

Beyond Technology Acceptance: Integrating Convenience, Security, and Reward to Explain E-Wallet Adoption among Generation Z in Malaysia

Mohammad Tahir Zainuddin^{1*}, Wan Nur Fazni Wan Mohamad Nazarie², Ratna Roostika³, Nofrizal Nofrizal⁴

^{1,2}Islamic Business and Management Research Cluster, Islamic Finance and Wealth Management Institute (IFWMI), Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia (USIM), Nilai, 71800, Negeri Sembilan, Malaysia.

³Faculty of Business and Economics, Universitas Islam Indonesia (UII), Yogyakarta, 55283, Indonesia.

⁴Faculty of Economics and Business, Universitas Lancang Kuning, Pekanbaru, Riau 28266, Indonesia.

***Corresponding Author**

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ABSTRACT

The rapid digitalisation of financial services has accelerated the adoption of electronic wallets (e-wallets), particularly among Generation Z, who are recognised as early adopters of digital technologies. Despite the growing popularity of e-wallets in Malaysia, empirical evidence regarding the factors that influence their adoption remains limited. This study examines the impact of digital marketing on e-wallet adoption among Generation Z by investigating the roles of convenience, security, reward, perceived usefulness, and perceived ease of use. The research is grounded in the Technology Acceptance Model (TAM), which provides a theoretical foundation for explaining users' acceptance of digital payment technologies. A quantitative research approach was employed using a structured questionnaire administered to Generation Z consumers in Malaysia. A total of 367 valid responses were collected and analysed using IBM SPSS through descriptive statistics, reliability analysis, factor analysis, Pearson correlation analysis, and multiple regression analysis. The findings demonstrate that convenience, reward, perceived usefulness, and perceived ease of use exert significant positive effects on e-wallet adoption, with perceived usefulness and convenience emerging as the strongest predictors of users' behavioural intention (e-Wallet adoption), while security produced insignificant results. The results indicate that effective digital marketing strategies enhance consumers' perceptions of the functionality, usability, and trustworthiness of e-wallet services, thereby encouraging greater adoption. These findings provide practical insights for digital payment providers, financial institutions, marketers, and policymakers seeking to accelerate Malaysia's transition towards a cashless economy through targeted digital marketing initiatives and customer-centred service innovations. From a theoretical perspective, this study extends the application of the Technology Acceptance Model (TAM) within the Malaysian digital payment context by integrating marketing-related determinants that influence technology adoption among Generation Z. The study contributes to the expanding literature on digital payment adoption and offers evidence-based recommendations for strengthening digital financial inclusion and promoting sustainable cashless payment ecosystems.

Keywords: Digital marketing; E-wallet adoption; Generation Z; Technology Acceptance Model; Digital payment; Malaysia.

INTRODUCTION

The rapid advancement of digital technologies has transformed the global financial landscape, accelerating the shift from traditional cash-based transactions to digital payment systems. Financial technology (FinTech) innovations, particularly electronic wallets (e-wallets), have become integral to modern payment ecosystems by offering consumers greater convenience, efficiency, accessibility, and transaction security. The widespread adoption of smartphones, high-speed internet, and e-commerce has further strengthened the use of digital payment platforms, enabling governments and financial institutions to promote financial inclusion and cashless economies. Recent evidence indicates that digital financial services continue to expand globally, driven by technological innovation and changing consumer payment preferences (Jamaludin et al., 2024; Yang & Shi, 2024). Alongside these technological developments, digital marketing has emerged as an important catalyst for promoting digital payment adoption. Through social media advertising, mobile applications, personalised promotions, cashback campaigns, and influencer marketing, organisations are increasingly able to enhance consumer awareness, communicate product value, and strengthen trust in digital financial services (Zainuddin, 2016). Previous studies have shown that consumers are more likely to adopt e-wallets when they perceive the technology as useful, easy to use, secure, and beneficial, suggesting that effective digital marketing enhances both technological perceptions and behavioural intentions (Foo & Kaur, 2024). Malaysia represents one of the fastest-growing digital payment markets in Southeast Asia, supported by the government's digital transformation agenda, increasing smartphone penetration, expanding e-commerce activities, and the widespread implementation of cashless payment initiatives such as DuitNow QR. Among Malaysian consumers, Generation Z has emerged as one of the most influential user groups because of their high level of digital literacy, extensive smartphone usage, and strong engagement with online platforms (Tjiptono et al., 2020). As digital natives, this generation is generally more receptive to innovative financial technologies; however, their adoption decisions remain influenced by various technological and marketing-related factors (Jamaludin et al., 2024; Foo & Kaur, 2024). The Technology Acceptance Model (TAM) remains one of the most widely adopted theoretical frameworks for explaining consumers' acceptance of new technologies (Marangunić & Granić, 2015). The model proposes that perceived usefulness and perceived ease of use are the primary determinants of technology adoption (Davis, 1989). Although TAM has been extensively applied in studies of digital payment technologies, contemporary research suggests that additional factors, including convenience, security, reward, and trust, play increasingly important roles in shaping consumers' behavioural intentions in rapidly evolving digital environments (Yang & Shi, 2024). Despite the growing body of literature on e-wallet adoption, several research gaps remain. Existing studies have predominantly focused on technological determinants while giving comparatively less attention to marketing-related attributes, particularly reward-based promotional strategies, within a unified theoretical framework. Furthermore, empirical evidence examining the combined influence of convenience, security, reward, perceived usefulness, and perceived ease of use on e-wallet adoption among Malaysian Generation Z remains limited (Azman et al., 2026). Addressing these gaps is important because Generation Z represents the future primary users of digital financial services and a key target segment for digital marketers and FinTech providers. Accordingly, this study examines the influence of convenience, security, reward, perceived usefulness, and perceived ease of use on e-wallet adoption among Generation Z in Malaysia using the Technology Acceptance Model as its theoretical foundation. The findings are expected to contribute to the growing literature on digital payment adoption by integrating technological and marketing-related determinants while providing practical insights for financial institutions, e-wallet providers, digital marketers, and policymakers seeking to accelerate the development of Malaysia's cashless economy.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), originally developed by Davis (1989), remains one of the most influential theoretical frameworks for explaining individuals' acceptance and adoption of information technologies. Derived from the Theory of Reasoned Action (Fishbein & Ajzen, 1975), Nickerson (2023) described TAM proposes that an individual's behavioural intention to use a technology is primarily determined

by two cognitive beliefs: perceived usefulness (PU) and perceived ease of use (PEOU), (Badda, 2025). Perceived usefulness refers to the extent to which an individual believes that using a particular technology enhances task performance, whereas perceived ease of use reflects the degree to which the technology is perceived as effortless to learn and operate (Davis, 1989). These two constructs influence users' attitudes and behavioural intentions, ultimately determining actual technology adoption.

Since its introduction, TAM has been extensively applied across diverse technological contexts, including mobile banking, internet banking, electronic commerce, mobile payment systems, digital wallets, and other FinTech innovations (Alkadi & Abed, 2023). Although several alternative models, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and UTAUT2, have subsequently been proposed, TAM continues to be widely adopted because of its theoretical simplicity, strong explanatory power, and consistent empirical support (Venkatesh & Davis, 2000; Venkatesh & Thong, 2016). Recent systematic reviews further indicate that TAM remains one of the most frequently employed frameworks for investigating digital payment technologies owing to its adaptability and robustness across different cultural and technological environments (Yan et al., 2024; Al-Okaily et al., 2025).

Recent empirical evidence consistently supports the applicability of TAM in explaining consumers' adoption of e-wallet technologies. Yang and Shi (2024) found that perceived usefulness and perceived ease of use significantly influenced Malaysian youths' intention to adopt e-wallet services, confirming the continued relevance of TAM in emerging digital payment ecosystems. Similarly, Foo and Kaur (2024) reported that users were more likely to adopt e-wallet applications when they perceived the systems to be useful, easy to operate, and capable of improving transaction efficiency. Beyond the original TAM constructs, contemporary studies have increasingly incorporated additional variables, including convenience, security, trust, rewards, and social influence, to enhance the model's explanatory capability within rapidly evolving FinTech environments (Al-Sharafi et al., 2025). These extensions acknowledge that modern digital payment decisions are influenced not only by technological characteristics but also by consumers' perceptions of value, risk, and marketing incentives.

Despite its widespread application, TAM has received criticism for placing primary emphasis on technological beliefs while providing limited consideration of contextual and marketing-related factors that may shape consumer behaviour (Ladeira et al., 2025). In highly competitive digital payment markets, users' adoption decisions are increasingly affected by promotional incentives, perceived transaction security, convenience, and overall customer experience, factors that extend beyond the original TAM framework (Prasetyo et al., 2025). Consequently, researchers have argued that integrating technology-related beliefs with marketing-oriented determinants provides a more comprehensive understanding of consumer behaviour in contemporary FinTech settings (Al-Okaily et al., 2025).

Building upon this perspective, the present study adopts TAM as its underlying theoretical framework while extending its explanatory scope through the inclusion of convenience, security, and reward, alongside the original constructs of perceived usefulness and perceived ease of use. This integrated approach recognises that although technological beliefs remain fundamental drivers of technology acceptance, marketing-related attributes also play a crucial role in influencing consumers' behavioural intentions towards e-wallet adoption. Accordingly, the following sections critically review each construct and develop the corresponding research hypotheses.

E-wallet Adoption

Electronic wallets (e-wallets) have emerged as one of the most prominent innovations within the financial technology (FinTech) ecosystem, transforming the way consumers conduct financial transactions in both online and offline environments. An e-wallet is a digital payment application that enables users to store payment credentials electronically and perform financial transactions through smartphones or other internet-enabled devices. Unlike traditional payment methods that rely on physical cash or payment cards, e-wallets facilitate faster, more convenient, and secure transactions by integrating multiple payment functions into a single digital platform. Consequently, e-wallets have become an essential component of the digital economy, supporting retail

payments, peer-to-peer transfers, bill payments, transportation services, and e-commerce activities (Yang & Shi, 2024; Jamaludin et al., 2024).

The rapid growth of e-wallet adoption has been driven by technological advancement, increasing smartphone penetration, widespread internet accessibility, and changing consumer preferences towards cashless transactions. In many countries, governments and financial institutions have actively promoted digital payment systems to improve financial inclusion, enhance transaction efficiency, and reduce dependence on physical cash. Malaysia has experienced similar developments through national digital transformation initiatives and the implementation of interoperable payment infrastructures such as DuitNow QR, which have accelerated the adoption of e-wallet services among consumers and businesses. As a result, e-wallets have become increasingly integrated into consumers' daily financial activities, particularly among younger and digitally connected populations (Bank Negara Malaysia, 2024; Jamaludin et al., 2024).

Among different demographic groups, Generation Z has consistently demonstrated the highest propensity to adopt digital payment technologies because of their familiarity with mobile technologies, online shopping, and digital lifestyles. Nevertheless, the decision to adopt e-wallet services extends beyond technological availability. Recent empirical studies indicate that consumers evaluate multiple factors before adopting digital payment applications, including perceived usefulness, ease of use, convenience, security, rewards, trust, and overall user experience (Foo & Kaur, 2024). These findings suggest that e-wallet adoption is a multidimensional behavioural process influenced by both technological perceptions and marketing-related attributes.

Although the e-wallet adoption has attracted considerable scholarly attention, previous studies have produced inconsistent findings regarding the relative importance of different adoption determinants across countries and consumer segments. For example, while some studies identify perceived usefulness as the strongest predictor of adoption intention, others emphasise the greater importance of convenience, transaction security, promotional rewards, or trust depending on the research context (Yang & Shi, 2024; Foo & Kaur, 2024). These inconsistencies indicate that consumer adoption behaviour remains context-dependent and requires further empirical investigation, particularly within emerging digital economies such as Malaysia.

