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# Effects of the Pandemic on the Adoption of E-Wallets Among Young Adults in Malaysia

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## Abstract

The rapid growth and advancement of electronic devices and technologies in the FinTech industry empower new innovative products and services. The covid-19 pandemic could have a devastating effect on Malaysia's economy, but it has offered additional opportunities for the E-wallet segment of the Fintech business to thrive. The E-wallet segment of FinTech is one of the latest innovations that is currently growing as there is a need for contactless payments during the pandemic situation. The main objective of the study is to examine the factors affecting e-wallet adoption among young adults in Malaysia. A sample of 200 responses was analyzed using Smart PLS 3.0. The findings revealed that the factors of "performance expectancy", "effort expectancy", "compatibility", and "social influence" have a positive and significant impact during the pandemic; however, the factor of "facilitating conditions" has no significant impact on the adoption of the E-wallets. The study substantiates the key and important variables of adoption in order to develop and evolve E-wallet providers' existing services. Particularly, due to the increasing importance of e-commerce, E-wallet service providers are urged to focus on the system's interoperability, which encourages individuals or customers to use the strategy. They should include unique features that allow customers to accept the service, trust its benefits and feel comfortable using the technology. The study is useful to the E-wallet providers to improve the existing services. The findings also guide the companies offering E-wallets to enhance the usage and adoption of their services.

**Keywords:** E-wallet Adoption, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Compatibility.

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## Introduction

People have become increasingly reliant on the digital and mobile environment in recent years. The ever expanding digital e-commerce market of Malaysia must be constantly monitored. The data contradicted the early belief that e-commerce would decline after the pandemic (blog. commission factory, 2022). Based on the statistics published by blog.commissionfactory (2022), the experts predicted the e-commerce growth in Malaysia to increase to US $7.1 billion in the year 2021 and US $13.8 billion by the year 2025. They also projected the Southeast Asian e-commerce economy to reach US $234 billion by 2025, and the Malaysian e-commerce market to hit US $30 billion by 2025. In addition, the World Bank Group (blog.commissionfactory, 2022) envisioned the country to become a high-income economy between the years 2024 and 2028.

Payment systems have changed to e-payment as a result of the integration of electronic and mobile technologies. The usage of smartphones for making online payments in today's ever-developing and evolving industry has gradually increased over time (Moghavvemi et al., 2021). The growing use of mobile facilities in daily operations has opened up a slew of new business prospects (Singh et al., 2020). The most current technological developments in transaction processing have a big impact on today's business (Stewart, 2013). The electronic wallet (e-wallet) is an emerging technical breakthrough in today's world (Gunawan et al., 2021). An e-wallet, which replaces a physical wallet, is software that allows you to perform online transactions using an electronic device (Uduji et al., 2019). E-wallets, like conventional wallets, require funds to conduct transactions. Credit cards, debit cards, and online bank transfers can all be used to fund e-wallets. E-wallets are digital wallets that may be used to pay for services or goods at participating businesses and send money to other e-wallet users. Customers may purchase products at the convenience stores using e-wallet applications on their smartphones (Punwatkar & Verghese, 2018).

According to a report by Boku (July, 2021), a fintech worldwide mobile payments network, there are currently around 2.8 billion mobile wallet users. This number is anticipated to increase to 4.8 billion by 2025, accounting for almost 60% of the global population. The research further elucidates that Southeast Asia will be the world's fastest expanding area for

mobile wallets in the next five years, with an overall growth of 311%, followed by Latin America with a growth rate of 166%, Africa and the Middle East are in the third place with a growth rate of 147% by year 2025 (Tech Collective, 2021). According to a study conducted by MasterCard (Trotman, J. 2021) on 10,000 customers in the Asia Pacific region, Malaysia, in Southeast Asia, has the highest adoption of e-wallets among its neighbours. The survey also found that 40 percent of Malaysians use e-wallets, 36 percent in the Philippines followed by 27 percent and 26 percent in Thailand and Singapore respectively.

The covid-19 pandemic could have a devastating effect on Malaysia's economy, but it has offered additional opportunities for the e-wallets sector of the Fintech business to thrive. This is owing to the market's need for contactless payments. People, particularly youngsters and the government, are enthusiastic about the cashless economy. To encourage and incentivise youngsters to use e-wallets, the Malaysian government partnered with e-wallet providers and distributed 450 million via the e-Tunai Rakyat initiative in early 2020 (Ministry of Finance Malaysia, 2020). In an effort to sustain and accelerate the adoption of electronic payments, the Malaysian government launched an RM3000 million e-Belia initiative for two million people aged between 18 to 20 through e-wallet service providers (The Star, May 2021). Therefore, the e-wallet trend will continue to grow and is expected to develop in Malaysia.

