A TAM3-Based Model of E-Wallet Adoption: The Roles of Trust and Government Support among Malaysian Youth

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Abstract

This paper explores e-wallet adoption among Malaysian youth (ages 18-30) by applying the Technology Acceptance Model 3 (TAM3) and extending it with trust and government support to capture governmental initiatives that influence the use of financial technology. An online survey was conducted, and 489 responses were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). Findings reaffirm TAM3's strength in explaining digital adoption, with perceived ease of use and perceived usefulness remaining pivotal drivers of behavioural intention. Results highlight computer self-efficacy, enjoyment, and perceived external control can enhance the predictability of perceived ease of use, while playfulness is insignificant. Government support emerges as a key institutional driver, directly influencing adoption intention and strengthening perceived usefulness, emphasising the role of policy and regulatory infrastructure in digital financial adoption. Trust further reinforces intention, emphasising security and reliability. The study validates TAM3 in a Southeast Asian context and extends the model by including government support as a critical institutional construct.

Keywords: *E-wallet adoption; Fintech; Government support; Malaysian Youth; Technology Acceptance Model 3*

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1. Introduction

In the digital payment landscape, electronic wallets (e-wallets) are reshaping consumer payment behaviour through an unprecedented transformation. The rise of e-wallets in Malaysia has significantly reshaped the country's payment ecosystem. The Malaysian government is aggressively promoting the acceptance of e-wallets as part of its vision to become a cashless society (Payments Network Malaysia, 2025). Initiatives such as e-Penjana the e-Tunai Rakyat programme, Cashless Boleh 4.0, and Cashless Boleh 5.0 (Ministry of Finance Malaysia, 2022), as well as collaborations with various banks and financial services to promote a unified cashless ecosystem, have accelerated the digital payment agenda (Bank Negara Malaysia, 2022). Campaigns such as the e-Tunai Rakyat programme are focused particularly on the Generation Z, which represents an important demographic, as this segment is from the digital native segment with a high digital presence and is very receptive to technological change (Wan Nawang et al., 2025).

Most scholars have used the Technology Acceptance Model (TAM), with extensions such as TAM3 providing a deeper understanding of adoption behaviours (Venkatesh and Bala, 2008) in the study of e-wallet adoption. The TAM3 model includes variables such as subjective norms, computer self-efficacy, perceptions of external control, and experience, not only perceived usefulness and perceived ease of use. This TAM3 extension is well suited to the Malaysian youth context, given their exposure to smart education (Venkatesh and Bala, 2008). For example, Teo et al. (2020) found that social influence plays a significant role in shaping youth adoption of e-wallets, while Lim et al. (2024) emphasised the importance of security and perceived ease of use.

This study aims to introduce trust as a variable because trust has consistently emerged as a key determinant in digital financial transactions based on past literature (Shao et al., 2019; Appiah and Agblewornu, 2025). Mixed results regarding Malaysian youth, combined with data protection and fraud risks, highlight the need for further research. (Lim et al., 2024). Furthermore, in Malaysia, government support is very crucial in the rollout of any new initiatives, which not only builds confidence through regulatory oversight but also stimulates adoption via monetary incentives, infrastructure readiness, and policy encouragement (Economic Planning Unit, 2021). Together, these constructs highlight the multi-dimensional drivers of e-wallet adoption among Malaysian youth.

1.1 Problem Statement

Despite Malaysia’s vision of achieving a cashless society, e-wallet adoption among youth remains inconsistent, even with their high digital exposure and smartphone penetration (Economic Planning Unit, 2021; Oppotus, 2025). While young consumers are drawn to the convenience and promotional incentives of e-wallets, persistent trust concerns, ranging from privacy breaches to cyber fraud, will continue to inhibit sustained adoption (Lim et al., 2024; Mohd Abdillih and Wan Nawang, 2024). Government-led initiatives such as e-Tunai Rakyat and e-Penjana have increased first-time use, yet academic studies often treat state interventions as peripheral rather than as theorised constructs, overlooking their influence on legitimacy, safety, and long-term adoption (Bank Negara Malaysia, 2022;

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Ling et al., 2025). Moreover, while TAM, TAM2, and UTAUT have been extensively applied to fintech research (Teo et al., 2020), limited empirical work has tested TAM3, with inconsistent findings suggesting the need to integrate contextual enablers such as trust and government support.

Another limitation of existing research is its predominant focus on undergraduates (Mohd Abdillih and Wan Nawang, 2024), which risks overlooking the heterogeneity of adoption behaviours across the broader youth segment operationalised in this study as 18-30 years. Youth outside higher education, such as working professionals, entrepreneurs, and unemployed individuals, may adopt e-wallets for different purposes, from bill payments and online shopping to business transactions (Lim et al., 2024). Focusing on the Klang Valley, Malaysia's economic and digital hub (Teo et al., 2020; Wan Nawang et al., 2025; Ling et al., 2025), this study addresses these gaps by empirically testing TAM3 while extending it with trust and government support. In doing so, it contributes to theory by contextualising adoption models for emerging economies and offers practical guidance for policymakers and providers to strengthen digital finance strategies.

1.2 Research Objectives

This study aims to advance the understanding of e-wallet adoption among Malaysian youth by applying the Technology Acceptance Model 3 (TAM3) (Venkatesh and Bala, 2008) and extending it with trust and perceived government support, two critical variables often overlooked in the Malaysian fintech context.

The objectives are:

1) To examine the effects of TAM3 determinants (perceived usefulness, perceived ease of use, subjective norm, image, output quality, result demonstrability, computer self-efficacy, perceptions of external control, computer playfulness, and perceived enjoyment) on the behavioural intention to adopt e-wallet.

2) To assess the influence of government support on perceived usefulness and behavioural intention to adopt e-wallet.

3) To evaluate the role of trust as an enabler of behavioural intention to adopt e-wallet.

