained gives good comprehension of the factors affecting e-wallet ownership among the computer science faculties in the private universities in Pakistan. The study has adapted the questionnaire from a previous study. Five items are used to measure PU from (Yang et al., 2021). Three items are used to peer social influence from (Belmonte et al., 2024). Four items are used to measure attitude (Nguyen & Nguyen, 2022). Six items are used to measure intention from (Yang

et al., 2021). Four items are used to measure continuous use of E-wallet adoption from (Tan et al., 2024). Lastly, three items are used to measure perceived security from (Belmonte et al., 2024).

Results

Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to test the hypotheses, because PLS-SEM is applicable in models that are complex and has gained application in business research and social science research. It was chosen because the SmartPLS software can process small and non-normal data sets and is user friendly (Hair et al., 2019). Being a technique of the second generation, PLS-SEM allows explaining and predicting latent constructs, which is a good approach to theory development, especially in the research based on the social cognitive theory. Bootstrapping technique was used to evaluate factor loading, reliability, construct and significance of original hypothesis relationships. Findings in the model results indicated that there are strong relationships between the constructs. As a measure to mitigate the risk of a common method bias, the variance inflation factors (VIF) were calculated following the instructions of Kock (2015), which were less than 5, thus there is no sign of multicollinearity in the research.

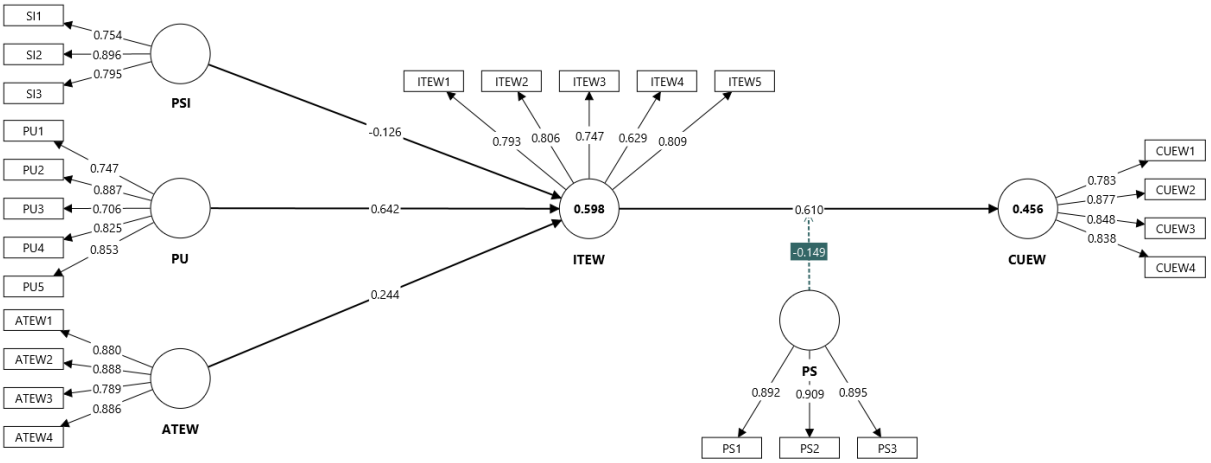

Figure 2: Measurement Model Assessment

The reliable and valid nature of the constructs was determined prior to the hypothesis testing by the use of the measurement model (see Fig. 2). Factor loadings, Composite Reliability (CR) and Average Variance Extracted (AVE) were considered to determine convergent validity. According to Dash and Paul (2021), only those items with better than 0.60 loadings were kept corresponding to satisfactory reliability, whereas the usage of those below this cut-off was forbidden. This was the case of most retained items, thus testifying their reliability. Also, as Hair et al. (2021) recommend, the values of CR were above 0.70, and the ones of AVE were above 0.50, which means that the constructs are highly convergent and have sufficient internal consistency.