According to Fintech Malaysia (2019), there were 53 e-wallets in Malaysia. The top three in the market being Boost, Samsung Pay, and Maybank QRpay, followed by BigPay, FavemPay, Alipay, GrabPay etc. Hence, consumers are using e-wallets more and more, and Malaysians use two to three e-wallets on average (Oppotus, Q3, 2020). The study also found the majority of e-wallet users in Malaysia are Generation Z. Therefore, E-wallet providers are continuously attempting to introduce innovative solutions in the industry with the growing demand for digital payment solutions. In order to experience, innovate and foster the entrepreneurial skills of the young students within the ever-growing eWallet industry, Touch 'n Go eWallet has recently announced its first-ever "Young Entrepreneurship Challenge 2022". Determining the factors that influence e-wallet use among Malaysia's young adults is essential because research studies on the factors driving e-wallet usage in Malaysia are still limited.

Therefore, this study seeks to investigate the factors influencing the adoption of e-wallets among young adults in Malaysia. The research framework is designed with the Unified Theory of Acceptance and Use of Technology (UTAUT) model and the Diffusion of Innovations (DOI) model as the basis. The proposed model used the following variables: performance expectancy, effort expectancy, social influence, facilitating conditions, compatibility, and adoption of e-wallets.

## Literature Review

Digital payment has a good reputation with the development of the Fintech industry and e-commerce in Malaysia. Customers prefer digital wallets or e-wallets, or mobile wallets for making payments. Hizam (2020) has explained the distinctions between digital wallets, e-wallets, and mobile wallets. The researchers frequently customize these terminologies. Even though the e-wallet trend in Malaysia is encouraging, an important concern is whether this technology will transform the mode of payment for consumers.

### Underpinning Theory

This study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) as its theoretical basis. Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions are the four primary concepts that constitute the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003). UTAUT considered several competing theories, including the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Technology Acceptance Model 2 (TAM2), Diffusion of Innovation theory, Theory of Planned Behaviour (TPB), Model of PC Utilisation (MPCU), Social Cognitive Theory (SCT), and Combined Technology Acceptance Model and Theory of Planned Behaviour (Venkatesh et al., 2003: Kiwanuka, 2015). The model accounts for 70% of the variation in user intentions to use technologies and has been used to understand user attitudes toward accepting ICT solutions. Hence, drawing on the UTAUT, the study adopted this framework to investigate the factors affecting e-wallet adoption among young adults in Malaysia.

### Related Theories

In addition to addressing the infrastructural challenges such as affordability of smartphones and internet connection, it is critical to address the psychological factors that significantly impact the adoption of e-wallets among Malaysians. Saroia and Gao's (2018) study investigated the factors affecting consumers' intention to adopt the latest technologies. Based on the Theory of Reasoned Action, Davis et al. (1989) created the Technology Adoption Model (TAM) (Fishbein & Ajzen, 1975). This is a crucial model for analysing the elements that impact innovation adoption (Davis et al., 1989; Marangunić & Granić, 2015). TAM is one of the best frameworks for empathising with technology-related adoption (Belanche et al., 2012). Several models, including Theory of Planned Behaviour (TPB) (Ajzen, 1991), Innovation of Diffusion Theory (IDT) (Roger, 1995), and UTAUT (Venketesh, et al., 2003), were developed to identify the adoption predictors or factors of various innovative technological tools, such as e-payment, mobile banking, mobile wallet, and e-wallet.

The key aspects of the TAM model are Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) (Alaeddin et al., 2018; Phyo, 2020). PEOU relates to how simple a system is to use and learn, whereas PU focuses on whether using the system would enhance one's performance. Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions are the four key variables in the UTAUT model, which is considered an extension of TAM (FC). PE is similar to PU, while EE is built on TAM's PEOU concepts. Roger (1995) established the Diffusion of Innovations theory (DOI), one of the most prominent theories for studying the variables that influence individual adoption of new technology. The predictors in the model include relative advantages, compatibility, complexity, observability and trial ability. In addition, the DOI model emphasised the importance of technological features associated with information technology adoption and diffusion. DOI's success stems from its comprehensive, collective expertise in evaluating technological characteristics (Lai et al., 2010).

Some studies have developed hybrid models by integrating relevant factors from various contexts to enhance and enrich predictive ability (Phyo, 2020). Some models developed in the context of mobile and e-wallets are by expert researchers like Shaw (2014), Aydin and Burnaz (2016), Seetharaman et al. (2017), Watcharadamrongkun et al. (2018), Routray et al. (2019), Do et al. (2019), Lwin and Thanabordeekij (2019), Nag and Gilitwala (2019), Taufan and Yuwono (2019), Phyo (2020), and Moghavvemi et al. (2021). Some other related studies conducted in Malaysia include research works of Alaeddin et al. (2018), Nizam et al. (2018), Othman and Noor (2020), Teo et al. (2020), and Ming et al. (2020). The proposed model considered TAM and UTAUT's factors and a few other variables. The current study addresses this gap by merging the factors of the UTAUT model, namely the performance expectancy, effort expectancy, social influence, and facilitating conditions along with the factor of compatibility from the DOI model to predict the adoption of e-wallets in Malaysia.