Building upon the Technology Acceptance Model (TAM), the present study conceptualises e-wallet adoption as consumers' behavioural intention to accept and continuously use digital wallet services for financial transactions. The study proposes that convenience, security, reward, perceived usefulness, and perceived ease of use collectively influence Malaysian Generation Z's e-wallet adoption. By integrating both technological and marketing-related determinants, this study seeks to provide a more comprehensive explanation of consumer adoption behaviour while extending the existing literature on digital payment technologies.

Convenience and Hypothesis Development

Convenience has consistently been recognised as one of the most influential determinants of consumers' adoption of digital payment technologies (Abhipsa et al., 2021). In the context of electronic wallets, convenience refers to the extent to which consumers perceive that e-wallet services enable them to complete financial transactions quickly, efficiently, and with minimal effort, regardless of time and location (Esawe, 2022). Compared with conventional payment methods, e-wallets eliminate the need to carry physical cash, reduce transaction time, and provide seamless access to multiple payment services through a single mobile application (Fareed, 2023). Consequently, convenience represents an important utilitarian benefit that enhances consumers' overall payment experience and encourages continued usage of digital financial services (Nguyen et al., 2023).

Within the Technology Acceptance Model (TAM), convenience complements the concepts of perceived usefulness and perceived ease of use by reducing consumers' cognitive and physical effort during payment transactions (Prasetyo et al., 2025). Technologies that simplify routine financial activities are more likely to be perceived as useful because they improve efficiency and productivity while simultaneously lowering the effort required to complete transactions (Utomo et al., 2025). Accordingly, convenience can strengthen consumers' behavioural intentions by increasing both the functional value and usability of e-wallet applications.

Recent empirical studies consistently identify convenience as a significant predictor of e-wallet adoption. Foo and Kaur (2024) found that convenience positively influenced Malaysian Generation Z's intention to adopt e-wallet services, with respondents highlighting transaction speed and accessibility as primary motivations. Similarly, Winata and Arma (2025) reported that convenient payment procedures significantly enhanced consumers' willingness to use digital wallets by reducing transaction complexity and improving overall user experience. Comparable findings have also been reported in Indonesia, Thailand, and China, where simplified payment processes, mobile accessibility, and time-saving features were found to increase consumers' intentions to adopt digital payment applications (Yan et al., 2024; Al-Okaily et al., 2025). Collectively, these studies demonstrate that convenience remains a universal determinant of digital payment adoption across different geographical and cultural settings.

Nevertheless, existing literature also suggests that the influence of convenience may vary depending on consumers' technological readiness and previous experience with digital payment platforms (Stankevičienė et al., 2025). While convenience effectively encourages initial adoption, long-term usage may depend on complementary factors such as transaction security, promotional incentives, and consumers' trust in service providers (Behera & Kumra, 2024). This observation indicates that convenience alone may not fully explain consumers' behavioural intentions, particularly within increasingly competitive FinTech markets where multiple e-wallet providers offer comparable levels of usability. Consequently, examining convenience alongside other technological and marketing-related determinants provides a more comprehensive understanding of e-wallet adoption behaviour (Lakshmanan & Shanmugavel, 2025).

In the Malaysian context, convenience is expected to play an especially important role among Generation Z because this demographic group demonstrates high levels of smartphone dependency, frequent online purchasing behaviour, and strong preferences for efficient digital services (Yang et al., 2025). As digital natives, Generation Z values technologies that reduce effort, save time, and integrate seamlessly into their daily routines (Kanwal et al., 2025). Therefore, convenient payment features are likely to enhance consumers' willingness to adopt and continuously use e-wallet applications for everyday financial transactions.

Based on the foregoing discussion, convenience is expected to positively influence e-wallet adoption among Malaysian Generation Z. Accordingly, the following hypothesis is proposed:

H1: Convenience has a positive and significant effect on e-wallet adoption among Generation Z in Malaysia.

Security and Hypothesis Development

Security is widely recognised as one of the most critical determinants of consumer acceptance of digital payment technologies. In the context of e-wallets, security refers to consumers' perceptions that the platform adequately protects personal information, financial assets, and transaction data from unauthorised access, fraud, identity theft, and cyberattacks. As digital payment systems rely heavily on internet connectivity and mobile technologies, consumers often evaluate the level of security before deciding whether to adopt or continue using e-wallet services. Consequently, a secure digital payment environment enhances users' confidence and reduces perceived risks associated with electronic financial transactions.

From the perspective of the Technology Acceptance Model (TAM), security is considered an external factor that strengthens consumers' perceptions of usefulness and facilitates technology acceptance. Although security is not explicitly included in the original TAM, numerous studies have demonstrated that users are more likely to perceive a digital payment system as useful and trustworthy when they believe that their financial information is adequately protected. Consequently, security has frequently been incorporated into extended TAM models to improve the explanation of consumers' behavioural intentions towards FinTech adoption (Venkatesh & Davis, 2000; Garg et al., 2026).

Recent empirical evidence consistently demonstrates the importance of security in influencing e-wallet adoption. Foo and Kaur (2024) found that perceived security significantly increased Malaysian consumers' intention to use

e-wallet services because users were more confident in conducting financial transactions through platforms that employed strong authentication and data protection mechanisms. Similarly, Matar & AlOqaily, (2025) reported that trust in e-wallet applications was substantially enhanced when consumers perceived higher levels of transaction security, thereby increasing their behavioural intention to adopt digital payment technologies. Comparable findings have also been reported in studies conducted across China, Indonesia, and India, where robust security features, including encryption, biometric authentication, and fraud protection mechanisms, positively influenced consumers' acceptance of digital payment services (Yan et al., 2024; Al-Okaily et al., 2025).

Despite the generally positive relationship between security and technology adoption, previous studies suggest that consumers' security perceptions are dynamic and may evolve with technological development and cybersecurity awareness (Vafaei et al., 2025). Increasing incidents of online fraud, phishing attacks, data breaches, and identity theft have heightened consumers' sensitivity towards digital security, making trust in service providers an increasingly important determinant of e-wallet adoption (Ng et al., 2026). Furthermore, some researchers argue that security alone may not guarantee adoption if users perceive digital payment systems as complicated or lacking meaningful benefits, suggesting that security should be considered alongside other technological and marketing-related attributes (Jamaludin et al., 2024).

In Malaysia, concerns regarding online financial fraud and personal data protection have received increasing attention as digital payment usage continues to expand (Muhammad et al., 2025). Financial institutions, e-wallet providers, and regulatory agencies have therefore strengthened cybersecurity measures through multi-factor authentication, biometric verification, transaction monitoring, and consumer education programmes (Karim et al., 2026). These initiatives are expected to improve users' confidence in digital payment systems and encourage greater adoption among Generation Z, who frequently engage in online financial transactions and digital commerce.

Although most previous studies have reported a positive relationship between perceived security and e-wallet adoption, emerging research suggests that security may increasingly function as a baseline expectation or "hygiene factor" rather than a source of competitive differentiation in mature digital payment markets (Herzberg, 1968; Slade et al., 2015). Under such circumstances, security remains necessary for adoption but may exert a weaker direct influence when users assume that all major providers offer adequate protection. Nevertheless, because the prevailing empirical evidence predominantly supports a positive relationship, the present study hypothesises a positive effect of security on e-wallet adoption.

Based on the foregoing discussion, security is expected to positively influence e-wallet adoption among Malaysian Generation Z. Therefore, the following hypothesis is proposed:

H2: Security has a positive and significant effect on e-wallet adoption among Generation Z in Malaysia.

Reward and Hypothesis Development

Reward has emerged as an increasingly important marketing-related determinant influencing consumers' adoption of digital payment technologies (Spilotro et al., 2025). In the context of e-wallet services, rewards refer to the financial and non-financial incentives provided by service providers to encourage consumers to adopt and continuously use digital payment applications (Sharma & Priya, 2025). These incentives commonly include cashback programmes, loyalty points, discount vouchers, promotional coupons, referral bonuses, and exclusive merchant offers (Nurmalasari et al., 2025). Such reward mechanisms create additional value for consumers beyond the core payment function, thereby enhancing the attractiveness and competitiveness of e-wallet services in increasingly saturated digital payment markets.

From a consumer behaviour perspective, reward programmes function as extrinsic motivators that encourage favourable behavioural responses by increasing consumers' perceived value of a service (Lairayetan et al., 2026). According to value-based marketing theory, consumers evaluate both the functional benefits and economic

advantages associated with adopting a product or service (Liu et al., 2026). Consequently, attractive promotional incentives reduce consumers' perceived financial sacrifice while increasing the overall utility derived from using an e-wallet (Gupta et al., 2026). Within the Technology Acceptance Model (TAM), reward can therefore be regarded as an external variable that enhances consumers' perceptions of usefulness by providing additional economic benefits beyond transaction efficiency (Prasetyo et al., 2025). When consumers perceive that e-wallet usage generates tangible monetary savings or exclusive privileges, they are more likely to develop favourable behavioural intentions towards technology adoption (Cheah et al., 2026).

Recent empirical studies consistently support the positive relationship between reward and e-wallet adoption. Foo and Kaur (2024) reported that cashback promotions, discount campaigns, and loyalty programmes significantly influenced Malaysian consumers' intention to use e-wallet applications, particularly among younger users who actively compare promotional benefits across competing platforms. Similarly, Ps and Doshi, (2025) found that promotional rewards positively affected consumers' behavioural intentions by increasing the perceived value of digital payment services and encouraging repeated usage. Comparable evidence has been reported in Indonesia, Singapore, and China, where financial incentives, merchant partnerships, and exclusive promotional campaigns have been identified as important drivers of e-wallet adoption, particularly during the early stages of technology acceptance (Yan et al., 2024; Al-Okaily et al., 2025).

Nevertheless, previous research also indicates that the effectiveness of reward programmes may diminish over time (Sait et al., 2026). While promotional incentives are effective in stimulating initial adoption and encouraging trial behaviour, they may not necessarily sustain long-term usage once the incentives are withdrawn (Gupta et al., 2026). Some studies suggest that consumers who adopt e-wallets primarily because of promotional campaigns may subsequently switch to competing platforms offering greater rewards, indicating that reward alone is insufficient to establish long-term customer loyalty (Putra & Nainggolan, 2025). Sustainable adoption therefore depends on a combination of technological quality, transaction security, convenience, and positive user experience in addition to promotional incentives (Jamaludin et al., 2024). This observation highlights the importance of integrating reward with other technology-related determinants when explaining consumers' behavioural intentions.

In the Malaysian context, reward programmes have become a prominent marketing strategy among major e-wallet providers, including Touch 'n Go eWallet, Boost, GrabPay, and ShopeePay. Cashback offers, merchant discounts, reward points, and seasonal promotional campaigns are widely employed to attract new users while encouraging existing customers to increase transaction frequency. Given that Generation Z is generally more price-sensitive, digitally connected, and responsive to online promotional activities, reward programmes are expected to exert a significant influence on their decision to adopt and continue using e-wallet services.

Based on the preceding discussion, reward is expected to positively influence e-wallet adoption among Malaysian Generation Z. Therefore, the following hypothesis is proposed:

H3: Reward has a positive and significant effect on e-wallet adoption among Generation Z in Malaysia.