Table 1: Convergent Validity

Variables	Items	Loadings	VIF	Alpha	CR	AVE
Attitude towards switching to E-Wallets	ATEW1	0.88	3.181	0.885	0.903	0.743
	ATEW2	0.888	3.291			
	ATEW3	0.789	1.744			
	ATEW4	0.886	2.308			
Continuous Usage of E-Wallet	CUEW1	0.783	1.851	0.858	0.867	0.701
	CUEW2	0.877	3.193			

	CUEW3	0.848	2.938			
	CUEW4	0.838	1.968			
Intention Towards E-Wallet Adoption	ITEW1	0.793	2.901	0.817	0.843	0.577
	ITEW2	0.806	2.994			
	ITEW3	0.747	1.5			
	ITEW4	0.629	1.31			
	ITEW5	0.809	1.602			
Perceived Security	PS1	0.892	1.912	0.884	0.926	0.808
	PS2	0.909	3.827			
	PS3	0.895	3.463			
Perceived Usefulness	PU1	0.747	1.622	0.884	0.926	0.808
	PU2	0.887	3.837			
	PU3	0.706	2.284			
	PU4	0.825	2.3			
	PU5	0.853	2.698			
Peer Social Influence	PSI1	0.754	1.385	0.75	0.775	0.668
	PSI2	0.896	1.907			
	PSI3	0.795	1.597			

Standardized factor loadings, Cronbachs Alpha, Composite Reliability (CR), Average variance extracted (AVE) and Variance Inflation Factor (VIF) were used to estimate the measurement model. The result was that all constructs proved above the set marks, which proved the reliability and validity of the model. The four items of the Attitude Towards E-Wallets (ATEW) scale had good loading (0.789 to 0.888) as well as positive internal consistency (0.885) and convergent validity (0.903, AVE = 0.743). VIF values were of less than 5 that would show there was no multicollinearity. A high reliability value with item loadings of 0.783-0.877 indicated a comprehensible reliability of Continuous Usage of E-Wallet (CUEW) as well, with acceptable measurements (alpha = 0.858, CR = 0.867, AVE = 0.701). In Intention Towards E-Wallet Adoption (ITEW), five items were retained; one item (ITEW4) had a fairly small loading of 0.629, but was well above 0.7 whereas the other items varied between 0.747 and 0.809. The construct maintained satisfactory reliability (alpha, 0.817, Cronbach coefficient alpha, 0.843 and AVE, 0.577). The factor loadings on Perceived Security (PS) were high (> 0.892), and its internal consistency and convergent validity were sufficiently high, as well (alpha = 0.884, estimated CR = 0.926, and AVE = 0.808), indicating that more than 80 percent of the variance is explained. Equally, there was a good item loading (0.705887) in Perceived Usefulness (PU), which was found to be reliable (alpha = 0.884; CR = 0.926) and had perfect convergent validity (AVE = 0.808). Finally, the psychometric qualities of Peer Social Influence (PSI) were tolerable (alpha = 0.750, composite reliability = 0.775, average variance explained = 0.668), and VIF was less than 5 in every construct, precluding the issue of multicollinearity. In general, the measurement model showed an acceptable level of reliability and validity, which is why it is worth continuing with the analysis of structural models on the approach of Structural Equation Modelling (SEM).

Discriminant Validity

Discriminant validity was assessed using the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio to ensure the constructs were distinct from one another. Both methods confirmed that each latent construct measured unique aspects not captured by the others in the model (Hair et al., 2014).