2. Literature Review

2.1 Trust and E-Wallet Adoption

Past researchers have shown that in any form of digital payment, trust has consistently emerged as a decisive variable of intention and usage (Shao et al., 2019). In Malaysia, a study on Gen-Z has reported that trust both mediates and directly predicts intention to use e-wallets; perceived usefulness, ease of use, and social influence strengthen trust, which in turn elevates adoption likelihood. This pattern suggests that functional beliefs (usefulness, ease) and normative pressures operate partly through trust formation in youth segments (Wan Nawang et al., 2025).

Past literature has also highlighted that Malaysian youth are concerned about data privacy, security controls, and provider integrity, for example, authentication strength, transaction reversibility (Lim et al., 2024). Security-focused models show that perceptions of app security performance, secure authentication, and data privacy protections positively shape

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adoption, underscoring trust's multi-attribute nature in a mobile context (Lim et al., 2024). According to research conducted in Malaysia, the trust-use feedback strengthens when initial trials turn into sustained use when trust and security reviews are supported by positive experiences (Wong and Mohamed, 2021).

2.2 Government Support as an Adoption Catalyst

Bank Negara Malaysia has provided a Financial Sector Blueprint (2022-2026), which sets explicit objectives in digitalising payments and broadening inclusion, creating relevant infrastructure that can overcome obstacles to adoption (Bank Negara Malaysia, 2022). The Malaysian Government has also introduced schemes such as e-Tunai (January to March 2020), followed by e-Penjana and e-Belia schemes by channelling incentives to seed first-time users among youth and catalysing merchant acceptance.

Empirical studies link these government incentives and social influence to higher adoption intention among Malaysians, especially Gen-Z, indicating that policy support interacts with social norms to accelerate uptake.

Government support can facilitate intention to use mobile payments in Malaysia (Ling et al., 2025).

2.3 TAM3 Constructs in the Context of Malaysian Youth

TAM3 is an expansion of TAM and TAM2 that elaborates on factors influencing perceived usefulness and perceived ease of use, such as subjective norm, output quality, result demonstrability, computer self-efficacy, perceptions of external control, and experience (Venkatesh and Bala, 2008). Different theories were employed in the research on e-wallet adoption. Majority of research on e-wallet adoption in Malaysia has largely utilised the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), while few studies have made efforts to empirically examine the application of Technology Acceptance Model 3 (TAM3). The majority of studies carried out in Malaysia have emphasised TAM and UTAUT2 as key models for understanding behavioural intention, particularly among university students (Teo et al., 2020; Mohd Abdillih and Wan Nawang, 2024; Salimon et al., 2023

2.3.1 TAM3 Constructs

The Technology Acceptance Model (TAM) and its variants have been used to study the u se of digital financial technology such as e-wallets in great detail. TAM suggests that two main beliefs, perceived usefulness (PU) and perceived ease of use (PEOU), influence an individual's intention to use a technology, therefore determining how the technology is actually used (Davis, 1989). Subsequent models, including TAM2, TAM3, and the Unified Theory of Acceptance and Use of Technology (UTAUT), incorporated further elements such as subjective norms, image, trust, job relevance, and government support, thus providing a more comprehensive insight into technology adoption (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008) as shown in Table 1. These frameworks provide a robust theoretical foundation for examining how Malaysian young people adopt e-wallets within a shifting financial landscape.

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Table 1. Constructs of TAM3

Construct	Representative Finding	Supporting Sources
Perceived Usefulness (PU)	Perceived usefulness supports e-wallet adoption intention.	Wan Nawang et al. (2025)
Perceived Ease of Use (PEOU)	Ease of use supports usefulness and adoption intention.	Mohd Abdillih & Wan Nawang (2024)
Subjective Norm (SN)	Social influence can shape intention to adopt e-wallets.	Teo et al. (2020)
Image	Social image is a potential antecedent of perceived usefulness.	Venkatesh & Davis (2000)
Job Relevance	Task relevance can shape perceived usefulness in TAM2.	Venkatesh & Davis (2000)
Output Quality	Perceived output quality can shape perceived usefulness.	Venkatesh & Davis (2000)
Result Demonstrability	Observable results can support perceived usefulness.	Venkatesh & Davis (2000); Moore & Benbasat (1991)
Computer Self-Efficacy	Confidence in using digital tools supports ease-of-use perceptions.	Compeau & Higgins (1995); Venkatesh & Bala (2008)
Perceptions of External Control	Facilitating resources and support inform external-control perceptions.	Venkatesh & Bala (2008)
Computer Playfulness	Playfulness is a potential determinant of ease-of-use perceptions.	Venkatesh & Bala (2008)
Perceived Enjoyment	Enjoyment can shape perceptions of ease of use.	Venkatesh & Bala (2008)
Trust	Trust contributes to e-wallet adoption intention.	Wan Nawang et al. (2025); Kiew et al. (2022)
Government Support	Government support facilitates mobile payment intention.	Ling et al. (2025)
Behavioural Intention → Usage	Behavioural intention is an antecedent of technology use.	Venkatesh et al. (2003)

2.4 Perceived Usefulness

Perceived usefulness refers to the extent to which an individual believes that using a system enhances performance and originates from the Technology Acceptance Model (Davis, 1989). Prior studies in mobile payment contexts consistently identify it as a key determinant of adoption; for instance, Tian and Chan (2024) found it to be a dominant predictor of consumers' intention to use mobile payments. Perceived usefulness, shaped by task relevance, output quality, result demonstrability, and subjective norm, strongly predicts adoption of digital financial services (Shankar & Datta, 2018; Nguyen et al., 2022; Venkatesh and Bala, 2008).