**Performance Expectancy**

Performance Expectancy (PE) is defined as, "the level of belief for an individual that technology will assist them in attaining achievements in job performance" (Venkatesh et al., 2003). PE may be explained as to how this technology might aid improve in the adoption of e-wallets, and improve the payment process while performing the transaction during daily sales and purchasing (Madan & Yadav, 2016). Similarly, the degree of confidence in a given technological solution that might increase a person's work productivity is referred to as PU. PE has been validated as a significant factor in the technology adoption models of TAM2 (Venkatesh & Davis, 2000), TAM3 (Venkatesh & Bala, 2008), and PE also serves as a prominent construct in the UTAUT model developed by Venkatesh et al. (2003). Studies that found PE or PU to be a significant factor in the adoption of e-wallets include those by Liu and Tai (2016), Nag and Gilitwala (2019), Taufan and Yuwano (2019), Phyo (2020), and Ming et al. (2020).

H1: Performance Expectancy has a significant and positive impact on the adoption of E-wallets among young adults.

**Effort Expectancy**

Venkatesh et al. (2003) defined Effort Expectancy (EE) as the "degree of ease associated with the use of the system." EE is alike PEOU in the TAM model. Davis (1989) defined PEOU as an extent to which an individual believes that a certain system or technology can be used effortlessly. Samuel and Hillar (2014) defined EE as the level of ease with which an information system is being used and perceived by people. In the e-wallet context, EE is the extent to which the consumers can use the e-wallets with minimum effort and learn at ease to adopt in their daily transactions. Several researchers incorporated EE as an important factor in their models that determine the users' information technology adoption or intentions (Wang & Yi, 2012; Amoroso & Magnier-Watanabe, 2012; Pham & Ho, 2014; Yan & Yang, 2015). Recent studies by Gbongli et al. (2019), Nag and Gilitwala (2019), Karim et al. (2020), Ming et al. (2020) and Teo et al. (2020) found PEOU or EE to be a significant factor in the adoption of e-wallets.

H2: Effort Expectancy has a significant and positive impact on the adoption of E-wallets among young adults.

**Social Influence**

Venketesh et al. (2003) defined Social Influence (SI) as the "degree to which an individual observes that the important people in his or her life such as family members, friends or relatives believe that he or she should use the system." In business, the main implication of social influence is to effectively communicate the benefits of using the system to the customers (Taufan & Yuwono, 2020). If the customers realize the benefits of the system, they can act as promoters. In the earlier studies by Megadewandanu et al., (2017), Cheng et al., (2018), Lwin and Thanabordeekij (2019), SI was found to have a major impact on the adoption of mobile or e-wallets. SI is identified as one of the crucial factors influencing the intention to use e-wallets (Nag & Gilitwala, 2019). According to Riquelme and Rios (2010), SI is the degree to which a person's decision to utilize a product or service is influenced by his or her family members, friends, or relatives. SI has been largely acknowledged and accepted widely by various researchers as a significant factor in determining the adoption of technologies (Amoroso & Magnier-Watanabe, 2012; Yang et al., 2012; Madan & Yadav, 2016). SI also has been found to be a significant variable in the adoption of mobile or e-wallets in the studies carried out by Ming et al. (2020) and Teo et al. (2020).

H3: Social Influence has a significant and positive impact on the adoption of E-wallets among young adults.

**Facilitating Conditions**

Facilitating Conditions (FC) refers to the environmental factors that help complete a task efficiently (Thompson et al., 1991). FC also takes into account the elements that impact a person's motivation to complete a job. It consists of an administrative and technological framework that aids in the use of the system (Agarwal et al., 2009). In determining the adoption of e-wallet technologies, FC also relates to the physical environment and resources required for the acceptance and usage of technology (Madan & Yadav, 2016). According to Peñarroja, et al. (2019), FC positively impacts the knowledge-sharing behavior of people who use technology in the digital age. Prior studies by Chawla and Joshi (2019), Lwin and Thanabordeekij (2019), Soodan and Rana (2020) identified that FC has a positive influence on mobile or e-wallet acceptance.

H4: Facilitating Conditions have a significant and positive impact on the adoption of E-wallets among young adults.

**Compatibility**

Compatibility refers to how well a technology integrates with an individual's work operations, daily activities, and personal beliefs and demands. Othman and Noor (2020) referred to compatibility as the level of perception to which an individual adapts a system within the current environment. People would be more willing to adopt mobile wallets quickly if they feel more secure in using them compared to making cash payments (Cobanoglu et al., 2015). Compatibility is one of the most crucial indicators of readiness to employ e-payment (Hanafizadeh et al., 2014). According to Humbani and Wiese (2017) and Park et al. (2018), one factor that influences consumers' desire to use E-wallet technologies is the compatibility of the technology. Hence, it has a significant impact on the adoption of mobile or e-payment (Ewe et al., 2015; Oliveira et al., 2016; Jun et al., 2018; Othman & Noor, 2020).

H5: Compatibility has a significant and positive impact on the adoption of E-wallets among young adults.