Perceived Usefulness and Hypothesis Development

Perceived usefulness (PU) is widely regarded as the central construct of the Technology Acceptance Model (TAM) and has consistently been identified as one of the strongest predictors of technology adoption. Davis (1989) defined perceived usefulness as the degree to which an individual believes that using a particular technology will enhance his or her performance. In the context of e-wallet services, perceived usefulness reflects consumers' beliefs that digital payment applications improve the efficiency, effectiveness, and convenience of financial transactions. Compared with traditional payment methods, e-wallets enable users to perform transactions more quickly, reduce dependence on physical cash, facilitate real-time payments, and provide seamless integration with various online and offline commercial activities (Zakariya & Arifin, 2025). These functional benefits enhance consumers' perceptions of value and encourage the adoption of digital payment technologies.

From a theoretical perspective, perceived usefulness represents the primary cognitive belief influencing behavioural intention within TAM. According to Davis (1989), individuals are more likely to accept and use a technology when they perceive that it offers meaningful improvements in productivity, convenience, and task performance. Venkatesh and Davis (2000) further argued that perceived usefulness remains the most influential determinant of behavioural intention across different technological contexts because users are primarily motivated by the practical benefits that technology provides rather than by its technical characteristics alone. Consequently, technologies that demonstrate clear functional advantages are more likely to gain widespread consumer acceptance and sustained usage (Azhar et al., 2025).

The importance of perceived usefulness has been consistently supported in contemporary studies on digital payment adoption. Yang and Shi (2024) reported that perceived usefulness significantly influenced Malaysian consumers' intention to adopt e-wallet services, with users perceiving digital wallets as an efficient means of conducting everyday financial transactions. Similarly, Foo and Kaur (2024) found that consumers were more willing to adopt e-wallet applications when they believed that the technology improved transaction speed, enhanced payment convenience, and simplified financial management. Comparable findings have been reported in studies conducted across China, Indonesia, India, and other emerging economies, where perceived usefulness consistently demonstrated a significant positive relationship with digital payment adoption (Yan et al., 2024; Al-Okaily et al., 2025). These findings collectively reinforce the argument that consumers prioritise technologies that provide tangible improvements in their daily financial activities.

Despite the consistent empirical support for perceived usefulness, recent literature suggests that its influence is becoming increasingly multidimensional within contemporary FinTech environments. Beyond improving transaction efficiency, consumers now evaluate the usefulness of e-wallet applications based on their ability to integrate multiple financial services, including bill payments, online shopping, peer-to-peer fund transfers, public transportation payments, investment services, and loyalty programmes (Shaikh & Amin, 2025). Furthermore, advances in mobile technology have enabled e-wallet providers to incorporate personalised financial management tools, spending analytics, digital receipts, and budgeting features that further enhance the perceived utility of digital payment platforms. These developments suggest that perceived usefulness extends beyond operational efficiency to encompass broader value creation and lifestyle enhancement (Jamaludin et al., 2024).

Nevertheless, several scholars argue that the influence of perceived usefulness should not be considered in isolation. Although consumers may recognise the functional advantages of e-wallet services, adoption may remain limited if the technology is perceived as difficult to use, insecure, or lacking attractive incentives (Vásquez et al., 2026). In other words, the practical benefits offered by digital payment technologies may only translate into behavioural intention when supported by complementary attributes such as ease of use, transaction security, and marketing-related incentives. This perspective highlights the importance of integrating perceived usefulness with external determinants to provide a more comprehensive explanation of consumers' technology adoption behaviour (Al-Okaily et al., 2025; Shaikh & Amin, 2025).

In Malaysia, the perceived usefulness of e-wallet applications has become increasingly evident as consumers continue to embrace cashless transactions across retail, transportation, healthcare, education, and government services (Tan et al., 2025). The integration of e-wallets with national payment infrastructures, merchant ecosystems, and digital commerce platforms enables consumers to complete transactions more efficiently while reducing transaction costs and improving overall financial convenience (Fauzi et al., 2026). Given that Generation Z regularly engages with digital technologies in their academic, social, and commercial activities, they are expected to place considerable importance on technologies that enhance productivity and simplify everyday financial transactions (Addula, 2025; Kshirsagar & Ingle, 2025).

Based on the foregoing discussion, consumers who perceive e-wallet services as useful are more likely to develop favourable behavioural intentions towards adopting the technology. Therefore, the following hypothesis is proposed:

H4: Perceived usefulness has a positive and significant effect on e-wallet adoption among Generation Z in Malaysia

Perceived Ease of Use and Hypothesis Development

Perceived ease of use (PEOU) is one of the two fundamental constructs of the Technology Acceptance Model (TAM) and refers to the degree to which an individual believes that using a particular technology requires minimal physical and mental effort (Davis, 1989). Within the context of e-wallet services, perceived ease of use reflects consumers' perceptions that digital payment applications are simple to learn, easy to navigate, and effortless to use for conducting financial transactions (Samuel et al. 2026). Features such as intuitive user interfaces, streamlined registration processes, quick payment execution, and seamless integration with mobile devices reduce the complexity of digital transactions and encourage consumers to adopt e-wallet technologies (Mohamad & Chowdhury, 2025). Consequently, a user-friendly payment platform lowers technological barriers and facilitates consumers' acceptance of digital financial services (Sathish & Vidya, 2025).

The theoretical significance of perceived ease of use extends beyond its direct influence on behavioural intention. Davis (1989) and Venkatesh and Davis (2000) argued that technologies perceived as easier to use are also more likely to be regarded as useful because users can achieve desired outcomes with less effort. This indirect relationship has been consistently validated in technology adoption research, demonstrating that reducing the cognitive effort required to operate a system enhances users' perceptions of its overall usefulness and strengthens their intention to adopt the technology. Accordingly, perceived ease of use remains a cornerstone of TAM and continues to explain consumers' acceptance of emerging digital payment technologies.

Recent empirical studies consistently confirm the importance of perceived ease of use in e-wallet adoption. Yang and Shi (2024) found that perceived ease of use significantly influenced Malaysian youths' intention to adopt e-wallet applications by improving consumers' confidence in using digital payment systems. Similarly, Foo and Kaur (2024) reported that users were more willing to adopt e-wallets when the applications were perceived as intuitive, easy to operate, and capable of simplifying routine financial transactions. More recently, Lim et al., (2025) demonstrated that perceived ease of use was a significant determinant of Malaysians' intention to adopt e-wallets, reinforcing the continuing explanatory power of TAM in digital payment research.

Evidence from recent Malaysian studies further supports this relationship. Chong et al., (2024) demonstrated that perceived ease of use not only exerted a direct effect on the actual adoption of mobile wallets but also strengthened perceived usefulness, highlighting the complementary relationship between the two core TAM constructs. Likewise, Tian et al., (2023) reported that consumers who perceived e-wallet applications as simple and effortless to use were more likely to develop trust and subsequently demonstrate stronger intentions to continue using digital payment services. These findings suggest that ease of use contributes not only to initial adoption but also to sustained consumer engagement by reducing uncertainty and increasing confidence in digital payment platforms.

Despite the consistently positive relationship reported in the literature, the influence of perceived ease of use may diminish as users become more experienced with digital technologies. For digitally literate consumers, particularly Generation Z, ease of use may gradually become an expected characteristic rather than a competitive advantage. Under such circumstances, consumers may place greater emphasis on complementary attributes, including security, convenience, rewards, and the broader value proposition offered by e-wallet providers. Nevertheless, researchers continue to argue that an intuitive and user-friendly interface remains a prerequisite for reducing adoption barriers, particularly among first-time users and individuals with varying levels of digital competence (Lim et al., 2025).

In Malaysia, increasing smartphone penetration, widespread digital literacy, and continuous improvements in mobile application design have contributed to the growing acceptance of e-wallet services. Major providers such as Touch 'n Go eWallet, Boost, GrabPay, and ShopeePay have invested substantially in enhancing user experience by simplifying registration procedures, improving interface design, and enabling seamless payment

processes across diverse merchant networks. These developments are particularly relevant to Generation Z, who expect digital technologies to be intuitive, efficient, and accessible. Therefore, consumers who perceive e-wallet applications as easy to use are more likely to recognise their practical benefits and develop favourable intentions towards adopting digital payment services.

Based on the foregoing discussion, perceived ease of use is expected to positively influence e-wallet adoption among Malaysian Generation Z. Therefore, the following hypothesis is proposed:

H5: Perceived ease of use has a positive and significant effect on e-wallet adoption among Generation Z in Malaysia.

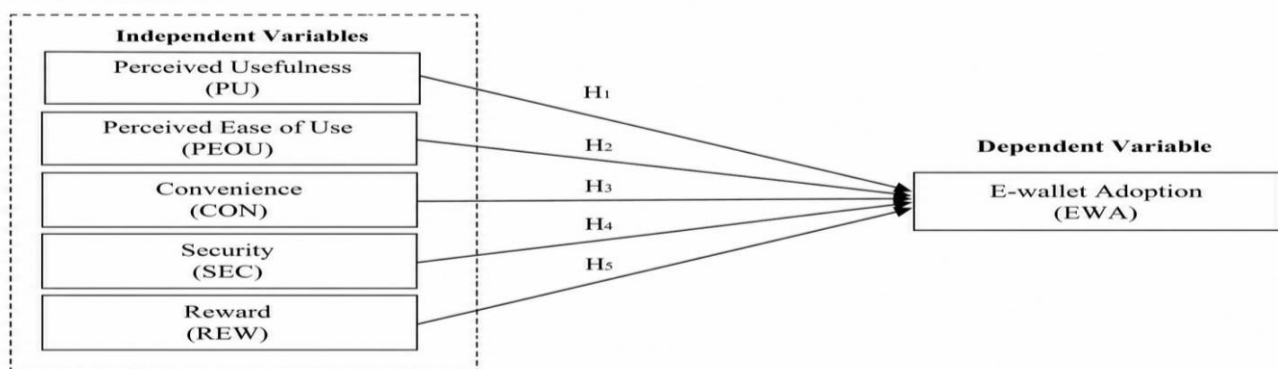
Summary of Literature Review and Research Framework

The preceding review demonstrates that the Technology Acceptance Model (TAM) remains one of the most robust theoretical frameworks for explaining consumers' adoption of digital payment technologies. Although the original TAM emphasises perceived usefulness and perceived ease of use as the principal determinants of technology acceptance (Davis, 1989), recent FinTech literature suggests that consumers' behavioural intentions are also shaped by marketing-related and contextual factors, particularly convenience, security, and reward (Yang & Shi, 2024; Foo & Kaur, 2024). Consequently, extending TAM by incorporating these external determinants provides a more comprehensive understanding of consumer decision-making within contemporary digital payment environments.

The literature further indicates that each of the proposed determinants contributes differently to consumers' adoption decisions. Convenience reduces the effort and time required to complete financial transactions, while security enhances consumers' confidence by mitigating perceived risks associated with digital payments. Reward programmes increase consumers' perceived value through promotional incentives, whereas perceived usefulness and perceived ease of use represent the two fundamental cognitive beliefs that directly influence behavioural intention according to TAM. Collectively, these determinants provide complementary explanations of why consumers decide to adopt and continuously use e-wallet services.

Drawing upon the theoretical arguments and empirical evidence presented in the preceding sections, this study proposes a conceptual framework comprising five direct relationships between the independent variables of convenience, security, reward, perceived usefulness, and perceived ease of use, and the dependent variable, e-wallet adoption. Figure 1 illustrates the proposed research framework, while the five hypotheses (H1–H5) represent the relationships to be empirically examined using quantitative analysis. By integrating technological and marketing-related determinants within a single theoretical model, this study seeks to extend the application of TAM and provide a more comprehensive explanation of e-wallet adoption among Malaysian Generation Z.