2.5 Perceived Ease of Use

Perceived ease of use is defined as the degree of how an individual believes that the usage of technology will be effortless (Davis, 1989). Davis (1989) posit that perceived ease of

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use is influenced by individual capabilities, system design, and facilitating conditions, and has been consistently shown to positively affect perceived usefulness. Past studies such as by Lim et al. (2023) have found that perceived ease of use has strong predictive relevance to the adoption of e-wallet.

2.6 Subjective Norm

Subjective norm is referred to the degree to which user perceives that people who are that important to them will influence them to follow an action (Fishbein & Ajzen, 1975; Venkatesh & Davis, 2000), in this case referring to the usage of e-wallet. Past studies in the adoption of e-wallet contexts, found that subjective norm captures social influence from peers, family, and close social networks who endorse mobile payments (Shao et al., 2019; Ling et al., 2025).

2.7 Image

Image is the extent of perceived enhancement of social status in this case from the usage of technological innovation (Davis, 1989). While image may influence perceived usefulness during early adoption phases, recent fintech research suggests that its impact diminishes once e-wallets become mainstream. Users increasingly prioritise functional value, trust, and regulatory assurance over prestige or status signalling in financial technologies (Oliveira et al., 2016; Kolade et al., 2022).

2.8 Job Relevance

Job relevance, often reframed as task relevance in consumer fintech research, refers to the extent to which an e-wallet is perceived as applicable to daily financial activities (Venkatesh and Davis, 2000). When users perceive e-wallets as highly relevant for routine transactions such as payments and transfers, perceived usefulness is significantly enhanced, leading to stronger adoption intentions (Venkatesh and Davis, 2000).

2.9 Output Quality

Output quality reflects users' perceptions of how well an e-wallet performs its intended functions, including transaction accuracy, processing speed, and reliability (Venkatesh & Davis, 2000). High perceived output quality enhances perceived usefulness and reinforces trust, both of which are critical for adoption and continued usage in digital financial services (Pazarbasioglu et al., 2020; Shankar & Behl, 2023).

2.10 Result Demonstrability

Result demonstrability refers to the degree to which the benefits of e-wallet usage are tangible and observable (Moore and Benbasat, 1991). Features such as instant transaction confirmations, digital receipts, and cashback rewards improve users' ability to evaluate outcomes, thereby strengthening perceived usefulness and encouraging continued adoption (Venkatesh and Davis, 2000).

2.11 Computer Self-Efficacy

Computer self-efficacy denotes individuals' confidence in their ability to use digital technologies effectively (Compeau & Higgins, 1995). In e-wallet adoption, higher digital self-efficacy reduces perceived effort and increases both perceived ease of use and

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perceived usefulness, leading to stronger behavioural intention (Rahi et al., 2021; Sharma and Saini, 2022).

2.12 Perceptions of External Control

Perceptions of external control describe the belief that adequate technical, organisational, and institutional support exists to facilitate e-wallet use (Venkatesh et al., 2003). This includes access to stable infrastructure, customer support, merchant acceptance, and regulatory protection. Strong external control perceptions enhance perceived ease of use and perceived usefulness by reducing perceived risk and uncertainty (Alalwan et al., 2018; Ling et al., 2025).

2.13 Computer Playfulness

Computer playfulness refers to spontaneous and exploratory interaction with technology (Webster & Martocchio, 1992). While playfulness may enhance perceived ease of use in hedonic systems, empirical evidence suggests that it has limited influence in e-wallet adoption due to the utilitarian and risk-sensitive nature of financial transactions (Kolade et al., 2022; Moon and Kim, 2001).

2.14 Perceived Enjoyment

Perceived enjoyment captures the intrinsic pleasure derived from using an e-wallet, independent of performance outcomes (Venkatesh, 2000). Studies indicate that enjoyment positively influences perceived ease of use and continued usage, particularly among younger users accustomed to mobile-centric interfaces (Yang and Han, 2021; Kim et al., 2025).

2.15 Trust

Trust, from a social psychological perspective, refers to the expectation and willingness of a party to engage in a transaction (Roca, García, & de la Vega, 2009) and is influenced by perceived characteristics of providers (Haider et al., 2024). Past studies based on e-wallet found that e-wallet's security, reliability, and integrity has consistently encourage behavioural intention to adopt and use e-wallets by reducing perceived risk and reinforcing confidence in the technology (Kiew, Toh, Ngian, & Law, 2022; Riza & Aditya, 2025).

2.16 Government Support

Government support such as policies and initiatives that facilitate technology adoption has significantly influence e-wallet adoption, especially during crises like COVID-19 (Ling et al., 2025). While partial lockdowns in Malaysia and Indonesia did not mandate cashless payments, initiatives such as Malaysia's ePENJANA stimulus and Micro, Small, and Medium Enterprises (MSME) campaigns encouraged digital transactions (Ministry of Finance Malaysia, 2022). Empirical evidence has consistently demonstrated that government support has a positive impact on innovation and consumer adoption of digital financial services (Appiah et al., 2025; Wei et al., 2025).

2.17 Behavioural Intention

Behavioural intention is when an individual has an intention to start using a system, where actual system use is influenced by intention (Davis, 1989). The concept of behavioural intention is the central to e-wallet adoption research, with numerous studies finding that

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factors such as perceived usefulness, ease of use, trust, and security significantly shape users' intention to adopt and use e-wallets in various contexts (Akib, et al., 2022; Wan Nawang et al., 2025).

In this study, the attempt to develop a strong research framework, two (2) original variable was removed: job relevance and computer anxiety. Job relevance, which reflects system utility in work-related contexts (Venkatesh and Davis, 2000), is theoretically misaligned with consumer financial technologies such as e-wallets, where adoption is primarily driven by hedonic, lifestyle, and transactional value rather than occupational applicability. Similarly, computer anxiety, a salient barrier during the early stages of personal computing (Igbaria and Parasuraman, 1989), is no longer a significant determinant among digital-native cohorts who display high levels of mobile technology fluency (Prensky, 2001) and show almost a saturated smartphone adoption in Malaysia (Lim et al., 2019) as the study is focusing on the Malaysian youth aged 18-30 years of age.