The research framework for this study is presented in Figure 1:

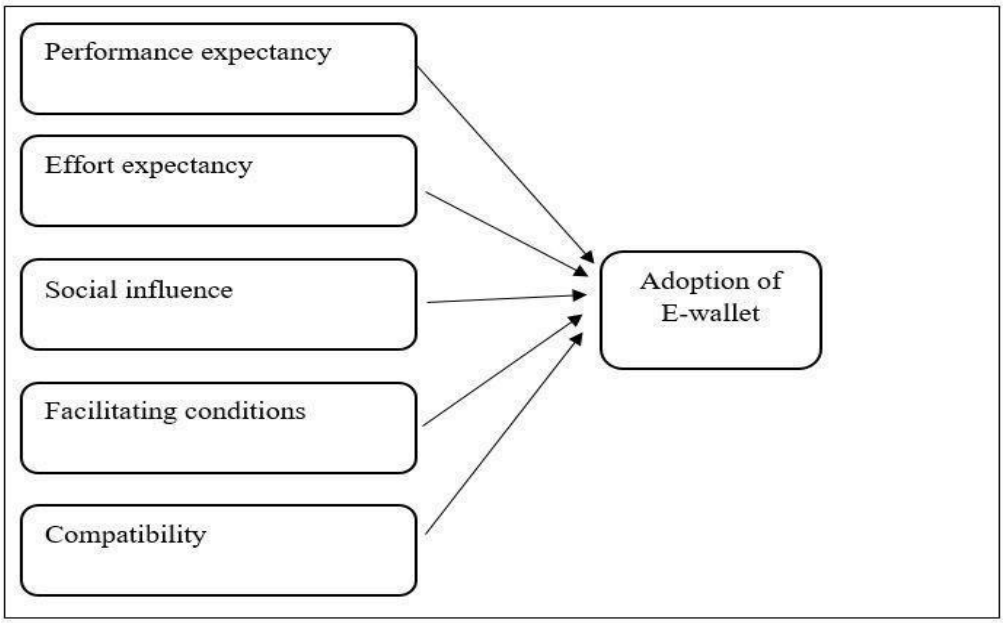


Figure 1. Research framework

## Methodology

The study used the positivistic paradigm referred as quantitative by Hussey and Hussey (1997). In this study, hypotheses were developed based on the prior studies and tested using the quantitative data collected using the survey method. The instruments to measure the variables in the survey were adapted from past studies. The data collection was done using a purposive convenient sampling approach focused on young adults as respondents. The data was collected using an intangible survey questionnaire created using a google form. The target respondents were a multiracial group of young adults who are representative of the actual population of Malaysia. A total of 200 respondents participated in the study. The research instrument consists of two parts: the first part collected information on the respondents' profiles, while the second part evaluated the variables namely Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Compatibility in the adoption of E-wallets. The 30-item instrument which was used to measure the six variables were adapted from Moore and Benbasat (1991), Ajzen (1991), Tan and Teo (2000), Venkatesh et al. (2003), Lu et al. (2005), Schierz et al. (2010), Venkatesh et al. (2012), Yang et al. (2012), and Manikandan and Jayakodi (2017). The five-point rating Likert scale was used with 1 being "Strongly disagree", and 5 denoting "Strongly Agree". The Partial Least Squares Structural Equation Modelling (SEM) technique was employed with the use of SmartPLS software for measurement model estimation, confirmatory factor analysis and hypotheses testing.

## Results

The data analysis includes descriptive statistics to summarise the respondents' demographic profile and the SEM for hypotheses testing.

The descriptive statistics of the demographic profiles are presented in Table 1. The total number of respondents' comprise 56% females and 44% males. The majority of the respondents are 22 – 25 years old (50%), followed by 20 – 22 years old and 18 – 20 years old, which constitute 27.5% and 22.5% of the total respondents respectively. 61.5% of Chinese, 24% of Malay, and 14.5% of Indian respondents participated in this study. The highest percentage of respondents have a Bachelor's Degree (33.5%), followed by 63 respondents (31.5%) with a Diploma Degree and the lowest percentage (2%) with a Master's Degree. 123 respondents (61.5%) are students, whereas 57 respondents (28.5%) are working individuals in full-time employment. Lastly, three unemployed respondents (1.5%), six disabled (3%) and 11 part-time employees (5.5%) also participated in this study.

Table 1. Demographic Profile of the Respondents

| Total 200 respondents | | | |
|---|---|---|---|
| | | Frequency | Percentage |
| Gender | Male | 112 | 56 |
| | Female | 88 | 44 |
| Age | 18 – 20 | 45 | 22.5 |
| | 20 – 22 | 100 | 50 |
| | 22 – 50 | 55 | 27.5 |
| Ethnicity | Malay | 48 | 24 |
| | Chinese | 123 | 61.5 |
| | Indian | 29 | 14.5 |
| Education Level | Secondary School Level | 55 | 27.5 |
| | Certificate | 63 | 31.5 |
| | Diploma | 11 | 5.5 |
| | Bachelor Degree | 67 | 33.5 |
| | Master's Degree | 4 | 2.0 |
| Occupation | Student | 123 | 61.5 |
| | Disable | 6 | 3.0 |
| | Employed-Full time | 57 | 28.5 |
| | Employed -Part time | 11 | 5.5 |
| | Unemployed | 3 | 1.5 |

Structural Equation Modelling: The hypotheses developed were tested using PLS Structural Equation Modelling. Data analysis started with the assessment of the measurement model for convergent validity and discriminant validity. The structured model was evaluated to determine the model's significant predictors, followed by the Importance-Performance Matrix Analysis (IPMA) used to identify factors of significant importance and factors with poor performance (Hock, et al., 2010).