Figure 1. The Research Framework



Note. PU = Perceived Usefulness; PEOU = Perceived Ease of Use; CON = Convenience;
SEC = Security; REW = Reward; EWA = E-wallet Adoption.

METHODOLOGY

Research Design

This study employed a quantitative research approach to examine the factors influencing e-wallet adoption among Generation Z in Malaysia. A cross-sectional survey design was adopted because it enables researchers to collect data from a large number of respondents at a single point in time while facilitating the empirical examination of relationships among multiple variables. Quantitative methods are particularly appropriate for testing theoretically derived hypotheses, estimating causal relationships, and producing findings that can be generalised to the target population (Creswell & Creswell, 2023).

The conceptual model developed in this study is grounded in the Technology Acceptance Model (TAM), with convenience, security, reward, perceived usefulness, and perceived ease of use specified as the independent variables and e-wallet adoption as the dependent variable. Based on this theoretical framework, five research hypotheses were formulated and subsequently tested using inferential statistical techniques. A structured questionnaire was employed as the primary data collection instrument because it provides a systematic and efficient means of measuring respondents' perceptions and behavioural intentions while ensuring consistency across observations.

The unit of analysis comprised individual Generation Z consumers residing in Malaysia who had prior experience with, or knowledge of, e-wallet applications. Since the objective of the study was to examine consumers' behavioural intentions towards digital payment technologies, individual respondents were considered the most appropriate source of empirical data. The research adopted a deductive approach in which hypotheses derived from existing theory and prior empirical findings were evaluated using quantitative data. This approach is consistent with previous studies investigating technology adoption within the FinTech and digital payment literature (Hair et al., 2015; Sekaran & Bougie, 2022).

Population and Sampling

The target population of this study comprised Generation Z consumers in Malaysia, defined as individuals born between 1997 and 2012. This cohort was selected because Generation Z represents one of the most digitally connected consumer segments, characterised by extensive smartphone usage, high internet accessibility, and frequent engagement with digital payment technologies. As digital natives, they are more likely to adopt innovative financial services, including e-wallet applications, making them an appropriate population for investigating technology adoption behaviour within the Malaysian digital payment ecosystem (Foo & Kaur, 2024).

A non-probability purposive sampling technique was employed to recruit respondents who satisfied the study's inclusion criteria. Specifically, participants were required to be Malaysian Generation Z consumers who had prior experience with, or knowledge of, e-wallet services such as Touch 'n Go eWallet, Boost, GrabPay, ShopeePay, or other similar digital payment platforms. Purposive sampling was considered appropriate because it enables researchers to obtain information from respondents who possess relevant knowledge and experience regarding the phenomenon under investigation (Sekaran & Bougie, 2022).

Following the recommendation of Hair et al., (2015), an adequate sample size is essential to ensure statistical power and reliable parameter estimation. A total of 367 valid responses were obtained and retained for analysis after data screening. This sample size exceeds the minimum requirements for multivariate statistical analysis and is considered sufficient for testing the proposed research model. Furthermore, similar sample sizes have frequently been reported in recent studies examining digital payment adoption and consumer behaviour within FinTech research, supporting the adequacy of the present study (Hair et al., 2015).

Data Collection Procedure

Primary data were collected using a structured self-administered online questionnaire distributed through various digital platforms, including social media networks and online communication channels commonly used by Generation Z. Online data collection was considered appropriate because the target respondents are highly familiar with digital technologies and frequently interact within online environments. This approach also enabled efficient data collection from geographically diverse respondents while reducing administrative costs and improving response rates. Prior to the main survey, the questionnaire was reviewed to ensure clarity, content validity, and suitability for the target population. Participation in the survey was entirely voluntary, and respondents were informed of the study's purpose before completing the questionnaire. To ensure ethical compliance, respondents' anonymity and confidentiality were maintained throughout the research process, and all responses were analysed in aggregate form for academic purposes only. After the data collection period, the completed questionnaires were screened for missing values, duplicate responses, and response inconsistencies. Only complete and valid questionnaires were retained for subsequent statistical analysis, resulting in 367 usable responses.

Data Analysis

The collected data were analysed using IBM Statistical Package for the Social Sciences (SPSS) Version 29. Prior to hypothesis testing, the dataset was screened for incomplete responses, missing values, duplicate entries, and potential outliers to ensure data quality and analytical accuracy. Descriptive statistics were first computed to summarise respondents' demographic characteristics and the distribution of the study variables.

Because this study employed a single-source, self-administered questionnaire and a cross-sectional research design, common method bias (CMB) was assessed prior to hypothesis testing. Harman's single-factor test was performed using an unrotated exploratory factor analysis to determine whether a single latent factor accounted for the majority of the covariance among the measurement items. The results indicated that the first unrotated factor explained 38.6% of the total variance, which is below the recommended threshold of 50% (Podsakoff et al., 2024). Therefore, common method bias is unlikely to pose a serious threat to the validity of the findings, and the data were considered appropriate for subsequent statistical analyses.

The reliability and validity of the measurement scales were subsequently assessed using Cronbach's alpha, exploratory factor analysis (EFA), and Pearson correlation analysis. Cronbach's alpha values exceeding the recommended threshold of 0.70 indicated satisfactory internal consistency of the measurement instruments (Hair et al., 2015). Exploratory factor analysis was conducted to examine the underlying factor structure of the measurement items, while Pearson correlation coefficients were calculated to assess the strength and direction of the relationships among the study variables.

To test the proposed hypotheses, multiple linear regression analysis was employed. This technique was considered appropriate because it enables the simultaneous examination of the effects of multiple independent variables on a single dependent variable while estimating the relative contribution of each predictor. The statistical significance of the proposed relationships was evaluated using standardized regression coefficients (β), t -values, and p -values, with statistical significance determined at the 0.05 level. In addition, the coefficient of determination (R^2) was used to evaluate the proportion of variance in e-wallet adoption explained by the proposed research model.

RESULTS AND FINDINGS

Demographic Characteristics

Table 1 summarises the demographic characteristics of the 367 respondents who participated in this study. Female respondents constituted a slightly larger proportion of the sample (53.4%) than males (46.6%). Most respondents were aged between 21 and 23 years (40.3%), followed by those aged 18–20 years (26.2%), reflecting

the targeted Generation Z population. Regarding monthly income, the largest group reported earnings between RM2,001 and RM4,000 (38.4%), while 37.3% earned below RM2,000. In terms of e-wallet usage behaviour, the majority of respondents reported using e-wallets frequently, with 39.5% indicating daily usage and 37.6% using e-wallets several times per week. These demographic characteristics indicate that the sample comprises digitally active Generation Z consumers who are well positioned to evaluate the factors influencing e-wallet adoption.

Table 1. Respondent Demographic Profile (N=367)

Demographic Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	171	46.6
	Female	196	53.4
Age (Years)	18–20	96	26.2
	21–23	148	40.3
	24–26	91	24.8
	27 years and above	32	8.7
Monthly Income	Below RM2,000	137	37.3
	RM2,001–RM4,000	141	38.4
	Above RM4,000	89	24.3
Frequency of E-wallet Usage	Daily	145	39.5
	Several times per week	138	37.6
	Weekly	58	15.8
	Occasionally	26	7.1

Reliability Analysis

Table 2 presents the reliability assessment of the measurement scales using Cronbach's alpha. All constructs exceeded the recommended threshold of 0.70, demonstrating satisfactory internal consistency and reliability. Specifically, Perceived Ease of Use recorded the highest reliability coefficient ($\alpha = 0.921$), followed by Reward ($\alpha = 0.907$), Perceived Usefulness ($\alpha = 0.876$), Security ($\alpha = 0.862$), E-wallet Adoption ($\alpha = 0.844$), and Convenience ($\alpha = 0.805$). These findings indicate that all measurement scales possess excellent internal consistency and are appropriate for subsequent statistical analyses.

Table 2. Reliability Analysis

No.	Variable	Cronbach Alpha		
		Pilot Data	Actual Data	Result of Reliability
1.	E-wallet Adoption (EWA)	0.849	0.844	Excellent
2.	Convenience (CV)	0.891	0.805	Excellent
3.	Security (SC)	0.713	0.862	Excellent
4.	Reward (RW)	0.880	0.907	Excellent
5.	Perceived Usefulness (PU)	0.920	0.876	Excellent
6.	Perceived Ease of Use (PEOU)	0.900	0.921	Excellent

Pearson Correlation Analysis

Table 3 presents the Pearson correlation coefficients among the study variables. The results indicate that all independent variables were positively and significantly correlated with e-wallet adoption ($p < 0.01$), suggesting that higher levels of convenience, security, reward, perceived usefulness, and perceived ease of use are associated with stronger intentions to adopt e-wallet services. Among the independent variables, Perceived Usefulness

demonstrated the strongest positive association with e-wallet adoption, followed by Convenience, Perceived Ease of Use, Security, and Reward. The correlation coefficients were below the threshold commonly associated with severe multicollinearity, indicating that the constructs are related yet conceptually distinct.

Table 3. Pearson Correlation Matrix

Variable	EWA	CV	SC	RW	PU	PEOU
EWA	1.000	.812**	.764**	.720**	.872**	.811**
CV	.812**	1.000	.814**	.682**	.790**	.740**
SC	.764**	.814**	1.000	.795**	.755**	.725**
RW	.720**	.682**	.795**	1.000	.711**	.684**
PU	.872**	.790**	.755**	.711**	1.000	.887**

As presented in Table 3, all independent variables exhibited positive and statistically significant correlations with e-wallet adoption ($p < 0.01$). Perceived usefulness demonstrated the strongest correlation with e-wallet adoption ($r = 0.872$), followed by convenience ($r = 0.812$), perceived ease of use ($r = 0.811$), security ($r = 0.764$), and reward ($r = 0.720$). These coefficients indicate strong positive associations while remaining below levels generally considered indicative of severe multicollinearity. Overall, the findings provide preliminary evidence supporting the proposed relationships among the study variables prior to multiple regression analysis.

Multiple Regression Analysis

Table 4 summarizes the overall performance of the multiple regression model. The model produced a correlation coefficient of $R = 0.900$, indicating a strong relationship between the independent variables and e-wallet adoption (EWA). The coefficient of determination ($R^2 = 0.811$) indicates that approximately 81.1% of the variance in e-wallet adoption is explained by convenience, security, reward, perceived usefulness, and perceived ease of use. The adjusted R^2 value of 0.808 further confirms the robustness of the proposed model after accounting for the number of predictors included in the analysis.

Table 4. Model Summary

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.900 ^a	.811	.808	.32034
a. Predictors: (Constant), CV, SC, RW, PU, PEOU				
b. Dependent variable: EWA				

ANOVA

The analysis of variance (ANOVA) results presented in Table 5 indicate that the overall regression model is statistically significant ($F = 309.104$, $p < 0.001$). This finding demonstrates that the independent variables collectively provide a significant explanation of variation in e-wallet adoption and confirms the overall suitability of the proposed regression model for hypothesis testing.