Additionally, since the target segment is the youth who are already frequent users of smartphones and digital natives, the variable experience is not relevant in the context of the study. Therefore, the TAM3 moderator variable is removed. The second moderator variable from the original TAM3 model is voluntariness, which is also removed in the proposed research framework because the usage of e-wallet is consumer-driven and discretionary, making the variable not relevant as well.

3. Hypotheses Development

The majority of the literature that was carried out in Western countries have consistently shown that perceived usefulness and perceived ease of use are essential factors influencing actual usage. A study closer to Malaysia by Effendy et al. (2021) revealed that both perceived usefulness and perceived ease of use have a notable impact on the intention to utilise e-wallets in Indonesia, consistent with results from various fintech adoption research in Asia. For young users, the simplicity of engaging with technology, along with views of its practical advantages, frequently influences their willingness to embrace mobile payment solutions. Comparable trends are observed in the uptake of mobile banking, where perceived ease of use encourages initial adoption and perceived usefulness maintains ongoing use. In the context of Malaysia, Wan Nawang et al. (2025) identified that both perceived usefulness and perceived ease of use serve as important factors influencing the intention to adopt e-wallets, reinforcing the fundamental relationships of TAM. Similarly, research involving Malaysian Gen Z students revealed that perceived usefulness and perceived ease of use greatly influenced their intentions to adopt (Mohd Abdillih and Wan Nawang, 2024). These results emphasise the important influence of these two concepts on Malaysian youths' actual usage of e-wallet

H1: Perceived usefulness influences *the behavioural intention to adopt e-wallet.*
H2: Perceived ease of use influences the behavioural intention to adopt e-wallet.

A significant body of literature highlights the impact of social influence on the adoption of technology. TAM2 and UTAUT suggest that subjective norms directly impact behavioural intention and also shape views on image and utility (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008). In collectivist cultures like Malaysia, approval from peers and family significantly influences young people's choices about adopting fintech (Teo et al.,

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2020). Global studies indicate that when people sense significant social pressures, they are more inclined to adopt digital payment methods to improve their social status (Venkatesh and Davis, 2000). Malaysian researchers like Teo et al. (2020) found that subjective norms had a considerable effect on e-wallet usage among Malaysian youth, whereas a study by Mat Yunoh et al. (2023) emphasised the role of peer and social pressures in driving adoption. Therefore in this study, the following hypotheses are developed.

H3: Perceived ease of use influences the perceived usefulness of e-wallets.

H4: Subjective norm influences the behavioural intention to adopt e-wallet.
H5: Subjective norm influences perceived usefulness of e-wallets.

H6: Image influences the perceived usefulness of e-wallets.

Additionally, TAM2 recognises output quality and result demonstrability as key factors influencing perceived usefulness. User's opinions on perceived usefulness are strengthened when they believe that using e-wallet is beneficial in their daily life, due to the reliability and outcome, which can guarantee that the advantages are obvious (Venkatesh and Davis, 2000). Venkatesh and Davis (2000) identified these constructs as essential for the adoption of IT in organisations globally. In the Malaysian fintech industry, these elements are similarly important as e-wallets progressively take the place of cash and are incorporated into retail, education, and public services, highlighting their advantages for the youth (Wan Nawang et al., 2025). Thus, the following hypotheses were developed.

H7: Output quality influences the perceived usefulness of e-wallets.
H8: Result demonstrability influences the perceived usefulness of e-wallets.

Expanding on TAM3, personal and psychological elements influence how ease of use is perceived. Confidence in handling digital tools is strengthened by computer self-efficacy and beliefs about external control, whereas computer playfulness and perceived enjoyment improve positive attitudes toward their use (Venkatesh and Bala, 2008; Moon and Kim, 2001). Research has indicated that these elements are significant predictors of young users' ease and proficiency in navigating digital platforms in various contexts (Venkatesh and Bala, 2008; Chen and Mooi, 2021). These variables are essential to be tested to ascertain why Malaysian youth accept e-wallets more readily than others in the same age segment given the varying degree of literacy level.

H9: Computer self-efficacy influences perceived ease of use of e-wallets.
H10: Perceptions of external control influence perceived ease of use of e-wallets.
H11: Computer playfulness influences perceived ease of use of e-wallets.
H12: Perceived enjoyment influences perceived ease of use of e-wallets.

Trust and governmental support are deemed equally essential in the e-wallet adoption journey. In digital financial services, trust diminishes perceived risks and uncertainties, thus promoting actual usage (Gefen et al., 2003). A study in Malaysia by Mat Yunoh et al. (2023) established that trust is crucial for young people's readiness to use e-wallets. In the same vein, studies conducted by Wan Nawang et al. (2025) highlighted that feelings of security and reliability were essential to adoption choices in Malaysia. In addition to trust, governmental backing, comprising subsidies, incentives, and promotional initiatives like e-Tunai and Belia e-Cash, has demonstrated the ability to speed up adoption. A study

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indicated that government initiatives served as a normative influence on the fintech usage of Malaysian youths (Ling et al., 2025), especially when the government is trying to promote the usefulness of going digital. These results indicate that trust in institutions and governmental support together promote the spread of e-wallets.

H15: Trust positively influences the behavioural intention to adopt e-wallet.

H16: Government support influences perceived ease of use of e-wallets.

H17: Government support influences the behavioural intention to adopt e-wallet..

Figure 1 shows the research framework developed based on TAM3 and the inclusion of two (2) variables as discussed earlier; trust and government support.