Measurement Model: Factor loadings, Composite Reliability (CR), and Average Variance Extracted (AVE) were used to test the measurement model's convergent validity. Table 2 summarises the findings.

Table 2. Measurement Model

| Factors | Items | Loadings | CR | AVE |
|---|---|---|---|---|
| Adoption | A1 | 0.855 | 0.935 | 0.742 |
| | A2 | 0.901 | | |
| | A3 | 0.881 | | |
| | A4 | 0.852 | | |
| | A5 | 0.816 | | |
| Compatibility | C1 | 0.855 | 0.94 | 0.757 |
| | C2 | 0.882 | | |
| | C3 | 0.866 | | |
| | C4 | 0.867 | | |
| | C5 | 0.882 | | |
| Effort Expectancy | EE1 | 0.829 | 0.94 | 0.758 |
| | EE2 | 0.888 | | |
| | EE3 | 0.89 | | |
| | EE4 | 0.886 | | |
| | EE5 | 0.86 | | |
| Facilitating Conditions | FC1 | 0.842 | 0.921 | 0.699 |
| | FC2 | 0.827 | | |
| | FC3 | 0.857 | | |
| | FC4 | 0.866 | | |
| | FC5 | 0.786 | | |
| Performance Expectancy | PE1 | 0.837 | 0.92 | 0.698 |
| | PE2 | 0.883 | | |
| | PE3 | 0.869 | | |
| | PE4 | 0.797 | | |
| | PE5 | 0.789 | | |
| Social Influence | SI1 | 0.862 | 0.93 | 0.725 |
| | SI2 | 0.865 | | |
| | SI3 | 0.813 | | |
| | SI4 | 0.88 | | |
| | SI5 | 0.836 | | |

The factor loading of all the items is greater than 0.7 which satisfies the minimum requirements. The AVE obtained is in the range of 0.699 to 0.758, which is more than the threshold value of 0.5, and the CR values are within the range of 0.92 to 0.94, meeting the minimum requirement of 0.8. As a result, the convergent validity is satisfactory (Hair et al., 2017). Furthermore, Table 3 reveals that all measures have high loadings in connection to their respective constructions and low loadings in reference to the other constructs. This indicates that all measures have high loadings in relation to their respective constructs and low loadings in relation to the other constructs. Hence, convergent validity at the item levels is supported (Chin, 1998).

Table 3. Loadings and cross-loadings for the measurement model

| | Adoption of E-wallet | Compatibility | Effort Expectancy | Facilitating conditions | Performance Expectancy | Social Influence |
|---|---|---|---|---|---|---|
| A1 | 0.855 | 0.69 | 0.596 | 0.599 | 0.667 | 0.664 |
| A2 | 0.901 | 0.716 | 0.7 | 0.605 | 0.684 | 0.668 |
| A3 | 0.881 | 0.682 | 0.675 | 0.58 | 0.677 | 0.658 |
| A4 | 0.852 | 0.65 | 0.592 | 0.595 | 0.61 | 0.586 |
| A5 | 0.816 | 0.698 | 0.597 | 0.589 | 0.531 | 0.609 |
| C1 | 0.687 | 0.855 | 0.684 | 0.744 | 0.633 | 0.7 |
| C2 | 0.673 | 0.882 | 0.659 | 0.724 | 0.646 | 0.686 |
| C3 | 0.723 | 0.866 | 0.69 | 0.645 | 0.687 | 0.643 |
| C4 | 0.669 | 0.867 | 0.619 | 0.668 | 0.663 | 0.575 |
| C5 | 0.718 | 0.882 | 0.615 | 0.694 | 0.66 | 0.648 |
| EE1 | 0.643 | 0.611 | 0.829 | 0.536 | 0.647 | 0.556 |
| EE2 | 0.665 | 0.68 | 0.888 | 0.57 | 0.654 | 0.589 |
| EE3 | 0.647 | 0.694 | 0.89 | 0.634 | 0.701 | 0.617 |
| EE4 | 0.65 | 0.685 | 0.886 | 0.642 | 0.665 | 0.657 |
| EE5 | 0.59 | 0.593 | 0.86 | 0.543 | 0.639 | 0.671 |
| FC1 | 0.58 | 0.648 | 0.538 | 0.842 | 0.606 | 0.699 |
| FC2 | 0.615 | 0.698 | 0.584 | 0.827 | 0.628 | 0.626 |
| FC3 | 0.517 | 0.653 | 0.519 | 0.857 | 0.616 | 0.57 |
| FC4 | 0.608 | 0.697 | 0.622 | 0.866 | 0.646 | 0.639 |
| FC5 | 0.547 | 0.635 | 0.54 | 0.786 | 0.545 | 0.628 |
| PE1 | 0.601 | 0.599 | 0.545 | 0.609 | 0.837 | 0.559 |
| PE2 | 0.669 | 0.67 | 0.604 | 0.625 | 0.883 | 0.637 |
| PE3 | 0.632 | 0.643 | 0.6 | 0.662 | 0.869 | 0.621 |
| PE4 | 0.574 | 0.625 | 0.709 | 0.572 | 0.797 | 0.623 |
| PE5 | 0.6 | 0.62 | 0.727 | 0.577 | 0.789 | 0.588 |
| SI1 | 0.663 | 0.642 | 0.677 | 0.662 | 0.652 | 0.862 |
| SI2 | 0.613 | 0.644 | 0.592 | 0.65 | 0.63 | 0.865 |
| SI3 | 0.574 | 0.567 | 0.536 | 0.582 | 0.571 | 0.813 |
| SI4 | 0.64 | 0.648 | 0.604 | 0.645 | 0.6 | 0.88 |
| SI5 | 0.655 | 0.675 | 0.598 | 0.681 | 0.629 | 0.836 |