Table 2: HTMT Ratios

	ATEW	CUEW	ITEW	PS	PU	SI
ATEW						
CUEW	0.850					
ITEW	0.748	0.702				
PS	0.195	0.426	0.293			
PU	0.869	0.734	0.853	0.217		
SI	0.544	0.458	0.471	0.363	0.781	

The discriminant validity among a number of conceptually related constructs was tested through use of the HeterotraitMonotrait (HTMT) ratio. The HTMT value between the Attitude Toward E-Wallets and Continuous Usage of E-Wallets was 0.85 a bit above the conservative estimate of 0.85 yet below the acceptable limit of 0.90 which clearly shows that despite the correlation between the constructs, these are not redundant. Again, the HTMT ratio between E-Wallet Intention Adoption and Continuous use was 0.702, affirming the fact that the two constructs are conceptually different but correlated to the same effect as they relate to the e-wallet behavior. On the other hand, low value of HTMT of 0.293 between Perceived Security and Continuous Usage indicates that the feeling of security does not directly result into the usage behavior. In addition, the magnitude of the HTMT (0.217) between Perceived Usefulness and Perceived Security implies that the practical advantages of e-wallets and worry about security are not confused in the minds of its users. Finally, the HTMT value between Peer Social Influence and Perceived Usefulness stood at 0.781 which means that although the opinions of peers and the usefulness to a person could be dependent on each other, the constructs have no relationship per se. In general, any values of HTMT were less than the critical value of 0.90 and most of them were less than 0.85, thereby demonstrating good discriminating validity of every construct.

Table 3: Fornell-Larcker Criteria

	ATEW	CUEW	ITEW	PS	PU	SI
ATEW	**0.862**					
CUEW	0.749	**0.837**				
ITEW	0.675	0.627	**0.76**			
PS	0.128	0.38	0.273	**0.899**		
PU	0.757	0.629	0.749	0.199	**0.807**	
SI	0.44	0.369	0.378	0.288	0.617	**0.817**

As has been recommended by Fornell and Larcker, the table 3 was compared with each off-diagonal correlation coefficient against the square root of the Average Variance Extracted (AVE) of each construct, which is on the diagonal (Khuram et al., 2022). The objective of this comparison is to evaluate the discriminant validity. According to the table, the square roots of the AVE of the Attitude, Continuous Use, Intention, Perceived Security, Perceived Usefulness, and Social Influence were larger than their respective inter-construct correlation. This evidences that every latent variable is highly connected with its own measurement items than with another construct measurement item, thus, enhancing discriminant validity. Also, Table 2 substantiates the fact that all HTMT ratios were lower than the suggested value of 0.90 as suggested by Vinzi, Chin, Henseler and Wang (2010). This lends more credence to the finding that the constructs in the research are empirically differentiated to each other.

Structural Model Assessment

In Partial Least Squares Structural Equation Modeling (PLS-SEM), assessing the structural model is essential to evaluate the hypothesized relationships between latent variables within the theoretical framework. Once the measurement model confirms that the constructs are both valid and reliable, the next step involves examining the structural model to determine the strength, direction, and statistical significance of the path relationships. This is typically done by analyzing path coefficients (β), along with their corresponding t-values and p-values, which are commonly derived through a bootstrapping procedure.