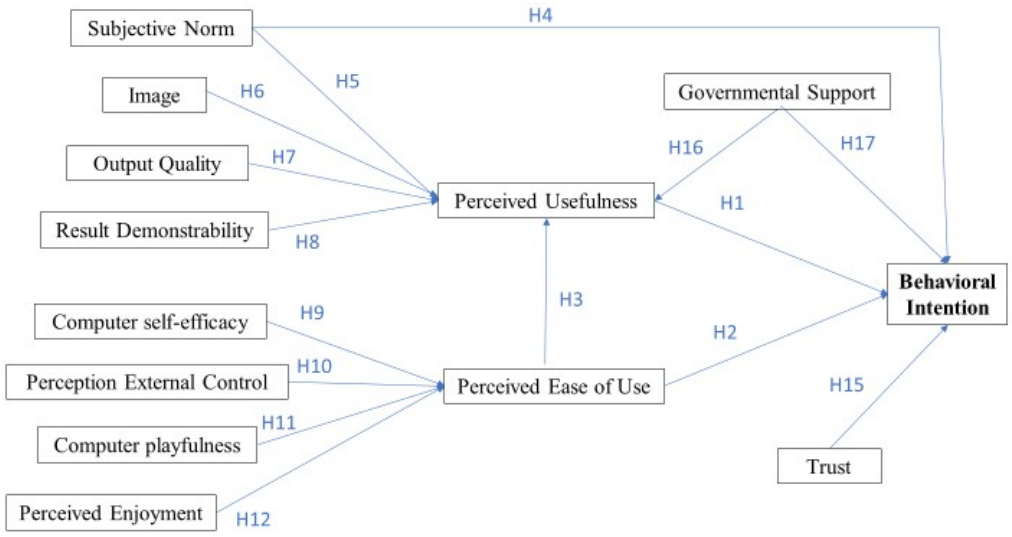


Figure 1. Research Framework

4. Research Methodology

This study adopts a quantitative survey design to examine the adoption of e-wallets among Malaysian youth, focusing on individuals aged 18-30 who either actively use or have access to e-wallet platforms. The quantitative approach is appropriate as it enables the testing of causal relationships between constructs derived from the Technology Acceptance Model 3 (TAM3), trust, and government support, while providing generalisable insights into actual usage and actual usage patterns (Creswell and Creswell, 2018). A self-administered structured questionnaire will be developed, drawing upon established and validated measurement scales from prior literature. Each variable including perceived usefulness, perceived ease of use, subjective norms, image, job relevance, output quality, result demonstrability, computer self-efficacy, perceptions of external control, computer anxiety, computer playfulness, perceived enjoyment, trust, government support, behavioural intention, and actual usage will be operationalised using multi-item Likert scales adapted from previous studies (e.g., Davis, 1989; Venkatesh and Davis, 2000; Venkatesh and Bala, 2008; Gefen et al., 2003). A 5-point Likert scale, ranging from

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"strongly disagree" (1) to "strongly agree" (5), will be used to ensure consistency and comparability of responses.

The target population comprises Malaysian youth between the ages of 18 and 30, as this demographic has been identified as the key driver of digital payment adoption in line with government initiatives such as e-Tunai Rakyat and eBelia (Bank Negara Malaysia, 2022; Lim et al., 2022). To ensure representativeness, the study will employ a stratified random sampling technique, selecting respondents from both urban and semi-urban regions in Malaysia. Urban youths are expected to have higher exposure to fintech innovations, while semi-urban respondents may provide insights into infrastructural and literacy challenges. Stratification by geographic area ensures coverage of different socio-economic and technological contexts (Sekaran and Bougie, 2019). A minimum sample size of 400 respondents will be targeted, which exceeds the threshold recommended by Krejcie and Morgan (1970) for populations above 1 million. Moreover, for PLS-SEM, a sample size of 10 times the maximum number of structural paths directed at a construct is considered sufficient (Hair et al., 2019). Given the complexity of TAM3 with multiple exogenous predictors, a sample of 400 is robust for achieving adequate statistical power.

Online data collection via Google Forms was adopted in this study because it supports efficient questionnaire design, dissemination, and access among digitally connected respondents. Published applications include student satisfaction surveys (Nurmahmudah & Nuryuniarti, 2020), hand-hygiene monitoring (Wiemken et al., 2018), and online consumer research (Zhang et al., 2023). An internet-based survey is therefore appropriate for the intended technology-using population, consistent with methodological guidance on internet organizational surveys (Simsek & Veiga, 2001).

For data analysis, this study will employ Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS software. PLS-SEM is particularly suited for this research due to its ability to handle complex models with multiple constructs and relationships, as well as its suitability for exploratory research where theoretical frameworks are extended with new variables such as trust and government support (Hair et al., 2019; Sarstedt et al., 2020). The analysis will follow a two-step process: (1) assessment of the measurement model to establish the reliability and validity of constructs, and (2) evaluation of the structural model to test hypothesised relationships.

5. Analysis and Findings

A total of 489 respondents participated in the survey. From the total respondents, a total of 316 were female and 173 were male. The ages of the participants ranged from 18 to 30 years, with a significant portion belonging to the 20-24 age category, which indicates a youthful demographic engaged online-based activities. This age distribution is consistent with earlier studies that suggest younger generations are more likely to embrace e-wallet technologies due to their comfort with digital platforms and mobile devices (Asad et al., 2024). The greater involvement of females may also indicate gender differences in technology adoption behaviours, underscoring the necessity of recognising demographic variations in e-wallet usage trends (Shao et al., 2019). In summary, the demographic profile of respondents provides valuable insights into the target user base for e-wallet services in Klang Valley, emphasising the importance of the 20-24 age group within digital financial ecosystems.

