

**Factors affecting the adoption of e-wallets to enter cashless society: An integration approach****Nor Hazlina Hashim<sup>a</sup>, Tak Jie Chan<sup>b\*</sup> and Panfeng Li<sup>a</sup>**<sup>a</sup>*Department of Management & Marketing, Faculty of Business and Economics, Universiti Malaya, 50603, Kuala Lumpur, Malaysia*<sup>b</sup>*Faculty of Applied Communication, Multimedia University, Persiaran Multimedia, 63100, Cyberjaya, Selangor, Malaysia***CHRONICLE***Article history:*

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*Keywords:**E-wallets**Use behavior**Diffusion of innovation**Unified Theory of Acceptance and**Use of Technology 2**Personal innovativeness**Self-efficacy***ABSTRACT**

The Malaysian government actively encourages the development of e-wallets in Malaysia and set a goal to enter a cashless society by 2050. However, the mobile technology that has swept the world does not seem to be developing smoothly in Malaysia. The objective of the study is to investigate the determinants that impact the user behavior of Malaysians in adopting e-wallets and proposes integration theoretical models, namely UTAUT 2, Diffusion of Innovation, and self-efficacy to support the study. Data were collected among 253 Malaysian e-wallet users in the Federal State of Kuala Lumpur. The survey (online questionnaire) was distributed to respondents via QR codes and links as data collection. The PLS-SEM was utilized to test hypothetical relationships. The findings of the study demonstrated that compatibility, hedonic motivation, habits, and self-efficacy have a significant relationship with the user behavior of e-wallets. Self-efficacy was found to be the strongest predictor in influencing the use behavior of e-wallets. Conclusion, implications, and suggestions for future study were also discussed.

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**1. Introduction**

The development of mobile apps has driven the development of many App-based services, such as e-wallets. An E-wallet is one of the most representative electronic payment methods which is also called a mobile wallet or digital wallet. Its essence is to use the smartphone App as a medium for online transactions, which allows consumers to transfer or make payments in a more convenient and faster way (Kumar et al., 2017; Raimee et al., 2021; Shanmugam et al., 2014).

The use of e-wallets is increasing, where the number of global users is increasing by an average of US\$140 million per year, and the average annual expenditure per user is increasing by an average of US\$124. Mehta predicts that by the year 2022, cash will only account for 17% of global payments, and the mainstream payment method in the future will be mobile payments (Mehta, 2019). With the latest development in mobile payment, e-wallets rapidly penetrate globally. As the most developed region for mobile payment, China, the transaction volume of e-wallets in China has reached an astonishing 36%. Mehta (2019) shows that more than 30% of e-wallet users come from a millennial, which is Gen Y, and from high-income groups, which shows that high purchasing power might also be the point that influences the use of e-wallets.

According to Statista data, as of 2019, the number of smartphone users in Malaysia is estimated to reach 28.6 million, accounting for 90.71% of its total population (Statista, 2020). This also provides the basis for the development of e-wallets in Malaysia. The Malaysian government claims that Malaysia will become a cashless country by 2050 and they are working on it. Until now, 80% of transactions in Malaysia have been completed with a bank system or cash, which is a long way from the

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"cashless" goal (Najib, 2018). At the same time, Malaysia's e-wallet brands are constantly developing, and more brands are appearing in people's attention, such as Touch n Go, Boost, GrabPay, VCash, and Razer Pay to name a few.

Past research has focused on the use of the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) model to study user behavior, and determinants (e.g. performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), perceived ease of use (PEOU), and perceived usefulness (PU) have been extensively tested and applied in previous studies related to behavioral intentions and user behavior (Revythi & Tselios, 2019; Nikou & Economides, 2017; Boonsiritomachai & Pitchayadejanant, 2019; She et al., 2022; Teo et al., 2020; Tian et al., 2023). However, although many factors that predict behavioral intention and use behavior have been highlighted in the past literature, there is only a paucity of studies that focus on innovativeness (Aransyah et al., 2019) and self-efficacy (Rosli et al., 2023). For instance, a study by Shetu et al., (2022) found that technological innovativeness did not have an impact on the continued usage intention of mobile wallets, whereas other studies found that innovation does impact the adoption of technology (AlRefai et al., 2022), which yielded different results, and urged future researchers to re-examine it. Besides, numerous past studies argued that technological self-efficacy is a significant construct to be added to expand the previous theoretical model (Daragmeh et al., 2021; Esawe, 2022; Rosli et al., 2023), which urged future studies to include this construct. Therefore, this study attempts to narrow the gap by integrating the 3 theories/models to investigate the determinants that influence Malaysian users in adopting e-wallets. Therefore, the constructs of this study include relative advantages, compatibility, hedonic motivations, habits, personal innovation, and self-efficacy which affect the consumers' adoption of e-wallets in Malaysian settings.