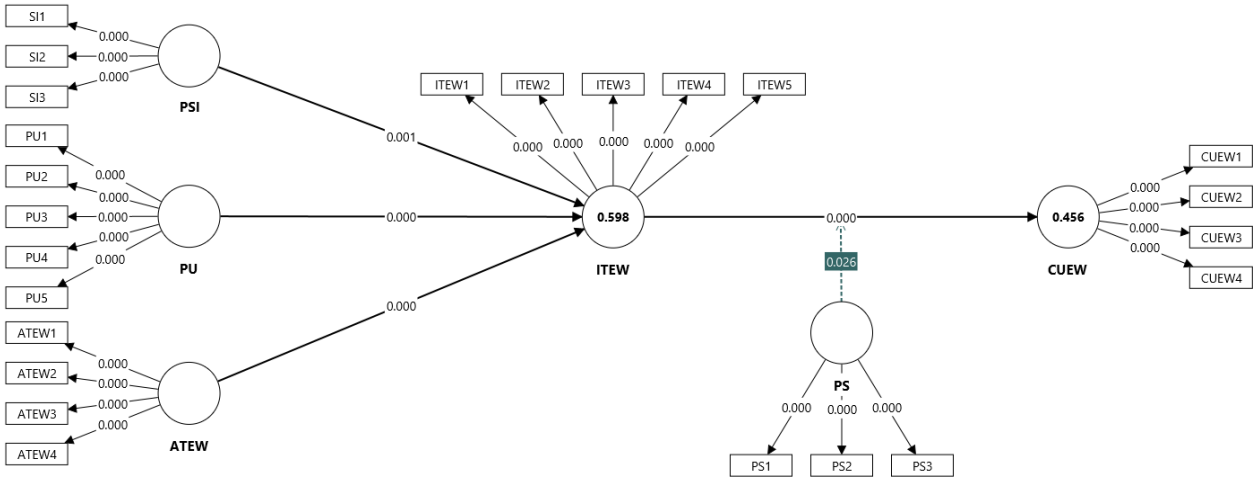

Figure 3: Structural Model Assessment

The structural model was evaluated to test the relationships between the independent and the dependent variable. This was analyzed both directly and latently, that is, the effects of Perceived Security on Intention which in turn influences Continuous Usage. Also, the model established the moderating role of Perceived Security on the correlation between Intention and Continuous Usage. Such an in-depth analysis will aid in finding the most driving factors that influence the choices of the users, will reveal meaningful pathways within the data, and will discover any possible moderating and mediating effects. In general, the structural model gives a strong framework to test theoretical assumptions and comprehend key determinants of e-wallets adoption and its prolonged use.

Table 4: Path Analysis

	Beta	STDEV	T statistics	P values	Decision
ATEW -> ITEW	0.244	0.060	4.090	0.000	Supported
ITEW -> CUEW	0.610	0.043	14.169	0.000	Supported
PS -> CUEW	0.209	0.048	4.342	0.000	Supported
PSI -> ITEW	-0.126	0.039	3.206	0.001	Partially Supported
PU -> ITEW	0.642	0.065	9.808	0.000	Supported

The results revealed that a positive attitude toward e-wallets significantly and positively influences an individual's intention to adopt them ($\beta = 0.244$, $p < 0.001$). Intention emerged as a key determinant of Continuous Usage of E-Wallets (CUEW), indicating a strong influence on sustained user behavior ($\beta = 0.610$, $t = 14.169$, $p < 0.001$). Furthermore, higher levels of Perceived Security were found to significantly contribute to continued usage ($\beta = 0.209$, $t = 4.342$, $p < 0.001$). Among all predictors, Perceived Usefulness had the greatest impact on users' intention to adopt e-wallets ($\beta = 0.642$, $t = 9.808$, $p < 0.001$), reinforcing the idea that users are more likely to

adopt technologies they find beneficial. Interestingly, Peer Social Influence (PSI) demonstrated a negative relationship with intention (β = −0.126, t = 3.206, p = 0.001), suggesting that higher peer pressure may reduce the likelihood of e-wallet adoption. This could be attributed to cultural or psychological tendencies toward autonomy among respondents.

Table 5: Indirect Relationships

	Beta	STDEV	T statistics	P values	Decision
PSI -> ITEW -> CUEW	-0.077	0.024	3.211	0.001	Partially Supported
PU -> ITEW -> CUEW	0.392	0.035	11.261	0.000	Supported
ATEW -> ITEW -> CUEW	0.149	0.044	3.355	0.001	Supported

The analysis of the indirect effects mediated is found in Table 5. A noteworthy serial association was discovered between Perceived Usefulness and Continuous Usage of E-Wallets (CUEW) through Intention toward E-Wallet Adoption (ITEW) with path coefficient of 0.392. On the same note, incidentally it strongly mediated the connection between Attitude towards E-wallets (ATEW) and CUEW (beta = 0.149, t = 3.355, p = 0.001) and also peer social influence (PSI) and CUEW (beta = -0.077, t = 3.211, p = 0.001). These results imply that the intentions of the users are a very important mediating factor and they are the major determinant of how the initial perception and social factors, will influence the continued use of e-wallet application.