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5.1 Reliability and Validity

Table 2 shows the measurement model demonstrated satisfactory reliability and validity across the constructs. Cronbach's alpha values ranged from 0.708 (PEC) to 0.878 (ENJ), all exceeding the recommended threshold of 0.70 (Nunnally and Bernstein, 1994), thereby confirming internal consistency. Composite reliability values were also above the cut-off of 0.70, with most constructs surpassing 0.85, reflecting strong construct reliability (Hair et al., 2019). Convergent validity was established as the Average Variance Extracted (AVE) values exceeded 0.50 for all constructs (Fornell and Larcker, 1981), with particularly high values for ENJ (0.804), IMG (0.792), and BI (0.780). However, constructs such as RES (0.575) and CPLAY (0.565) were closer to the lower acceptable boundary, suggesting areas for potential refinement.

The factor loading results demonstrate that all retained items load strongly on their respective constructs, with values exceeding the recommended threshold of 0.70, thereby confirming adequate indicator reliability (Hair et al., 2022). Only a few items with marginally lower values were retained as they contributed to content validity without significantly compromising construct reliability. Overall, the findings affirm strong measurement model quality in line with established PLS-SEM guidelines (Henseler, 2021).

Table 2. Construct Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability (ρc)	AVE
BI (Behavioural Intention)	0.859	0.914	0.780
CPLAY (Computer Playfulness)	0.748	0.836	0.565
CSE (Computer Self-Efficacy)	0.875	0.915	0.729
ENJ (Perceived Enjoyment)	0.878	0.925	0.804
GOV (Government Support)	0.810	0.888	0.725
IMG (Image)	0.871	0.919	0.792
OUT (Output Quality)	0.841	0.903	0.757
PEC (Perceptions of External Control)	0.708	0.823	0.571
PEOU (Perceived Ease of Use)	0.872	0.913	0.723
PU (Perceived Usefulness)	0.850	0.898	0.689
RES (Result Demonstrability)	0.733	0.827	0.575
SN (Subjective Norm)	0.772	0.851	0.588
TR (Trust)	0.837	0.890	0.669

The HTMT ratios were utilised to evaluate discriminant validity. The findings supported discriminant validity by showing that each variable's square roots of AVE were higher than its correlations with other constructs. Similarly, HTMT ratios were generally below the conservative threshold of 0.85 (Henseler, Ringle, and Sarstedt, 2015), though a few higher values, such as RES-OUT (0.917) and PEC-CSE (0.826), indicate possible conceptual overlaps. Examination of item loadings further reinforced the model's robustness, as most exceeded the 0.70 threshold, except PEC4 (0.248) and RES4 (0.260), which fell below the recommended level and may require exclusion in subsequent analyses (Hair et al., 2019). Overall, the report provides strong evidence of reliability and validity,

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supporting the adequacy of the measurement model for subsequent structural testing as shown in Table 3.

Table 3. Heterotrait-Monotrait Ratios

Construct	BI	CPLAY	CSE	ENJ	GOV	IMG	OUT	PEC	PEOU	PU	RES	SN	TR
BI	N/A												
CPLAY	0.528	N/A											
CSE	0.680	0.550	N/A										
ENJ	0.728	0.684	0.548	N/A									
GOV	0.892	0.564	0.706	0.666	N/A								
IMG	0.111	0.612	0.101	0.302	0.143	N/A							
OUT	0.711	0.654	0.576	0.801	0.696	0.410	N/A						
PEC	0.701	0.748	0.826	0.689	0.694	0.258	0.675	N/A					
PEOU	0.661	0.561	0.766	0.702	0.653	0.139	0.674	0.826	N/A				
PU	0.682	0.563	0.694	0.595	0.622	0.176	0.561	0.756	0.800	N/A			
RES	0.708	0.763	0.629	0.757	0.752	0.542	0.900	0.702	0.649	0.614	N/A		
SN	0.726	0.714	0.568	0.832	0.760	0.451	0.820	0.772	0.637	0.604	0.821	N/A	
TR	0.703	0.701	0.577	0.766	0.734	0.399	0.819	0.735	0.682	0.648	0.818	0.829	N/A

Note: BI = Behavioural Intention; CPLAY = Computer Playfulness; CSE = Computer Self-Efficacy; ENJ = Perceived Enjoyment; GOV = Government Support; IMG = Image; OUT = Output Quality; PEC = Perceptions of External Control; PEOU = Perceived Ease of Use; PU = Perceived Usefulness; RES = Result Demonstrability; SN = Subjective Norm; TR = Trust.

**All HTMT ratios are below the liberal threshold of 0.90, supporting discriminant validity among constructs.

5.2 Structural Model Assessment

The structural model was evaluated through bootstrapping with 5,000 resamples to test the significance of hypothesized relationships. Path coefficients, standard errors, t-statistics, and p-values are reported in Table 4.

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Table 4. Path Coefficients and Hypothesis Tests

Hypothesized Path	β (O)	t-value	p-value	Supported
CPLAY → PEOU	0.008	0.210	0.834	No
CSE → PEOU	0.324	6.563	0.000	Yes
ENJ → PEOU	0.287	4.954	0.000	Yes
GOV → BI	0.499	10.604	0.000	Yes
GOV → PU	0.132	2.523	0.012	Yes
IMG → PU	0.027	0.803	0.422	No
OUT → PU	-0.060	0.971	0.332	No
PEC → PEOU	0.302	5.642	0.000	Yes
PEOU → BI	0.156	3.567	0.000	Yes
PEOU → PU	0.556	8.949	0.000	Yes
PU → BI	0.174	2.860	0.004	Yes
RES → PU	0.110	1.939	0.053	No
SN → BI	0.131	3.072	0.002	Yes
SN → PU	0.082	1.794	0.073	No
TR → BI	0.121	2.615	0.009	Yes

Note: BI = Behavioural Intention; CPLAY = Computer Playfulness; CSE = Computer Self-Efficacy; ENJ = Perceived Enjoyment; GOV = Government Support; IMG = Image; OUT = Output Quality; PEC = Perceptions of External Control; PEOU = Perceived Ease of Use; PU = Perceived Usefulness; RES = Result Demonstrability; SN = Subjective Norm; TR = Trust.