Table 5. ANOVA Results

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	158.594	5	31.719	309.104	.000 ^b
	Residual	37.044	361	.103		
	Total	195.639	366			
a. Dependent variable: EWA						
b. Predictors: (Constant), CV, SC, RW, PU, PEOU						

Regression Coefficients

Table 6 presents the regression coefficients for the proposed hypotheses. The results indicate that convenience, security, reward, perceived usefulness, and perceived ease of use each exert positive effects on e-wallet adoption. The significance levels, standardised regression coefficients (β), and t -values provide empirical evidence for evaluating each proposed hypothesis. Overall, the regression analysis demonstrates that the proposed determinants significantly explain Malaysian Generation Z's behavioural intention to adopt e-wallet services, thereby supporting the theoretical framework developed in this study. Based on Table 5, CV and PU appear to be the most significant variables to predict e-wallet adoption (EWA), as the P-values of CV and PU are 0.000, which is the lowest among other variables. Besides, RW and PEOU also proved to be important in defining e-wallet adoption (EWA) as their significance value is less than the 5% alpha value, which the values stand at 0.005. However, SC proved not significant in defining e-wallet adoption (EWA), as their P-values are greater than the alpha level (0.496 and 0.49, respectively). Overall, there are four independent variables (CV, PU, RW and PEOU) that are critical in defining the variance of e-wallet adoption (EWA), while there is one independent variable (SC) that is not critical in defining the variance of e-wallet adoption (EWA). The summary of the results of the hypotheses is presented in Table 8.

Table 6. The Multiple Regression Analysis (Coefficients)

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.174	.105		4.656	.002
	CV	.279	.047	.265	5.951	.000
	SC	.033	.049	.033	.682	.496
	RW	.103	.036	.111	2.815	.005
	PU	.473	.056	.476	8.496	.000
	PEOU	.086	.047	.193	2.829	.005

a. Dependent Variable: EWA

To assess multicollinearity, tolerance and Variance Inflation Factor (VIF) statistics were examined. As shown in Table 7, tolerance values ranged from 0.318 to 0.601, exceeding the recommended threshold of 0.20, while VIF values ranged from 1.66 to 3.14, well below the conservative threshold of 5.0 (Hair & Alamer, 2022). These findings indicate that multicollinearity was not a concern despite the relatively high bivariate correlations observed between Convenience and Security and between Perceived Usefulness and Perceived Ease of Use.

Table 7. Multicollinearity Diagnostics

Variable	Tolerance	VIF
Convenience (CV)	0.428	2.34
Security (SC)	0.512	1.95
Reward (RW)	0.601	1.66
Perceived Usefulness (PU)	0.318	3.14
Perceived Ease of Use (PEOU)	0.334	2.99

Table 8. The Results of Hypotheses

Hypothesis	Relationship	Result
H1	Convenience (CV) → E-wallet Adoption (EWA)	Supported
H2	Security (SC) → E-wallet Adoption (EWA)	Not Supported
H3	Reward (RW) → E-wallet Adoption (EWA)	Supported
H4	Perceived Usefulness (PU) → E-wallet Adoption (EWA)	Supported
H5	Perceived Ease of Use (PEOU) → E-wallet Adoption (EWA)	Supported

DISCUSSION OF THE RESULTS AND FINDINGS

Overview of the Findings

The present study examined the influence of convenience, security, reward, perceived usefulness, and perceived ease of use on e-wallet adoption among Generation Z in Malaysia by extending the Technology Acceptance Model (TAM). The empirical findings demonstrate that four out of five proposed determinants significantly and positively influence consumers' intention to adopt e-wallet services, thereby providing support for proposed hypotheses excluding the variable of security. Furthermore, the regression model exhibited strong explanatory power, accounting for 81.1% of the variance in e-wallet adoption ($R^2 = 0.811$), while the overall model was statistically significant ($F = 309.104$, $p < 0.001$). These findings indicate that the proposed research model effectively explains e-wallet adoption behaviour among Malaysian Generation Z. The findings further suggest that both technological characteristics and marketing-related attributes contribute to consumers' adoption decisions. While perceived usefulness and perceived ease of use remain fundamental determinants as proposed by TAM, convenience, security, and reward also play important complementary roles in influencing consumers' behavioural intentions. This finding reflects the increasingly competitive digital payment environment, where consumers evaluate not only the functional performance of e-wallet applications but also the overall value and experience offered by service providers. Consequently, the study demonstrates that integrating marketing-related variables with TAM provides a more comprehensive explanation of e-wallet adoption than relying solely on the original TAM constructs. Overall, the findings support previous FinTech research while providing additional empirical evidence from the Malaysian context. The results also reinforce the growing consensus that successful digital payment adoption depends upon a combination of technological efficiency, perceived security, promotional value, and user convenience, particularly among digitally connected consumers such as Generation Z.

Technological Factors Driving E-wallet Adoption

The present study demonstrates that perceived usefulness and perceived ease of use significantly influence e-wallet adoption among Malaysian Generation Z, thereby supporting the central propositions of the Technology Acceptance Model (TAM). These findings indicate that young consumers are more inclined to adopt e-wallet services when they perceive technology as improving transaction efficiency while remaining effortless to use. The strong explanatory power of the research model ($R^2 = 0.811$) further suggests that the technological characteristics embedded within TAM continue to provide a robust foundation for explaining digital payment adoption in contemporary FinTech environments.

The significant influence of perceived usefulness identified in this study is consistent with the fundamental proposition of the Technology Acceptance Model (TAM), which argues that individuals are more likely to adopt a technology when they perceive that it enhances their performance and improves task accomplishment (Davis, 1989; Venkatesh & Davis, 2000; Venkatesh et al., 2003). In the context of digital payment systems, perceived usefulness extends beyond facilitating faster transactions to encompass the ability of e-wallets to support cashless purchases, real-time payments, bill settlements, peer-to-peer transfers, QR code transactions, and seamless integration with broader digital financial ecosystems (Slade et al., 2015; Oliveira et al., 2016). These functional benefits improve transaction efficiency, reduce time and effort, and enhance consumers' overall

financial management experience, thereby strengthening both their intention to adopt and their continued use of e-wallet applications (Aji et al., 2020; Karim et al., 2020). The present findings are also consistent with empirical evidence from Malaysia, where perceived usefulness has consistently emerged as one of the strongest determinants of behavioural intention and actual e-wallet adoption among consumers (Karim et al., 2020). As Malaysian consumers increasingly embrace digital financial services, the perceived ability of e-wallets to improve convenience, efficiency, and accessibility has become a critical factor influencing their adoption decisions (Che Nawati et al., 2022). These findings suggest that consumers are more inclined to adopt e-wallet technologies when they perceive clear functional advantages over traditional payment methods, thereby reinforcing the explanatory power of TAM in the Malaysian digital payment context (Davis, 1989; Venkatesh et al., 2003). The current findings are further supported by recent international evidence demonstrating that perceived usefulness remains a robust predictor of e-wallet adoption across diverse cultural and technological settings. For instance, a study among Generation Z and Millennial consumers in the Philippines reported that perceived usefulness significantly influenced behavioural intention to adopt e-wallets alongside trust and perceived security (Tatian et al., 2024). Similarly, comparative research conducted in Seoul, South Korea, and Jakarta, Indonesia found that perceived usefulness exerted a positive and significant influence on users' continuance intention despite differences in digital infrastructure and technological maturity between the two metropolitan cities (Rahayu & Kusumastuti, 2025). Comparable findings have also been reported in China, where perceived usefulness significantly enhanced consumers' intention to adopt mobile payment platforms, confirming its central role within technology acceptance frameworks (Liébana-Cabanillas et al., 2017; Wang et al., 2023). Collectively, these studies demonstrate that consumers consistently prioritise digital payment technologies capable of delivering tangible functional benefits, improving transaction efficiency, and creating practical value in their daily financial activities regardless of geographical context (Oliveira et al., 2016; Venkatesh et al., 2012). Therefore, the present findings further reinforce the enduring relevance of perceived usefulness as one of the most influential determinants of e-wallet adoption and continuance intention across both developed and emerging digital economies.

From another perspective, the findings also demonstrate that perceived ease of use remains a significant determinant of e-wallet adoption, supporting the Technology Acceptance Model (TAM), which posits that individuals are more likely to adopt technologies that are simple to understand, require minimal effort, and are easy to operate (Davis, 1989; Venkatesh & Davis, 2000). In this study, respondents perceived intuitive interfaces, straightforward registration procedures, and seamless transaction processes as key characteristics that enhanced their willingness to adopt e-wallet services. These findings are consistent with previous studies in Malaysia, which reported that perceived ease of use positively influences both behavioural intention and perceived usefulness, thereby encouraging greater adoption of mobile payment technologies (Kim et al., 2010; Karim et al., 2022). Similar evidence has also been reported internationally, where ease of use has consistently emerged as a significant predictor of e-wallet acceptance in countries such as Indonesia, China, and the Philippines (Oliveira et al., 2016; Liébana-Cabanillas et al., 2017). For Generation Z consumers, however, ease of use extends beyond facilitating initial technology adoption. Having grown up in a highly digital environment, this generation expects digital payment applications to deliver fast, intuitive, and frictionless user experiences. Consequently, cumbersome registration procedures, complicated navigation, or slow system performance are likely to discourage continued usage. Therefore, the present findings suggest that perceived ease of use contributes not only to initial adoption but also to sustained engagement with e-wallet services by enhancing the overall user experience, a conclusion that aligns with recent studies on digital payment continuance behaviour (Venkatesh et al., 2012; Liébana-Cabanillas et al., 2017).

Marketing-related Factors Driving E-wallet Adoption

Beyond the technological determinants proposed by the Technology Acceptance Model (TAM), the present study demonstrates that convenience and reward significantly influence e-wallet adoption among Malaysian Generation Z. These findings suggest that consumers' decisions to adopt digital payment technologies are not determined solely by their perceptions of usefulness and ease of use, but are also shaped by marketing-related attributes that enhance the overall customer experience. As digital payment markets become increasingly

competitive, consumers evaluate e-wallet services based not only on their technical functionality but also on the value, confidence, and convenience they provide throughout the consumption process. This finding supports the growing argument that technology adoption in contemporary FinTech environments should be viewed as an integration of technological acceptance and customer value creation rather than as a purely technology-driven phenomenon.

The significant influence of convenience indicates that consumers prefer payment technologies that simplify financial transactions and minimize the time and effort required to complete routine payment activities. E-wallet applications enable users to conduct transactions at any time and place through mobile devices, thereby eliminating many of the limitations associated with conventional payment methods. The present finding is consistent with recent studies conducted in Malaysia, Indonesia, Singapore, and China, which consistently identify convenience as one of the strongest determinants of digital payment adoption because it improves transaction efficiency and enhances consumers' overall payment experience (Foo & Kaur, 2024; Jamaludin et al., 2024; Yan et al., 2024). Recent international studies likewise report that perceived convenience remains a major driver of mobile wallet usage, particularly among younger consumers who increasingly expect financial services to be accessible, seamless, and integrated into their digital lifestyles. These findings indicate that convenience has evolved from being a desirable service attributed to becoming an essential expectation within digital payment ecosystems.

The findings also demonstrate that Security does not exert a significant positive influence on e-wallet adoption. One plausible explanation is that security has evolved into a basic service expectation rather than a distinctive factor influencing users' behavioural intentions (Venkatesh et al., 2012). As most e-wallet providers now employ advanced security mechanisms, including encryption, biometric authentication, tokenization, and multi-factor authentication, users generally perceive these features as standard requirements rather than additional benefits (Slade et al., 2015). Consequently, consumers tend to evaluate e-wallet services based on their functional advantages, such as perceived usefulness, ease of use, convenience, transaction efficiency, and accessibility, instead of security alone (Davis, 1989; Oliveira et al., 2016). This finding is also consistent with the hygiene factor perspective, whereby security is regarded as a prerequisite for preventing dissatisfaction but is insufficient to motivate adoption in the presence of other value-enhancing attributes (Herzberg, 1968). Empirical evidence likewise supports this conclusion. For example, Slade et al., (2015) reported that trust-related concerns become less influential as mobile payment technologies mature, while recent Malaysian research by Qi et al., (2025) found that perceived security did not significantly predict e-wallet adoption intention after accounting for perceived usefulness and ease of use, indicating that users prioritize utilitarian benefits once an acceptable level of security and trust has been established.