Table 6: Moderation Effects

	Beta	STDEV	T statistics	P values	Decision
PS x ITEW -> CUEW	0.149	0.067	2.221	0.026	Supported

As presented in Table 6, the interaction term between Perceived Security and Intention Toward E-Wallet Adoption (PS × ITEW) has a statistically significant effect on Continuous Usage of E-Wallets (CUEW), with a path coefficient of β = 0.149, t = 2.221, and p = 0.026. The positve direction of this interaction suggests that Perceived Security moderates the relationship between Intention and Continuous Usage. As illustrated in Figure 3, individuals who place greater importance on security may require a stronger level of intention to continue using e-wallets or may rely more heavily on their perception of security than on their behavioral intention. This indicates that higher perceived security can dampen the strength of the intention-behavior link, potentially shifting the driver of usage behavior from intention to security concerns.

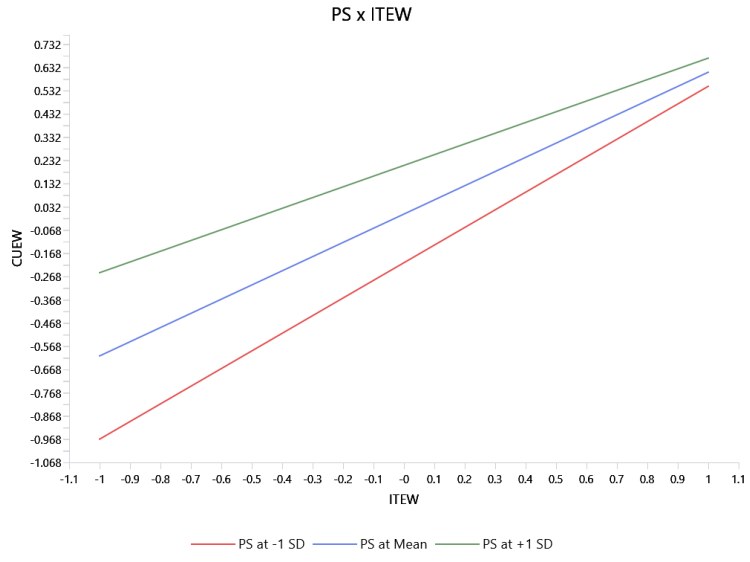

Figure 4: Moderation Effect

Discussion and Implementations

This paper has replicated and expanded on previous studies which have been done on technology acceptance by testing the issues that determine the adoption of the technology and a continuous usage of e-wallets, paying special attention to perceived security as the moderating variable. To study the effect of attitudes towards e-wallets (ATEW), perceived usefulness (PU), and peer social influence (PSI) on the intention to adopt e-wallets (ITEW) and their frequent application of e-wallets (CUEW) once they use it, the research was based on the Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM). Besides, the paper focused on the moderating position of perceived security (PS) on the relationship involving intention and sustained usage. The study background was well-chosen in accordance to present-day digital payment rates of adoption and the model was proven to be true in structural equation modeling practices. It was found that the perceived usefulness was significantly and positively related to the intention toward e-wallets adoption (0.642, $p < 0.001$), which means that people are mostly interested in e-wallets due to their utility. Intention was also significantly influenced by attitude towards e-wallets (beta = 0.244, $p < 0.001$), which is supported by TPB where it insists on attitudes as a major factor. To the surprise of researchers, peer social influence was a weak negative predictor of intention (beta = -0.126, $p = 0.001$), indicating that users might be less susceptible to the impact of others when they make choices regarding the adoption of digital financial tools or do it because of privacy concerns or they like to make independent decisions. Intention to adopt captured the strongest predictive force of further use (beta = 0. 610, $p < 0. 001$), appreciating the centrality of behavioral intention in the acceptance of a technology. Page 16 of 16 Both mediation analysis and the corresponding plots indicated that intention had significant mediation effect on the relationship between PU (beta = 0.392), ATEW (beta= 0.149), and PSI (beta= -0.077) and continued usage. To reduce the exposure to all users, theoretically, higher levels of confidence are required among those who perceive security priorities, which appear in the moderation analysis with a significantly positive interaction with the intention (beta = 0.149, $p = 0.026$), meaning that those who monetize security prioritize need more confidence to translate their intention into actual further use. Finally, the study confirms the eminent significance of perceived usefulness, favorable perceptions and favorable behavioral intentions with regard to promoting lasting e-wallet use. It further also notes a more subtle role that perceived security can play, not in influencing directly further usage but as a moderator that can diminish the intensity of intention in the case that security is a major concern.