Fornell-Larcker's (1981) criterion and Heterotrait-monotrait (HTMT) (Henseler et al., 2015) were used to assess the discriminant validity. The results (Table 4) show that all the variances extracted by the diagonal values are more than the correlation coefficients between the off-diagonal values, indicating adequate discriminant validity. Furthermore, the results shown in Table 5 fulfil the criterion of HTMT0.9 (Gold et al., 2001). The HTMT inference does not show the value of 1 in the confidence interval which confirms the factors are distinct.

Table 4. Discriminant Validity Using Fornell Lacker Criterion

| | Adoption of E-wallet | Compatibility | Effort Expectancy | Facilitating Condition | Performance Expectancy | Social Influence |
|---|---|---|---|---|---|---|
| Adoption of E-wallet | 0.862 | | | | | |
| Compatibility | 0.798 | 0.87 | | | | |
| Effort Expectancy | 0.735 | 0.751 | 0.871 | | | |
| Facilitating Condition | 0.689 | 0.798 | 0.673 | 0.836 | | |
| Performance Expectancy | 0.737 | 0.756 | 0.76 | 0.729 | 0.836 | |
| Social Influence | 0.74 | 0.747 | 0.708 | 0.758 | 0.725 | 0.852 |

Table 5. Discriminant Validity Using HTMT Criterion

| | Adoption of E-wallet | Compatibility | Effort Expectancy | Facilitating Condition | Performance Expectancy |
|---|---|---|---|---|---|
| Adoption of E-wallet | | | | | |
| Compatibility | 0.87 $CI_{0.9}$ (0.798,0.927) | | | | |
| Effort Expectancy | 0.8 $CI_{0.9}$ (0.715,0.869) | 0.815 $CI_{0.9}$ (0.751,0.871) | | | |
| Facilitating Condition | 0.761 $CI_{0.9}$ (0.657, 0.846) | 0.88 $CI_{0.9}$ (0.816,0.93) | 0.739 $CI_{0.9}$ (0.65,0.822) | | |
| Performance Expectancy | 0.815 $CI_{0.9}$ (0.75,0.874) | 0.835 $CI_{0.9}$ (0.776,0.888) | 0.843 $CI_{0.9}$ (0.779,0.897) | 0.816 $CI_{0.9}$ (0.744,0.877) | |
| Social Influence | 0.812 $CI_{0.9}$ (0.743,0.871) | 0.817 $CI_{0.9}$ (0.752,0.871) | 0.776 $CI_{0.9}$ (0.707,0.838) | 0.84 $CI_{0.9}$ (0.77,0.899) | 0.807 $CI_{0.9}$ (0.738,0.867) |

## Structural Model and Hypotheses Testing

The structural model was developed using the Smart PLS as shown in Figure 1. Bootstrapping procedure with a resample of 5000 as suggested by Hair et al., (2017) was used to test the hypotheses, and the results are presented in Table 5.