**All HTMT ratios are below the liberal threshold of 0.90, supporting discriminant validity among constructs.

The results reveal that computer self-efficacy ($\beta = 0.324$, $p < 0.001$), enjoyment ($\beta = 0.287$, $p < 0.001$), and perceptions of external control ($\beta = 0.302$, $p < 0.001$) significantly enhance perceived ease of use (PEOU), while computer playfulness was non-significant. Perceived ease of use significantly predicted both perceived usefulness (PU: $\beta = 0.556$, $p < 0.001$) and behavioural intention (BI: $\beta = 0.156$, $p < 0.001$). PU also significantly influenced BI ($\beta = 0.174$, $p = 0.004$).

Among external influences, government support emerged as the strongest predictor of BI ($\beta = 0.499$, $p < 0.001$) and also had a significant, though smaller, impact on PU ($\beta = 0.132$, $p = 0.012$). Subjective norm significantly affected BI ($\beta = 0.131$, $p = 0.002$) but not PU. In contrast, image and output quality showed no significant effects on PU. Trust also significantly predicted BI ($\beta = 0.121$, $p = 0.009$). Figure 2 shows the structural model.

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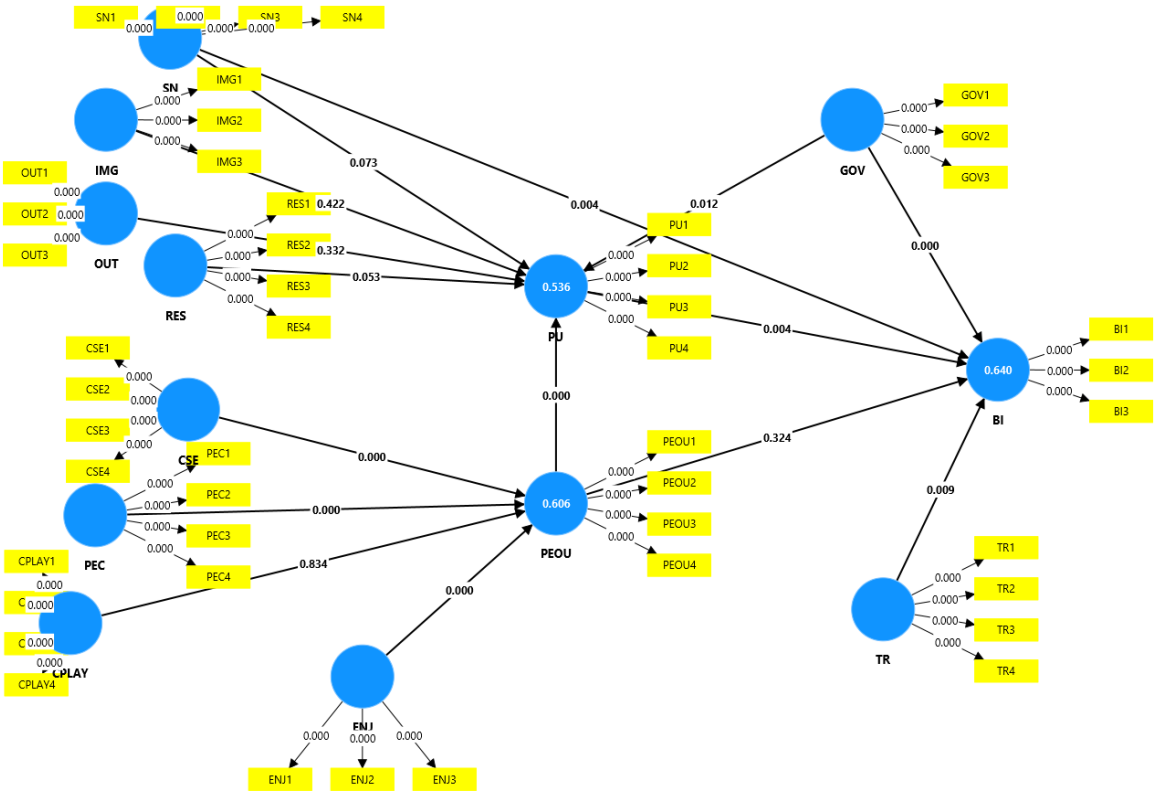


Figure 2. Structural Model

The findings of this study highlight several practical implications for policymakers, financial institutions, and e-wallet providers in Malaysia. The strong influence of perceived ease of use and usefulness on behavioural intention underscores the importance of designing user-friendly and seamless platforms that reduce transaction complexity and enhance efficiency, which directly aligns with prior studies on digital payment adoption (Venkatesh and Bala, 2008; Davis, 1989). Furthermore, the significant role of government support suggests that public-sector involvement remains essential through regulatory frameworks, awareness campaigns, and financial incentives to promote adoption and strengthen consumer confidence (Ling et al., 2025).

Trust was also found to be a crucial determinant, emphasising the need for robust cybersecurity measures, transparent data policies, and partnerships with established financial institutions to reassure users of system reliability (Gefen et al., 2003; Zhou, 2018). Additionally, the influence of subjective norms indicates that social influence strategies, such as peer referrals and influencer-driven campaigns, could effectively accelerate adoption among Malaysian youth who are highly engaged in digital communities (Teo et al., 2020). Collectively, these implications suggest that sustainable e-wallet adoption requires a dual emphasis on technological usability and institutional legitimacy, positioning collaboration between service providers and policymakers as a cornerstone for digital financial inclusion.

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5.3 Coefficient of Determination

The explanatory power of the model is presented in Table 5. R^2 values of 0.64 for BI and 0.606 for PEOU indicate substantial explanatory power, while PU's R^2 of 0.536 suggests a moderate level of variance explained (Hair et al., 2019).