Limitations of the study and Future Recommendations

The findings highlight that although functional benefits and satisfaction attributed by the users continue to be in the front seat of adoption, emotional and cognitive perceptions like security cannot be ignored. This study is however not devoid of gaps. The information was of a cross-sectional nature and, thus, there was no possibility of making causal statements overtime. The sample was geographically restricted, which can problem the possibility to generalize the study results to other cultural or economic settings. Also, all behavioral measures were self-reported and can mean bias or overestimation. These weaknesses could be addressed in future research by using longitudinal designs, extending the sample to multiple countries, and by summarizing a longer time with behavioral tracking data to provide a higher level of objectivity. Additional moderators could also be examined in future research: trust, user experience design, or differences in demographics are some of the possible metrics that can be used to diversify the knowledge of the dynamics of digital payment adoption.

References

1. Abdul-Halim, N.-A., Vafaei-Zadeh, A., Hanifah, H., Teoh, A. P., Nawaser, K. J. Q., & quantity. (2022). Understanding the determinants of e-wallet continuance usage intention in Malaysia. *56*(5), 3413-3439.
2. Adiani, W., Aprianingsih, A., Fachira, I., Debby, T., Maharatie, A. P. J. C. B., & Management. (2024). Social influence, financial benefit, and e-wallet multi-brand loyalty: The mediating impact of commitment. *11*(1), 2290228.
3. Aji, H. M., Berakon, I., & Riza, A. F. J. J. o. I. M. (2021). The effects of subjective norm and knowledge about riba on intention to use e-money in Indonesia. *12*(6), 1180-1196.
4. Ajzen. (1980). Understanding attitudes and predictiing social behavior.
5. Ajzen. (1991). The Theory of planned behavior.
6. Almaiah, M. A., Al-Rahmi, A., Alturise, F., Hassan, L., Lutfi, A., Alrawad, M., . . . Aldhyani, T. H. J. E. (2022). Investigating the effect of perceived security, perceived trust, and information quality on mobile payment usage through near-field communication (NFC) in Saudi Arabia. *11*(23), 3926.
7. Alsyouf, A., & Ishak, A. K. J. I. J. o. E. H. (2018). Understanding EHRs continuance intention to use from the perspectives of UTAUT: Practice environment moderating effect and top management support as predictor variables. *10*(1-2), 24-59.
8. Ariffin, S. K., Abd Rahman, M. F. R., Muhammad, A. M., & Zhang, Q. J. S. J. o. M.-E. (2021). Understanding the consumer's intention to use the e-wallet services. *25*(3), 446-461.
9. Arora, Amit, Kumar, Panchal, Ankit, Gupta, . . . Sharma, D. J. I. J. o. E. N. M. (2023). Digital payment apps: perception and adoption-a study of higher education students. *14*(1-2), 122-138.
10. Bakria, M. H., Almansoori, K. K. S. M., Azlan, N. S. M. J. G. B., & Review, F. (2023). Determinants intention usage of Islamic e-wallet among millennials. *28*(1), 11-32.
11. Belmonte, Z. J. A., Prasetyo, Y. T., Cahigas, M. M. L., Nadlifatin, R., & Gumasing, M. J. J. J. A. P. (2024). Factors influencing the intention to use e-wallet among generation Z and millennials in the Philippines: An extended technology acceptance model (TAM) approach. *250*, 104526.
12. Binti, Azmee, Dalmie, Shahrul, & Suryati. (2024). Factors Influencing the Intention to Use E-Wallet by using Theory of Reasoned Action (TRA) & Technology Acceptance Model (TAM): Evidence from Consumer in Malaysia. *13*(1).
13. Chawla, D., & Joshi, H. J. I. J. o. B. M. (2019). Consumer attitude and intention to adopt mobile wallet in India–An empirical study. *37*(7), 1590-1618.
14. Chen, L., & Aklikokou, A. K. J. I. J. o. P. A. (2020). Determinants of E-government adoption: testing the mediating effects of perceived usefulness and perceived ease of use. *43*(10), 850-865.
15. Effendy, F., Hurriyati, R., & Hendrayati, H. (2021). *Perceived usefulness, perceived ease of use, and social influence: intention to use e-wallet.* Paper presented at the 5th Global Conference on Business, Management and Entrepreneurship (GCBME 2020).
16. Gómez-Hurtado, C., Gálvez-Sánchez, F. J., Prados-Peña, M. B., & Ortíz-Zamora, A. F. J. S. J. o. M.-E. (2024). Adoption of e-wallets: trust and perceived risk in Generation Z in Colombia.
17. Gyaisey, A. (2023). *The Effect of Mobile Payment Technology Fraud Perception on Customer Intention to Continously Use the Service: A Study Moderated by Generation X, Y, and Z from a Developing Economy.* University of Ghana,
18. Hoque, M. E., Susanto, P., Shah, N. U., Khatimah, H., & Mamun, A. A. J. I. J. o. E. M. (2024). Does perceived behavioral control mediate customers' innovativeness and