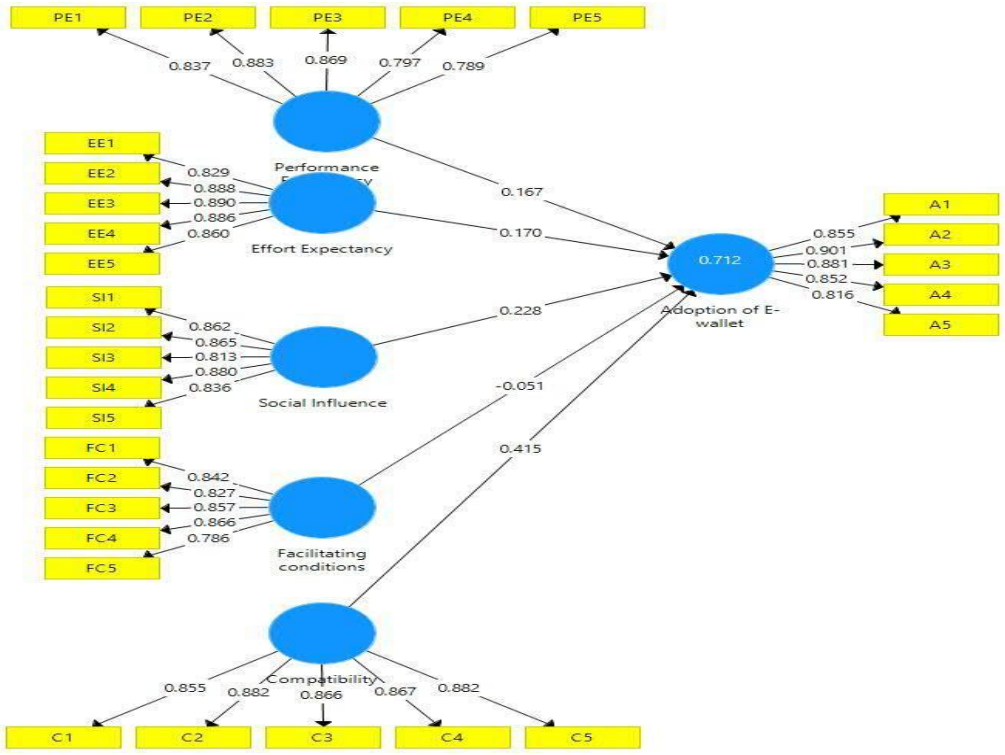


Figure 2. Structural Model

The R-square value for the model is 0.712, which indicates that the variation in the predictors can explain 71.2% of the variation in the adoption of e-wallets. The cross-validated redundancy Q2 is used to test the predictive relevance of the structural model. The blindfolding procedure resulted in a Q2 value of 0.52, which is more than 0.35, ensuring the model's large predictive relevance (Hair et al., 2017).

The results in Table 6 reveal that the adoption of e-wallets has no significant relationship with facilitating conditions. Compatibility, Effort Expectancy, Performance Expectancy and Social Influence have a positive and significant relationship with the adoption of e-wallets. The effect size f2 for the significant variable compatibility is more than 0.15. This indicates a large size effect while the f2 values are more than 0.02 and less than 0.15 for the effort expectancy, performance expectancy and social influence which implies a small effect size. Therefore, the facilitation conditions does not have a significant effect size as the value of f2 is less than 0.02. Similarly, the relative prediction relevance q2 for all the significant variables is between 0.02 to 0.065, indicating a small predictive relevance. The variance inflationary factor (VIF) and the tolerance value are used to investigate the problem of multicollinearity. VIF results ranged from 2.983 to 3.879, which is less than 5 points, and tolerance values are between 0 and 1, indicating no problem of multicollinearity (Hair et al., 2017; Gujarati et al., 2017).

Table 6. Hypotheses Testing Results

| Relationship | Beta | t-value | p-values | Decision | f2 | q2 | VIF | Tolerance |
|---|---|---|---|---|---|---|---|---|
| Compatibility → Adoption of E-wallet | 0.415 | 4.6 | 0 | Supported | 0.154 | 0.065 | 3.879 | 0.258 |
| Effort Expectancy → Adoption of E-wallet | 0.17 | 2.302 | 0.022 | Supported | 0.034 | 0.02 | 2.983 | 0.335 |
| Facilitating Condition → Adoption of E-wallet | -0.051 | 0.556 | 0.578 | Not supported | 0.003 | 0 | 3.429 | 0.292 |
| Performance Expectancy → Adoption of E-wallet | 0.167 | 2.377 | 0.018 | Supported | 0.03 | 0.025 | 3.239 | 0.309 |
| Social Influence → Adoption of E-wallet | 0.228 | 2.778 | 0.006 | Supported | 0.059 | 0.023 | 3.051 | 0.328 |

Furthermore, as Hock et al (2010) recommended, the IPMA identified the factors with high importance and low performance. The IPMA results facilitate insights to focus and improve on identified areas with high importance and low performance (Hock et al., 2010). The significance is shown by the direct influence of an independent variable on a dependent variable, while the performance is represented by an index value in a range of 0 to 100. The results of the IPMA analysis are presented in Table 7, and Figure 2 illustrates the IPMA map.

Table 7. Importance performance matrix analysis (IPMA) results

| Latent Variable | Adoption of E-wallet | |
|---|---|---|
| | Direct effect (Importance) | Index value (Performance) |
| Compatibility | 0.415 | 68.482 |
| Effort Expectancy | 0.17 | 65.316 |
| Facilitating Condition | -0.051 | 67.206 |
| Performance Expectancy | 0.167 | 66.082 |
| Social Influence | 0.228 | 66.743 |

The IPMA of Adoption of E-wallets indicates a good compatibility performance which is of high importance. The second-best performing variable is facilitating conditions, but it is of less importance. Performance expectancy and social influence perform equally well, while effort expectancy has the least performance. Besides, the IPMA map shows that social influence is the second important factor followed by effort expectancy and performance expectancy.