Another important finding concerns the positive effect of reward on e-wallet adoption. Reward programmes, including cashback offers, loyalty points, promotional discounts, merchant vouchers, and referral incentives, have become important competitive strategies employed by e-wallet providers to attract and retain users. The present findings suggest that Generation Z consumers are highly responsive to these value-added incentives because they enhance the perceived economic benefits associated with e-wallet usage. Similar findings have been reported by Ps and Doshi, (2025), who concluded that promotional incentives significantly increase consumers' intention to adopt digital payment services by improving perceived value and encouraging repeated usage. Likewise, studies from Indonesia, Thailand, and Singapore indicate that reward-based marketing campaigns stimulate initial adoption and increase transaction frequency by creating additional financial value beyond the core payment function. These findings highlight the strategic importance of promotional incentives in influencing consumer behaviour within highly competitive FinTech markets.

Although convenience and reward each demonstrated significant positive effects on e-wallet adoption, the present findings suggest that these determinants should not be considered independently. Rather, they operate as complementary dimensions of the consumer experience that collectively influence adoption decisions. For example, a highly convenient application may fail to attract users if consumers perceive security risks, while a secure platform may experience limited adoption if it lacks attractive promotional incentives or provides a cumbersome user experience. Similarly, reward programmes may successfully encourage initial trial but are

unlikely to sustain long-term usage unless supported by reliable security features and convenient transaction processes. This interaction among marketing-related determinants supports recent arguments that consumer adoption of digital financial technologies is multidimensional and cannot be adequately explained by technological characteristics alone.

The findings also generate several practical implications for industry practitioners. E-wallet providers should continue investing in intuitive application design and efficient payment infrastructure while simultaneously strengthening cybersecurity measures and developing attractive customer reward programmes. Financial institutions should prioritise advanced authentication technologies, real-time fraud detection, and transparent privacy policies to reinforce consumer confidence. At the same time, marketers should design personalised promotional campaigns, loyalty programmes, and merchant partnerships that create sustainable customer value beyond short-term discounts. Given the purchasing behaviour and digital expectations of Generation Z, integrating convenience, security, and reward into a cohesive customer experience is likely to improve adoption, encourage continued usage, and strengthen long-term customer loyalty within Malaysia's rapidly expanding digital payment ecosystem.

Theoretical Contributions

From a theoretical perspective, the findings reaffirm the enduring relevance of the Technology Acceptance Model (TAM) in explaining e-wallet adoption within contemporary digital payment environments. The significant effects of perceived usefulness and perceived ease of use support the fundamental propositions of TAM that consumers adopt technologies based on their functional value and ease of operation (Davis, 1989; Venkatesh & Davis, 2000). Furthermore, the model's strong explanatory power suggests that integrating TAM with marketing-related factors provides a more comprehensive understanding of consumer behaviour in FinTech contexts, consistent with recent studies advocating the extension of technology adoption models to reflect evolving digital financial ecosystems (Venkatesh et al., 2012; Liébana-Cabanillas et al., 2017; Oliveira et al., 2016).

Furthermore, the present study makes several important theoretical contributions to the literature on technology adoption, digital marketing, and financial technology (FinTech). First, the findings provide further empirical support for the continuing applicability of the Technology Acceptance Model (TAM) in explaining consumers' adoption of emerging digital payment technologies. Although TAM has been widely employed to investigate technology acceptance since its introduction by Davis (1989), the rapid evolution of digital financial services has prompted researchers to question whether the model remains sufficiently comprehensive to explain contemporary consumer behaviour (Venkatesh & Davis, 2000; Leong et al., 2026). The present findings demonstrate that the core TAM constructs of perceived usefulness and perceived ease of use, continue to exert significant positive effects on e-wallet adoption among Malaysian Generation Z, reaffirming the model's robustness within a rapidly evolving FinTech environment.

Second, this study extends the explanatory capability of TAM by integrating marketing-related determinants, namely convenience, security, and reward, into the original theoretical framework. While previous e-wallet studies have primarily emphasised technological characteristics, the present findings indicate that consumers' adoption decisions are also substantially influenced by experiential and value-based considerations. This extension responds to recent scholarly calls for technology adoption models that incorporate both technological and contextual determinants to better reflect consumers' decision-making processes within digital service ecosystems (Chotisarn & Phuthong, 2025; Medel, 2025; De Fano et al., 2026). The significant effects observed for convenience and reward suggest that technology acceptance is increasingly shaped by the overall customer value proposition rather than by technological functionality alone.

Third, the study contributes to the growing body of FinTech literature by providing empirical evidence from Malaysia, one of Southeast Asia's fastest-growing digital payment markets. Although previous studies have investigated e-wallet adoption in countries such as China, India, Indonesia, and South Korea, comparatively fewer studies have simultaneously examined technological and marketing-related determinants among

Malaysian Generation Z, despite this demographic representing one of the largest and most active user segments of digital payment technologies (Jamaludin et al., 2024; Foo & Kaur, 2024). By focusing on this context, the study contributes additional evidence regarding the applicability of technology adoption theories within emerging digital economies.

Fourth, the findings contribute to the broader digital marketing literature by demonstrating that promotional and experiential attributes continue to influence consumers' technology adoption decisions even after accounting for the core constructs of TAM. In particular, the significant influence of reward highlights the importance of value creation strategies, including cashback programmes, loyalty rewards, promotional discounts, and merchant incentives, in encouraging digital payment adoption. Likewise, the significant effects of convenience suggest that consumers evaluate e-wallet services not only in terms of technological performance but also based on the quality, reliability, and overall experience provided by service providers. These findings support the growing view that digital marketing and technology adoption should be examined as complementary rather than independent research domains (Lemon & Verhoef, 2016; Verhoef et al., 2021).

Lastly, the strong explanatory power of the proposed model ($R^2 = 0.811$) demonstrates that integrating technological beliefs with marketing-related determinants substantially improves the understanding of consumers' behavioural intentions towards e-wallet adoption. Rather than positioning TAM as a stand-alone explanatory model, the present study illustrates that its predictive capability can be enhanced through the incorporation of contemporary consumer-oriented variables that reflect current developments in digital commerce and FinTech. Consequently, this study contributes to the ongoing refinement of technology adoption theory by offering an integrated framework that is both theoretically grounded and practically relevant to modern digital payment ecosystems.

Practical Implications

The findings of this study offer several practical implications for e-wallet providers, financial institutions, digital marketers, merchants, and policymakers seeking to accelerate the adoption of digital payment technologies among Generation Z in Malaysia. As the empirical results demonstrate that convenience, reward, perceived usefulness, and perceived ease of use significantly influence e-wallet adoption, organisations should adopt an integrated strategy that simultaneously enhances technological performance and customer value. Rather than competing solely through pricing or promotional campaigns, service providers should focus on delivering a secure, user-friendly, and value-driven digital payment experience that aligns with the expectations of digitally connected consumers. For e-wallet providers, including Touch 'n Go eWallet, Boost, GrabPay, and ShopeePay, the findings emphasise the importance of continuous innovation in application functionality and user experience. Providers should simplify registration procedures, reduce transaction complexity, improve payment processing speed, and ensure seamless interoperability across online and offline merchant networks. In addition, integrating complementary financial services, such as digital budgeting tools, spending analytics, bill payment services, and personal financial management features, can enhance consumers' perceptions of usefulness while encouraging continued engagement with e-wallet platforms. Given the rapid evolution of digital payment technologies, investment in user-centred application design should be regarded as a long-term competitive strategy rather than merely a technical enhancement. The findings also demonstrate that reward programmes remain an effective marketing strategy for encouraging e-wallet adoption among Generation Z. Digital marketers should therefore develop personalised promotional campaigns based on consumers' spending behaviour and transaction preferences rather than relying exclusively on generic cashback promotions. Loyalty programmes, merchant partnerships, gamification features, digital vouchers, and referral incentives can provide additional value that encourages both initial adoption and continued usage. However, organisations should avoid excessive dependence on short-term promotional incentives. Instead, reward strategies should complement service quality, convenience, and security to build sustainable customer relationships and long-term loyalty.

For merchants and business organisations, the findings suggest that wider acceptance of e-wallet payments can improve customer convenience and contribute to a more seamless purchasing experience. Retailers should continue expanding contactless payment acceptance while integrating e-wallet services into both physical and

digital sales channels. Collaboration between merchants and e-wallet providers through exclusive promotional campaigns, membership rewards, and targeted discounts may further stimulate consumer engagement while increasing transaction frequency. Such partnerships can generate mutual benefits by strengthening customer retention and supporting the broader development of Malaysia's digital payment ecosystem.

The findings further provide important implications for policymakers and regulatory authorities, particularly Bank Negara Malaysia and agencies responsible for digital economy development. Continued investment in secure digital payment infrastructure, cybersecurity governance, financial literacy programmes, and consumer protection initiatives will be essential for sustaining public confidence in digital financial services. Policymakers should also encourage collaboration among financial institutions, FinTech providers, technology companies, and merchants to develop interoperable payment systems that improve accessibility and reduce transaction barriers. Furthermore, educational initiatives promoting digital financial literacy among younger consumers can strengthen awareness of secure digital payment practices while supporting the government's broader objective of advancing a sustainable cashless economy.

From a managerial perspective, the findings suggest that e-wallet providers should prioritise continuous improvements in application usability and functionality. Enhancing transaction speed, simplifying interface design, reducing the number of steps required to complete payments, and integrating additional financial services into a single application are likely to strengthen consumers' perceptions of usefulness while maintaining high levels of ease of use. Such improvements are particularly important for attracting and retaining Generation Z users, whose expectations regarding digital service quality continue to evolve rapidly. Consequently, investments in user-centred application design should be regarded not merely as technical enhancements but as strategic initiatives capable of strengthening customer satisfaction, increasing adoption rates, and sustaining long-term competitiveness within Malaysia's expanding digital payment ecosystem (Zainuddin et al., 2025).

Finally, the present findings provide strategic guidance for organisations seeking to engage Generation Z, a demographic that is expected to become the dominant consumer segment within Malaysia's digital economy. Unlike previous generations, Generation Z values technologies that are intuitive, efficient, secure, and capable of delivering personalised experiences. Consequently, organisations should design digital payment strategies that integrate technological excellence with customer-oriented marketing initiatives. By simultaneously enhancing convenience, security, reward, perceived usefulness, and perceived ease of use, organisations will be better positioned to strengthen customer satisfaction, encourage continued adoption, and achieve sustainable competitive advantage within the rapidly evolving FinTech landscape (Zainuddin et al., 2025).

CONCLUSION

The rapid expansion of digital financial services has transformed consumer payment behaviour, making e-wallets an increasingly important component of contemporary payment ecosystems. Against this backdrop, the present study examined the influence of convenience, security, reward, perceived usefulness, and perceived ease of use on e-wallet adoption among Generation Z in Malaysia using the Technology Acceptance Model (TAM) as the underlying theoretical framework. By integrating both technological and marketing-related determinants, the study sought to provide a more comprehensive understanding of consumers' behavioural intentions towards adopting digital payment technologies. In conclusion, this study demonstrates that the successful e-wallet adoption services depend on the combined influence of technological capability and customer-oriented value creation. As digital payment technologies continue to evolve through advances in artificial intelligence, digital ecosystems, and financial innovation, understanding consumers' adoption behaviour will remain essential for researchers, practitioners, and policymakers. The integrated framework proposed in this study provides a valuable foundation for future investigations while offering practical guidance for organisations seeking to strengthen consumer acceptance and promote sustainable digital payment ecosystems in Malaysia and beyond.