continuance intention of e-money? The moderating role of perceived risk and e-security. *19*(12), 4481-4502.
19. Joshi, H., & Chawla, D. J. I. J. o. B. M. (2024). Impact of security on wallet adoption: multiple and serial mediating roles of trust and attitude and gender as a moderator. *42*(5), 870-896.
20. Kandpal, V., Mehrotra, R. J. I. J. o. E., & Business. (2019). Financial inclusion: The role of fintech and digital financial services in India. *19*(1), 85-93.
21. Khan, W. A., & Abideen, Z. U. J. F. B. J. (2023). Effects of behavioural intention on usage behaviour of digital wallet: the mediating role of perceived risk and moderating role of perceived service quality and perceived trust. *9*(1), 73.
22. Kınış, F., Tanova, C. J. J. o. T., & Research, A. E. C. (2022). Can I trust my phone to replace My wallet? The determinants of E-wallet adoption in North Cyprus. *17*(4), 1696-1715.
23. Kumar, Ajay, Haldar, Piali, Chaturvedi, & Sharad. (2025). Factors influencing intention to continue use of e-wallet: mediating role of perceived usefulness. *22*(1), 45-61.
24. Lim, WeiLee, Munikrishnan, Uma, Thevi, Leong, . . . Security, C. (2024). Do you want a secure e-wallet? Understanding the role of risk and security in e-wallet continuance intention. *32*(3), 304-321.
25. Maqableh, M., Hmoud, H. Y., Jaradat, M., & Masa'deh, R. e. J. H. (2021). Integrating an information systems success model with perceived privacy, perceived security, and trust: the moderating role of Facebook addiction. *7*(9).
26. Moghavvemi, S., Mei, T. X., Phoong, S. W., Phoong, S. Y. J. J. o. R., & Services, C. (2021). Drivers and barriers of mobile payment adoption: Malaysian merchants' perspective. *59*, 102364.
27. Mohanty, N. J. I. J. o. E. B. (2024). Investigating the impact of perceived risk of non-adoption on internet banking adoption. *4*(4), 319-338.
28. Mohd Thas Thaker, H., Subramaniam, N. R., Qoyum, A., Iqbal Hussain, H. J. I. J. o. F., & Economics. (2023). Cashless society, e-wallets and continuous adoption. *28*(3), 3349-3369.
29. Mohd Yusof, M. A. R., Ismail, M. N. I., Mazlan, N., Abd Aziz, A., Mohd Aslin, M. A. J. J. o. T., Hospitality, & Arts, C. (2024). Unlocking e-wallet adoption: exploring the influence of functional barriers from a generation X perspective. *16*(1), 802-819.
30. Mtetwa, T. (2023). *Digital banking strategy and financial performance of banks in Zimbabwe.*
31. Nguyen, H. T., & Nguyen, N. T. J. P. J. o. M. S. (2022). Identifying the factors affecting the consumer behavior in switching to E-wallets in payment activities. *25*(1).
32. Nordhoff, S., Malmsten, V., van Arem, B., Liu, P., Happee, R. J. T. r. p. F. t. p., & behaviour. (2021). A structural equation modeling approach for the acceptance of driverless automated shuttles based on constructs from the Unified Theory of Acceptance and Use of Technology and the Diffusion of Innovation Theory. *78*, 58-73.
33. Park, D. Y., & Kim, H. J. S. (2023). Determinants of intentions to use digital mental healthcare content among university students, faculty, and staff: motivation, perceived usefulness, perceived ease of use, and parasocial interaction with AI Chatbot. *15*(1), 872.
34. Phan, & Long. (2024). Factors affecting Vietnamese people's intention to use E-wallet.
35. Pratiwi, A., & Lawita, N. F. (2024). *Analysis Of Factors Affecting Intention Sustainability Of E-Wallet Fund Adoption In Post Batam City Covid-19 Era Using The UTAUT2 Model.* Paper presented at the Sixth International Conference on Applied Economics and Social Science (ICAESS 2024).
36. Rahmayanti, P. L. D., Widagda, I., Yasa, N. N. K., Giantari, I., Martaleni, M., Sakti, D., . . . Science, N. (2021). Integration of technology acceptance model and theory of reasoned action in pre-dicting e-wallet continuous usage intentions. *5*(4), 649-658.