Table 5. Coefficients of Determination

Construct	R^2	R^2 Adjusted	Interpretation
BI (Behavioural Intention)	0.640	0.637	Substantial
PEOU (Perceived Ease of Use)	0.606	0.603	Substantial
PU (Perceived Usefulness)	0.536	0.530	Moderate

These findings demonstrate that the proposed model explains a meaningful proportion of variance in key adoption constructs, providing robust support for its predictive capacity in the context of e-wallet adoption among Malaysian youth.

6. Discussion and Conclusion

This study highlights the explanatory strength of TAM3 in predicting e-wallet adoption among Malaysian youth, while extending the model through the integration of trust and government support. Perceived ease of use emerged as a key driver, directly influencing behavioural intention and indirectly shaping adoption via perceived usefulness, underscoring the importance of intuitive digital interfaces (Wicaksono & Maharani, 2020; Tian and Chan, 2024). Internal enablers such as computer self-efficacy, enjoyment, and perceptions of external control further reinforced ease of use, though computer playfulness was not significant, suggesting that youth prioritize efficiency and functionality over entertainment. These findings diverge from prior research asserting that internal enablers consistently reinforce ease of use; for example, metaverse adoption studies indicate ease of use may be insignificant, while enjoyment and perceived usefulness remain central (Rosli and Saleh, 2024).

Institutional and contextual factors were equally decisive. Government support was the strongest external driver of behavioural intention ($\beta = 0.499$, $p < 0.001$) and influenced perceived usefulness, highlighting the role of regulatory frameworks and state-led initiatives in digital finance adoption (Ling et al., 2025). Trust also significantly shaped behavioural intention, reflecting the critical importance of security and reliability in financial technologies (Gefen et al., 2003; Oliveira et al., 2016). In contrast, image and output quality did not influence adoption, while subjective norm affected intention but not usefulness, emphasizing peer influence in collectivist cultures (Venkatesh et al., 2003; Teo et al., 2020).

The extended TAM3 model accounted for substantial variance in behavioural intention ($R^2 = 0.64$) and perceived ease of use ($R^2 = 0.606$), and moderate variance in perceived usefulness ($R^2 = 0.536$). Contributions include (1) validation of TAM3 in a Southeast Asian fintech context, (2) theoretical extension through government support and trust as institutional enablers, and (3) identification of cultural nuances in social influence. Collectively, results affirm that usability, usefulness, and institutional assurances are central to youth e-wallet adoption.

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Limitations include the focus on Malaysian youth, restricting generalizability, the cross-sectional design limiting causal inference, and reliance on self-reported data. The non-significance of playfulness and output quality may reflect contextual particularities. Future research should adopt longitudinal and cross-country designs, incorporate constructs such as risk, financial literacy, and digital resilience (Kass-Hanna et al., 2022), and employ qualitative methods to explore socio-cultural dimensions. Integrating technological and institutional perspectives can further advance theoretical understanding and provide actionable insights for accelerating digital finance adoption in Malaysia and beyond.

7. Managerial and Policy Implications

The findings of this study provide several important implications for policymakers, financial institutions, and e-wallet service providers. First, the strong influence of perceived ease of use and usefulness on behavioural intention suggests that providers must prioritize user-friendly design and seamless transaction experiences. This includes simplifying app navigation, reducing transaction steps, and ensuring compatibility across multiple payment platforms. As Malaysian youth value efficiency and convenience, improving usability will directly increase both perceptions of usefulness and actual adoption.

Second, the critical role of government support highlights the need for continued public-sector involvement in digital finance initiatives. Programs such as subsidies, cashback incentives, and public awareness campaigns should be maintained and expanded, as these initiatives not only incentivize adoption but also signal state endorsement and legitimacy. Regulatory frameworks that ensure transaction transparency, data protection, and consumer redress mechanisms will further strengthen confidence in e-wallet ecosystems (Ling et al., 2025).

Third, the significant role of trust indicates that both policymakers and providers must invest in strengthening cybersecurity and consumer protection. E-wallet operators should adopt advanced fraud detection mechanisms, publish transparent privacy policies, and engage in proactive communication strategies to reassure users about the safety of their funds. Building strong partnerships with established financial institutions can further enhance user confidence.

Fourth, the positive influence of subjective norms suggests that social influence campaigns could be effective in accelerating adoption. Providers may leverage peer referrals, social media influencers, and community-based promotions to encourage young users to adopt and continuously use e-wallets. Since Malaysian youth are digitally active and socially connected, normative influence strategies could substantially boost adoption rates.

Finally, despite growing interest in e-wallet adoption, existing studies have predominantly emphasised individual-level technological factors, offering limited insight into how institutional support shapes adoption decisions in emerging economies such as Malaysia. Addressing this gap, the present study extends prior technology acceptance research by integrating government support into the TAM3 framework, thereby capturing both technological and institutional influences on youth adoption behaviour. The non-significance of constructs such as image and output quality further indicate that adoption is driven less by prestige or status signalling and more by practical and trustworthy benefits.

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Emphasising cost savings, ease of use, and government-backed legitimacy may therefore be more effective than positioning e-wallets as luxury or high-status tools. Collectively, these findings underscore that successful e-wallet adoption in Malaysia requires a dual focus on technological usability and institutional assurances, highlighting the need for coordinated efforts among policymakers, regulators, and service providers to build a trusted and sustainable digital payment ecosystem.

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Author Contributions

K.K., J.S., S.K., and V.K. contributed to the development of this study and the preparation of the manuscript. All authors have read and agreed to the submitted version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

Generative AI Statement

Generative AI was used to assist with language editing, manuscript formatting, and reference checking. The authors take responsibility for the content of the manuscript.

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