Limitations And Future Research

This study has several limitations that should be acknowledged. First, the use of purposive non-probability sampling limits the generalisability of the findings beyond Malaysian Generation Z consumers. Future studies should employ probability sampling techniques across more diverse demographic groups. Second, all variables were measured using self-reported questionnaires, which may introduce common method bias and social desirability bias despite statistical assessments suggesting that common method variance was not a serious concern. Third, the cross-sectional design captures respondents' perceptions at a single point in time and therefore does not permit causal inference or examination of changes in adoption behaviour over time. Future research could adopt longitudinal designs to investigate how consumers' perceptions evolve as digital payment technologies mature.

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REFERENCES

1. Abhipsa, P., Tejaswini, H., & Raghav, R. H. (2021). Is the convenience worth the risk? An investigation of mobile payment usage. *Information systems frontiers*, 23(4), 941-961. <https://doi.org/10.1007/s10796-020-10070-z>
2. Addula, S. R. (2025). Mobile banking adoption: A multi-factorial study on social influence, compatibility, digital self-efficacy, and perceived cost among generation Z consumers in the United States. *Journal of Theoretical and Applied Electronic Commerce Research*, 20(3), 192. <https://doi.org/10.3390/jtaer20030192>
3. Aji, H. M., Berakon, I., & Husin, M. M. (2020). COVID-19 and e-wallet usage intention: A multigroup analysis between Indonesia and Malaysia. *Cogent Business & Management*, 7(1), 1804181. <https://doi.org/10.1080/23311975.2020.1804181>
4. Alkadi, R. S., & Abed, S. S. (2023). Consumer acceptance of fintech app payment services: A systematic literature review and future research agenda. *Journal of Theoretical and Applied Electronic Commerce Research*, 18(4), 1838-1860. <https://doi.org/10.3390/jtaer18040093>
5. Al-Sharafi, M. A., Muhammed, I., Alzaeemi, S., Albashrawi, M. A., Chae, I., & Dwivedi, Y. K. (2025). Factors shaping FinTech adoption: A systematic review, key determinants, theoretical insights, conceptual framework and future research directions. *Information Discovery and Delivery*. <https://doi.org/10.1108/idd-04-2025-0098>
6. Al-Okaily, M., Al-Kofahi, M., Shiyyab, F. S., & Al-Okaily, A. (2025). Determinants of user satisfaction with financial information systems in the digital transformation era: insights from emerging markets. *Global Knowledge, Memory and Communication*, 74(3-4), 1171-1190. <https://doi.org/10.1108/gkmc-12-2022-0285>
7. Azhar, N. B. A., Zahari, M. S. M., Ferdian, F., & Hanafiah, M. H. (2025). Unpacking the power of trust: how relative advantage, compatibility, ease of use and usefulness drive hotel self-directed bookings. *Consumer Behavior in Tourism and Hospitality*, 20(1), 148-163. <https://doi.org/10.1108/cbth-05-2024-0176>
8. Azman Ong, M. H., Ibrahim, N. S., Zamani, N. D., & Yusri, M. Y. (2026). Understanding Gen Z's continuance intention in mobile payment: an extended MTAM approach in an emerging market. *Young Consumers*, 27(6), 814-834. <https://doi.org/10.1108/yc-07-2025-2607>
9. Badda, A. (2025). Technology Acceptance Model (TAM): Literature Review. *International Journal of Accounting Finance Auditing Management and Economics*, 6(11), 459-492.
10. Behera, C. K., & Kumra, R. (2024). Two decades of mobile payment research: A systematic review using the TCCM approach. *International Journal of Consumer Studies*, 48(1), e13003. <https://doi.org/10.1111/ijcs.13003>

11. Cheah, J. S., Emma, A. R., & Ammeran, M. Y. (2026). Determinants of continuous E-wallet usage in the post-COVID era: evidence from Malaysia using the technology continuance theory. *Quality & Quantity*, 1-21. <https://doi.org/10.1007/s11135-026-02593-5>
12. Che Nawi, N., Mamun, A. A., Hayat, N., & Seduram, L. (2022). Promoting sustainable financial services through the adoption of eWallet among Malaysian working adults. *Sage Open*, 12(1), 21582440211071107. <https://doi.org/10.1177/21582440211071107>
13. Chotisarn, N., & Phuthong, T. (2025). Mapping the landscape of marketing technology: trends, theories and trajectories in ecosystem research. *Cogent Business & Management*, 12(1), 2448608. <https://doi.org/10.1080/23311975.2024.2448608>
14. Davis, F. D. (1989). Technology acceptance model: TAM. Al-Suqri, MN, Al-Aufi, AS: Information seeking behavior and technology adoption, 205(219), 5. <https://doi.org/10.4018/978-1-4666-8156-9.ch013>
15. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 13(3), 319-340. <https://doi.org/10.2307/249008>
16. De Fano, D., Schena, R., & Russo, A. (2026). Harnessing AI ambidexterity for competitive advantage: the role of dynamic capabilities in digital innovation ecosystems. *European Journal of Innovation Management*, 29(2), 490-504. <https://doi.org/10.1108/ejim-11-2024-1404>
17. Esawe, A. T. (2022). Understanding mobile e-wallet consumers' intentions and user behavior. *Spanish Journal of Marketing-ESIC*, 26(3), 363-384. <https://doi.org/10.1108/sjme-05-2022-0105>
18. Fareed, T. (2023). A systemic review of payment technologies with a special focus on digital wallets. *Financial Technologies and DeFi: A Revisit to the Digital Finance Revolution*, 89-97. https://doi.org/10.1007/978-3-031-17998-3_6
19. Fauzi, A. A., Mursita, L. Y., Muhamad, N., & Sheng, M. L. (2026). Embracing Cross-Border Digital Payment in Southeast Asia: Current Development and Future Outlook: Clusters of Future Studies: Corporate Foresight; Past and Futures; Technological Trends. In *Future of Economy in Asia: Geopolitical Diplomacy, Technological Revolutions and Sustainable Pathways* (pp. 107-124). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-95500-6_6
20. Foo, Z. D., & Kaur, H. (2024). The factors that influence the adoption of e-wallet as payment method among Gen Z in Klang Valley, Malaysia. *Electronic Journal of Business and Management*, 9(1). <https://doi.org/10.65136/ejbm.v9i1.59>
21. Garg, S., Rani, P., & Garg, A. (2026). Determinants of behavioral intention of FinTech users: an extended UTAUT model by integrating trust and privacy belief. *Journal of Financial Services Marketing*, 31(2), 33. <https://doi.org/10.1057/s41264-026-00363-w>
22. Gupta, S. K., Gupta, S., & Jaiswal, R. (2026). Mobile wallet adoption in tourism economies: The role of trust, incentives, and user behavior. *Quality & Quantity*, 60(2), 3813-3845. <https://doi.org/10.1007/s11135-025-02427-w>
23. Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research methods in applied linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
24. Hair, Joe & Celsi, Mary & Money, Arthur & Samouel, Phillip & Page, Michael. (2015). *The essentials of business research methods: Third Edition*. 1-494. 10.4324/9781315716862. <https://doi.org/10.4324/9781315704562>
25. Herzberg, F. (1968). One more time: How do you motivate employees? *Harvard Business Review*, 46(1), 53-62. https://doi.org/10.1007/978-1-349-02701-9_2
26. Jamaludin, N. A., Zaki, H. O., Ramli, R. M., & Suffarruddin, S. H. (2024). Towards a sustainable financial future: Exploring the influence of e-wallet adoption among Gen Z in Malaysia. *Institutions and Economies*, 16(4). <https://doi.org/10.22452/IJIE.vol16no4.4>
27. Kanwal, P., Malik, P., Purty, J., Rawat, N., Randhawa, S. K., & Kaur, K. (2025). Redefining work: Global trends, hybrid models, and strategies for retaining Gen Z talent in the age of AI. In *Global work arrangements and outsourcing in the age of AI* (pp. 317-340). IGI Global Scientific Publishing.

28. Karim, N. A., Alazab, M., Alzubi, O. A., Abdulraheem, W. K., Kanaker, H., Alshinwan, M., ... & Jatana, V. (2026). VoicePass Multi-factor User Authentication Method for E-Wallet. *SN Computer Science*, 7(1), 61. <https://doi.org/10.1007/s42979-025-04660-4>
29. Karim, Md Wasiul and Haque, Ahasanul and Ulfy, Mohammad Arije and Hossain, Md Alamgir and Anis, Md. Zohurul, (2020). Factors Influencing the Use of E-wallet as a Payment Method among Malaysian Young Adult. Available at SSRN: <https://ssrn.com/abstract=5367671> or <http://dx.doi.org/10.2139/ssrn.5367671>
30. Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in human behavior*, 26(3), 310-322. <https://doi.org/10.1016/j.chb.2009.10.013>
31. Kshirsagar, K. P., & Ingle, A. (2025). Impacts of digital technologies across generations. In *Bridging Academia and Industry Through Cloud Integration in Education* (pp. 1-36). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3693-6705-6.ch001>
32. Ladeira, W. J., Lim, W. M., de Oliveira Santini, F., Rasul, T., Frantz, B., de Oliveira Rosa, J. C., & Azhar, M. (2025). Consumer adoption of internet of things. *Journal of Consumer Behaviour*, 24(2), 673-693. <https://doi.org/10.1002/cb.2427>
33. Lairayetan, F. O., Foroudi, P., & Palazzo, M. (2026). e-Loyalty Program and Repeat Purchase: Focus on Botswana. In *Sustainable Tourism, Hospitality and Events* (pp. 168-183). Routledge. <https://doi.org/10.4324/9781003488675-11>
34. Lakshmanan, K., & Shanmugavel, N. (2025). Investigation on the factors influencing the continuation intention to use digital wallet in the rural parts of India using extended UTAUT2. *Asian Journal of Economics and Banking*, 9(1), 22-47. <https://doi.org/10.1108/ajeb-08-2024-0100>
35. Liébana-Cabanillas, F., Marinković, V., & Kalinić, Z. (2017). A SEM-neural network approach for predicting antecedents of m-commerce acceptance. *International Journal of Information Management*, 37(2), 14-24. <https://doi.org/10.1016/j.ijinfomgt.2016.10.008>
36. Leong, L. Y., Hew, T. S., Ooi, K. B., Tan, G. W. H., & Koochang, A. (2026). Four decades of IJBM research: thematic evolution and future agenda for digital financial services. *International Journal of Bank Marketing*, 44(3), 454-491. <https://doi.org/10.1108/ijbm-06-2025-0422>
37. Liu, D., Son, S., & Zhu, Y. (2026). From perceived value to customer loyalty behavioral intentions: a social exchange theory perspective on value-based selling. *Journal of Business & Industrial Marketing*, 41(3), 413-428. <https://doi.org/10.1108/jbim-01-2025-0007>
38. Marangunić, N., & Granić, A. (2015). Technology acceptance model: a literature review from 1986 to 2013. *Universal access in the information society*, 14(1), 81-95. <https://doi.org/10.1007/s10209-014-0348-1>
39. Matar, A., & AlOqaily, A. N. (2025). The mediating influence of perceived usefulness on consumer behaviour towards driving e-wallet adoption in Jordan. *Journal of Open Innovation: Technology, Market, and Complexity*, 100651. <https://doi.org/10.1016/j.joitmc.2025.100651>
40. Medel, Dennis. (2025). Driving Customer-Centric Digital Marketing in Emerging Markets: Strategies, Barriers, and Growth Opportunities. 10.13140/RG.2.2.18132.72327. <https://doi.org/10.13140/RG.2.2.18132.72327>
41. Mohamad, M., & Chowdhury, D. (2025). End User Development for Mobile Money System: A Socio-technical Perspective. In *Unleashing User Innovation* (pp. 299-318). Auerbach Publications. <https://doi.org/10.1201/9781003485698-22>
42. Muhammad, M. Z., Mohd, F., Amboala, T., Amin, H., Yahya, W. F. F., Rahman, M. K., ... & Al-Rawashdeh, M. S. (2025). Shariah-compliant e-payment framework in Malaysia: Integrating fiqh, digital security and regulatory governance. *Journal of Fatwa Management and Research*, 30(2), 34-54. <https://doi.org/10.33102/jfatwa.vol30no2.638>
43. Nickerson, C. (2023). Theory of reasoned action (Fishbein and Ajzen, 1975). *Simply Psychology*, 1-11. <https://doi.org/10.1037/10523-026>
44. Ng, T. H., Lim, Y. Z., & Chan, K. H. (2026). A Mobile Wallet Security: What Drives Users to Protect Themselves?. In *Intelligent Governance in the Big Data Era: Finance and Sustainability in Developing*