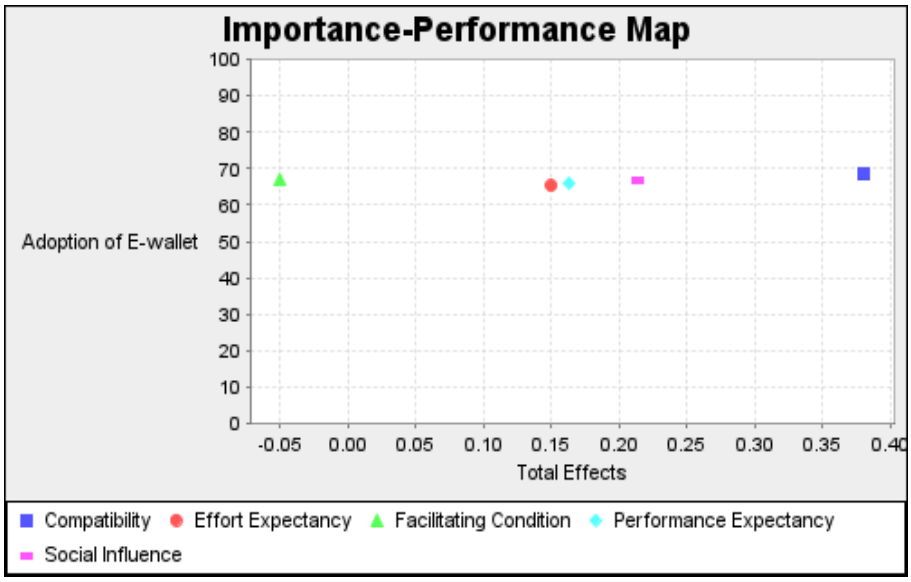


Figure 3. IPMA for Adoption of E-wallet

## Conclusion

The outbreak of the coronavirus pandemic has devastated the economy of various countries, including Malaysia, but it has created new opportunities for the growth of the Fintech industry. The pandemic has changed the lifestyle of people worldwide, especially their purchasing behaviour (Gu et al., 2021). E-wallets are the major segment of the FinTech industry that is growing rapidly as there is an enormous need for contactless payments during the pandemic. The current study intends to determine the impact of compatibility, effort expectancy, facilitating conditions, performance expectancy and social influence on the adoption of e-wallets. Findings reveal that compatibility has a significant and positive effect on the adoption of e-wallets. The results are consistent with studies by Ewe et al. (2015), Oliveira et al. (2016), Jun et al. (2018), and Othman and Noor (2020). The findings suggest

that the rate of e-wallets adoption rate will rise if the providers of e-wallets are able to deliver benefits and satisfy users' expectations and lifestyles. Effort expectancy also has a positive and significant effect on the adoption of e-wallets. The findings are similar to studies conducted by Liu and Tai (2016), Trivedi (2017), Nag and Gilitwala (2019), Gbongli et al. (2019), Karim et al. (2020), Ming et al. (2020) and Teo et al. (2020), and inconsistent with the studies conducted by Seetharaman et al. (2017), Shaw and Kesharwani (2019). The findings demonstrate that developing an easy-to-use system will motivate users to adopt e-wallet technology. Consistent with the results of past research (Liu & Tai, 2016; Cheng et al, 2018; Nag & Gilitwala, 2019; Taufan & Yuwano, 2019; Phyo, 2020; Ming et al., 2020) performance expectancy has a favourable and significant impact on e-wallets adoption. However, the findings of this study contradict those of Dastan and Gűrler (2016) and Teo et al. (2020), who reported that perceived usefulness had no effect on mobile payment system adoption. According to this study's findings, users are more inclined to use e-wallets if they recognise the benefits of mobile payments and believe that they improve performance.

The adoption of e-wallets is influenced by social influence in a favourable and substantial way. The findings are consistent with the prior studies by Nag and Gilitwala (2019), Lwin and Thanabordeekij (2019), Ming et al. (2020) Soodan and Rana (2020), and Teo et al. (2020). However, the findings of Belousova and Chichkanov (2015), and Phyo (2020) showed that social influence does not affect the adoption of mobile wallets. This study's results show that the opinion of the family members, friends and relatives has a significant impact on the adoption of e-wallets, indicating social pressure on the non-users in Malaysia. The only insignificant variable in this study is the facilitating condition. The findings are similar to the studies by Chemingui and Iallouna (2013), Alam (2014) and Phyo (2020). However, several other studies found facilitating conditions to be an important factor in the adoption of the technology. This shows that the e-wallets are still in their early phase, and the current infrastructure and technological support are inadequate for its adoption in Malaysia.

In conclusion, this study confirmed the application of UTAUT and DOI model to this study. It indicated that four out of five factors, namely performance expectancy, effort expectancy, social influence, and compatibility, predicted the adoption of e-wallets in Malaysia. The study substantiates the critical and important factors of adoption to further improve and evolve the existing services of the E-wallet providers. Though the COVID-19 pandemic stimulated online purchase worldwide, the findings of the study show that effort must be taken to improve the performance expectancy, effort expectancy in order to increase the adoption of e-wallets. In particular, the E-wallet service providers are prompted to focus on the system's compatibility, which can drive people to adopt the approach. Thus, the E-wallet service providers should add unique features that facilitate the users to be compatible with the technology, allowing them to believe that it will be beneficial and appropriate for them. Future studies should focus on including more factors, such as perceived security, trust,

perceived value, and perceived risk, further extending the current study's findings. Future studies should also investigate these variables' direct and indirect influences on the adoption of e-wallets. Future research should also analyse how people perceive e-wallet adoption based on their demographic factors like gender, age, income, etc.

## Conflict of interest

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy have been completely witnessed by the authors.

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