37. Salah, O. H., Ayyash, M. M. J. V. J. o. I., & Systems, K. M. (2024). Understanding user adoption of mobile wallet: extended TAM with knowledge sharing, perceived value, perceived privacy awareness and control, perceived security.
38. Salameh, A., Hayat, N. J. J. o. S., & Management, T. P. (2025). Exposing the youth continuous use intention for e-wallet use in Saudi Arabia: the interaction and expectation-confirmation theory.
39. Soni, H., Shyamsunder, C., Singh, S., & Srinivas, V. J. Q. A. J. (2025). The impact of mobile-wallet factors on customer satisfaction and customer loyalty: A study of B-schools in Hyderabad. *5*(1).
40. Sukaris, S., Renedi, W., Rizqi, M. A., & Pristyadi, B. (2021). *Usage behavior on digital wallet: perspective of the theory of unification of acceptance and use of technology models.* Paper presented at the Journal of Physics: Conference Series.
41. Supahan, S. B. (2024). *Developing an integrated e-wallet continuance model for the Malaysian digital economy*. Swinburne,
42. Tan. (2025). Navigating trust in mobile payments: Using necessary condition analysis to identify must-have factors for user acceptance. *41*(5), 3325-3339.
43. Tan, Siow-Hooi, Chong, Lee-Lee, Ong, & Hway-Boon. (2024). Continuance usage intention of e-wallets: Insights from merchants. *4*(2), 100254.
44. Tanjung, S. M., Sabrina, H., Lubis, A. J. S. S. A. J. o. M., & Research. (2025). The Effect of Perceived Usefulness and Trust on Decisions to Use E-Wallet Dana in Medan Selayang District. *3*(2), 60-74.
45. Yang, M., Mamun, A. A., Mohiuddin, M., Nawi, N. C., & Zainol, N. R. J. S. (2021). Cashless transactions: A study on intention and adoption of e-wallets. *13*(2), 831.