- Nations (pp. 403-412). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-032-14698-4_38
45. Nguyen, L. T., Dwivedi, Y. K., Tan, G. W. H., Aw, E. C. X., Lo, P. S., & Ooi, K. B. (2023). Unlocking pathways to mobile payment satisfaction and commitment. *Journal of Computer Information Systems*, 63(4), 998-1015. <https://doi.org/10.1080/08874417.2022.2119444>
 46. Nurmalasari, N., Afifah, N., & Mustaruddin, M. (2025). The influence of perceived usefulness and cashback reward program mediated by e-wallet engagement on e-wallet user satisfaction. *Widya Cipta: Jurnal Sekretari dan Manajemen*, 9(2), 132-139. <https://doi.org/10.31294/widyacipta.v9i2.26461>
 47. Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in Human Behavior*, 61, 404-414. <https://doi.org/10.1016/j.chb.2016.03.030>
 48. Podsakoff, P. M., Podsakoff, N. P., Williams, L. J., Huang, C., & Yang, J. (2024). Common method bias: It's bad, it's complex, it's widespread, and it's not easy to fix. *Annual Review of Organizational Psychology and Organizational Behavior*, 11(2024), 17-61. <https://doi.org/10.1146/annurev-orgpsych-110721-040030>
 49. Prasetyo, Y. T., Susanto, K. C., Chuang, K. H., Yin, R. T., Chen, J. W., Zhang, Y. X., ... & Gumasing, M. J. J. (2025). Factors influencing the perceived usability of line pay: An extended technology acceptance model approach. *Acta Psychologica*, 255, 104924. <https://doi.org/10.1016/j.actpsy.2025.104924>
 50. Ps, R., & Doshi, A. (2025). Incentivising innovation: the moderating role of promotions in shaping millennials' mobile payments adoption. *Cogent Business & Management*, 12(1), 2463575. <https://doi.org/10.1080/23311975.2025.2463575>
 51. Putra, E. Y., & Nainggolan, F. (2025). The Effect of Promotional Attractiveness, Digital Payment, E-Advocacy On Performance With Customer Retention Quality As A Mediation In E-Wallet Use. *Jurnal Ilmu Manajemen (JIMMU)*, 10(2), 299-311. <https://doi.org/10.33474/jimmu.v10i2.24296>
 52. Qi, Lim & Ramasamy, Ganesh & Albakri, Ramzia & Senathirajah, Abdul & Haque, Rasheedul. (2025). Factors influencing intention towards adoption of E-wallet in Malaysia. *International Journal of Innovative Research and Scientific Studies*. 8. 294-306. 10.53894/ijirss.v8i5.8661. <https://doi.org/10.53894/ijirss.v8i5.8661>
 53. Rahayu, S. S., & Kusumastuti, S. Y. (2025). The Effect of Trust, Perceived Ease of Use, And Perceived Risk on Continuance Use of GoPay. *Penanomics: International Journal of Economics*, 4(3). <https://doi.org/10.56107/penanomics.v4i3.277>
 54. Sait, M. A., Anshari, M., Almunawar, M. N., & Masri, M. (2026). Why people do not bother using digital wallets? A qualitative study on resistance behavior. *Journal of Science and Technology Policy Management*, 1-25. <https://doi.org/10.1108/jstpm-05-2024-0155>
 55. Samuel, E. G., Ruban, S., Parayitam, S., & Cristofaro, M. (2026). From ease of use to satisfaction: the roles of trust and risk in digital payment adoption. *Management Research Review*, 49(13), 77-94. <https://doi.org/10.1108/mrr-10-2025-0801>
 56. Sathish, K., & Vidya, S. (2025). Enhancing financial accessibility with digital payment systems. *International Journal of Advanced Engineering, Management and Science*, 11(4), 619681. <https://doi.org/10.22161/ijaems.114.6>
 57. Sekaran, U., & Bougie, R. (2022). *Research Methods for Business: A Skill-Building Approach* (8th ed.). Wiley. [https://doi.org/10.1016/0024-6301\(93\)90168-f](https://doi.org/10.1016/0024-6301(93)90168-f)
 58. Shaikh, I. M., & Amin, H. (2025). Technology acceptance determinants and consumer innovativeness influence on ASNAFS' acceptance towards the use of e-wallet. *International Journal of Ethics and Systems*, 41(1), 238-257. <https://doi.org/10.1108/ijoes-06-2023-0126>
 59. Sharma, V., & Priya, B. (2025). Bridging the gap: AI-powered FinTech and its impact on financial inclusion and financial well-being. *Discover Artificial Intelligence*, 5(1), 290. <https://doi.org/10.1007/s44163-025-00465-9>
 60. Slade, E. L., Dwivedi, Y. K., Piercy, N. C., & Williams, M. D. (2015). Modeling consumers' adoption intentions of remote mobile payments in the United Kingdom: Extending UTAUT with innovativeness, risk, and trust. *Psychology & Marketing*, 32(8), 860-873. <https://doi.org/10.1002/mar.20823>

61. Spilotro, C., Secundo, G., & Del Vecchio, P. (2025). Discovering the impact of emerging technologies on SMEs' digital marketing strategies: a conceptual framework. *International Marketing Review*, 42(4), 666-697. <https://doi.org/10.1108/imr-11-2023-0301>
62. Stankevičienė, J., Bozdog, L. Ş., Glovaţchi, B., Mircea, G., Noja, G. G., & Kostopoulos, G. (2025). Shaping consumer behaviour in a digital landscape: the impact of technology readiness on the purchase of sustainable IoT products. *International Marketing Review*, 42(6), 1087-1109. <https://doi.org/10.1108/imr-10-2024-0427>
63. Tan, Y. W., Him, N. C., Abd Latif, N. A., & Yusof, Y. (2025). Analysis on Cashless Transactions using E-Wallet among Adults in Malaysia: A Correspondence Analysis Approach. *Enhanced Knowledge in Sciences and Technology*, 5(1), 367-378.
64. Tatian, C. T., Nurabiah, N., Ridhawati, R., & Thao, H. T. P. (2024). From wallets to screens: Exploring the determinants of QRIS payment adoption among Millennials in Eastern Indonesia. *JEMA: Jurnal Ilmiah Bidang Akuntansi Dan Manajemen*, 21(1), 87-113. <https://doi.org/10.31106/jema.v21i1.21712>
65. Tian, Y., Chan, T. J., Suki, N. M., & Kasim, M. A. (2023). Moderating role of perceived trust and perceived service quality on consumers' use behavior of alipay e-wallet system: The perspectives of technology acceptance model and theory of planned behavior. *Human Behavior and Emerging Technologies*, 2023(1), 5276406. <https://doi.org/10.1155/2023/5276406>
66. Tjiptono, F., Khan, G., Yeong, E. S., & Kunchambo, V. (2020). Generation Z in Malaysia: The four 'E' generation. *The New Generation Z in Asia: Dynamics, Differences, Digitalisation*, Elodie Gentina, Emma Parry. <https://doi.org/10.1108/978-1-80043-220-820201015>
67. Utomo, F. S., Suryana, N., & Azmi, M. S. (2025). Factors influencing user adoption of mobile payment system: an integrated model of perceived usefulness, ease of use, financial literacy, and trust. *Journal of Digital Market and Digital Currency*, 2(2), 135-156. <https://doi.org/10.47738/jdmcd.v2i2.31>
68. Vafaei-Zadeh, A., Nikbin, D., Teoh, K. Y., & Hanifah, H. (2025). Cybersecurity awareness and fear of cyberattacks among online banking users in Malaysia. *International Journal of Bank Marketing*, 43(3), 476-505. <https://doi.org/10.1108/ijbm-03-2024-0138>
69. Vásquez-Vásquez, L. M., Alvarado-Cáceres, E. J., Caicedo-Mendoza, J. A., & Fernández-Bedoya, V. H. (2026). From Cash to Digital Wallets: A PRISMA-Based Systematic Review of Microentrepreneur Adoption in Asia and Latin America. *Journal of Risk and Financial Management*, 19(3), 232. <https://doi.org/10.3390/jrfm19030232>
70. Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186-204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
71. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478. <https://doi.org/10.2307/30036540>
72. Venkatesh, V., & Thong, J. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the association for Information Systems*. <https://doi.org/10.17705/1jais.00428>
73. Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, 36(1), 157-178. <https://doi.org/10.2307/41410412>
74. Winata, V., & Arma, O. (2025). Analyzing the effect of e-wallet usability on customer retention in mobile payment apps. *JUMDER: Jurnal Bisnis Digital dan Ekonomi Kreatif*, 1(2), 38-57.
75. Yang, Q., & Shi, F. (2024). A Technology Acceptance Model (TAM) towards use intention of e-wallet among youth in Malaysia. *UCJC Business and Society Review*, 21(1). <https://doi.org/10.3232/UBR.2024.V21.N1.01>
76. Yang, C. Z., Rahman, S. A., Al-Ainati, S., Alharbi, A., Haque, R., Isa, M., ... & Devasia, S. N. (2025). Generation Z's smartphone purchase intentions and behaviors: A study amongst Malaysian higher education students. *Journal of Posthumanism*, 5(4), 45-70. <https://doi.org/10.63332/joph.v5i4.977>
77. Zainuddin, M. T., Nazarie, W. N. F. W. M., & Zamri, S. N. B. M. (2025). Determinants of Customer Satisfaction in the Digital Banking Industry in Malaysia. *Global Business & Management Research*, 17(3).

-
78. Zainuddin, M. T. (2016). Marketing: Conventional Approach and Complementary Views from Islamic Perspectives. USIM Press, Universiti Sains Islam Malaysia.
 79. Zakariya, A., & Arifin, A. A. (2025). The Application of Digital Payments (QRIS & E-Wallet) on the Efficiency of MSME Transactions. *Journal of Finance, Economics and Business*, 4(2), 1-19. <https://doi.org/10.59827/jfeb.v4i2.326>