## 2. Literature review

### *Theoretical Foundations*

This research was developed based on three theories, namely the Unified theory of acceptance and use of technology 2 (UTAUT 2 model), Diffusion of Innovation (DOI), and Self-efficacy (SE) theories. First, the choice of the UTAUT 2 model is based on its high degree of integration and it is widely regarded as an effective model for studying adoption (Dwivedi et al., 2019; Venkatesh et al., 2012). The DOI and SE models were chosen because most of the previous research tended to explain consumers' behavior from the objective factors of e-wallets, and this study hopes to focus more on subjective factors to explain user behavior. Fig. 1 illustrates the proposed conceptual framework by combining the UTAUT 2 model, the DOI (Rogers, 1983), and the self-efficacy theory (Bandura, 1997), the models proposed in this study include exogenous variables and endogenous variables that affect customers' adoption/ use of e-wallets. There are two reasons why the complete UTAUT model / UTAUT2 model and the DOI model are not used in this study. According to Chang (2012), the UTAUT / UTAUT2 model refers to the DOI model in its development process, and both models have overlaps in terms of their variables. Therefore, this study does not consider using both the original theory/ model, but an integration of them. Another reason is this research is dedicated to studying the factors that affect the adoption of e-wallets by Malaysian consumers. Therefore, the UTAUT model / UTAUT2 model and DOI model, as general theoretical models used in technology or innovation research, cannot be fully applicable to every context. Therefore, this research refers to these three models/ theories and proposes an integrated theoretical model which is suitable for the Malaysian setting.

### *Relative advantage*

The relative advantage in this study refers to the degree to which electronic wallets are superior to existing payment methods such as cash. For instance, Mew and Millan (2021) found that relative advantages have a significant impact on the adoption of mobile wallets in the UK setting. Research conducted in Saudi Arabia found that relative advantage has a positive impact on adoption. (Al-Jabri & Sohail, 2012), which suggests that relative advantage is an important construct to drive the intention and adoption to use e-wallet services (Hidayat-ur-Rehman et al., 2022; Yapp et al., 2022). Besides, Sin et al., (2016) found that relative advantage and competitive pressure have been proven their a significant relationship with adoption. Hettiarachchi's (2014) study also found that relative advantage positively influenced Internet banking adoption in Sri Lanka.

E-wallets can effectively improve payment efficiency, are easy to use, and are simple to operate. These are their relative advantages over other payment methods. However, the relative advantages are not widely used in current research about e-wallets, because most of them have adopted the performance expectancy in the UTAUT/UTAUT2 model. Thus, there is still a debate about the relative advantage's predictive effect on user behavior (Akib et al., 2022). Therefore, the study hopes to fill the gap and involve relative advantage as one of the research variables to study the adoption of e-wallets. Thus, the hypothesis is formulated:

**H<sub>1</sub>:** *Relative advantage has a positive effect on the adoption of e-wallets.*

### *Compatibility*

Compatibility can be interpreted as how well the technology can be integrated into a specific context. In this study, compatibility is applied as the value provided by e-wallets to consumers' payment methods and their impact on existing payment

systems. Mohammadi et al., (2017) studies also showed that relative advantage and compatibility have a significant effect on cloud computing adoption. The above results are also supported by Hanafizadeh et al, (2014), who found that compatibility successfully explains the adoption of mobile banking among Iranian clients. Besides, the study by Hidayat-ur-Rehman et al., (2022), also found that compatibility positively influences mobile wallets adoption, which also supported the results of Akib et al., (2022), where compatibility as a variable of DOI has a significant relationship with the intention to use e-wallets and strengthen the findings of Misbah (2022), where compatibility was found to be the strongest predictor impact on the mobile payments adoption. Based on the discussion, the hypothesis is postulated:

**H<sub>2</sub>:** *Compatibility has a positive effect on the adoption of e-wallets.*

#### *Hedonic motivation*

In this study, hedonic motivation is defined as the pleasure or enjoyment of using e-wallets to pay, because e-wallets have a relatively high advantage, fast and convenient payment processes will undoubtedly improve payment efficiency, thereby, consumers are free from the trouble of preparing changes, and calculation. For instance, Salimon et al., (2017) findings showed that hedonic motivation impacts e-banking adoption, where hedonic motivation plays a mediating role between PU, perceived security, and e-banking adoption. In addition, the study of (Muzaldin et al., 2022; Mater et al., 2021), also found that hedonic motivation is the predictor in influencing the intention and adoption to use e-wallets, which also aligned with Wong and Ong (2021), where they proposed joy and gadget love impacted intention to adopt the e-wallets to extend the model of Hedonic-Motivation System Adoption. Hedonic motivation adoption frameworks have been shown to significantly impact the continued use of information technology. For example, Hedonic motivation positively affects teachers' intention to use mobile internet for e-learning (Nikolopoulou et al., 2021). Based on the above discussion, therefore, the below hypothesis is suggested:

**H<sub>3</sub>:** *Hedonic Motivation positively impacts the adoption of e-wallets.*

#### *Habit*

Habits are formed from sustained behaviors and are manifested as sustained specific behavior patterns. In turn, habits can significantly affect the behavior of individuals. Kumar and Bervell (2019) pointed out that habit is the strongest predictor of user behavior, where habits have a significant and positive relationship with expected performance, expected workload, and social impact on Google Classroom adoption and the importance-performance map analysis showed that habit is the most crucial determinant in influencing user behavior. This also supported the results of Nikolopoulou et al., (2021), who found that habit positively impacts the intention and actual use of mobile Internet among teachers. Besides, a study on the consumers' continuance usage of e-wallets in Malaysia found that habit is a significant construct, and their positive relationship with the continuance usage of mobile wallets was established (Abdul Halim et al., 2022). In Vietnam, Hong and Le (2020) who study on the promotion of mobile wallet adoption, found that promotion influences the habit and intention to use mobile wallets positively. Therefore, the below hypothesis is formulated:

**H<sub>4</sub>:** *Habit has a positive effect on the adoption of e-wallets.*

#### *Personal Innovativeness*

Talukder et al, (2019) found that the stronger the user's awareness of innovation, the greater the tendency for users to perceive their advantages. This is because high personal innovativeness can help users imagine, understand and appreciate the benefits of innovation better. In this research, personal innovativeness is defined as the extent to which potential consumers are willing or intentional to experience e-wallets. As the latest development in the field of mobile payment, e-wallets may still be an innovation for many Malaysians. Therefore, personal innovativeness can affect the degree to which they choose to adopt or experience cashless payment (Dongsan, 2022). The results of Mazman Akar (2019), about teachers' technology adoption, showed that personal innovativeness was influential in the technology acceptance of teachers, whereas personal innovativeness' effect on adoption was indirect. A study on ICT adoption by SMEs was implemented in Saudi Arabia (rural areas), which found that the personal innovativeness of managers and ICT knowledge had a significant impact on ICT adoption in Saudi Arabia (Karimi, 2016), and the findings were congruent with the results of Hidayat-ur-Rehman et al., (2022). This research adopted personal innovation based on the recommendations of Madan and Yadav (2016) and is committed to proving the impact of personal innovativeness on the user behavior of e-wallets in Malaysia. Thus, the below hypothesis is postulated:

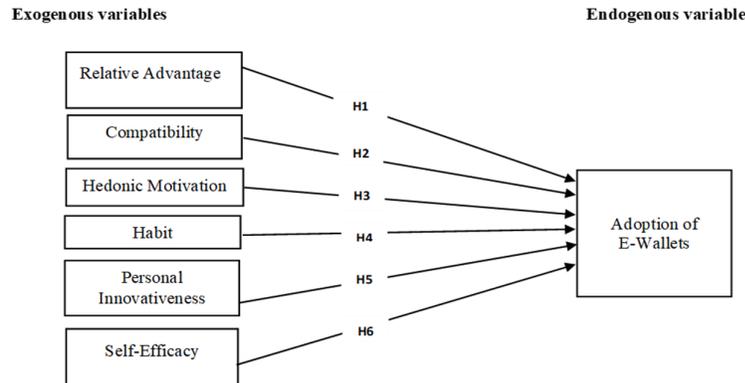
**H<sub>5</sub>:** *Personal innovativeness has a positive effect on the adoption of e-wallets.*

#### *Self-Efficacy*

Self-efficacy in this context is interpreted as potential users' confidence and ability in using e-wallets (Coskun et al., 2022). For instance, Wang et al, (2013) studied self-service technologies across various service sectors and indicated that customers'

continued use of an SST is largely influenced by self-efficacy. Hettiarachchi (2014) investigating consumer adoption within Sri Lanka Internet banking services, also found that confidence in using ICT services (self-efficacy) was found to impact the adoption of Internet banking, which also supported the findings of (Daragmeh et al., 2021; Mater et al., 2021), where they found self-efficacy positively influence the continuance intention and adoption of e-wallets. Therefore, this study posits that self-efficacy is a factor in predicting the use behavior of e-wallets in Malaysia. Thus, the below hypothesis is formulated:

**H<sub>6</sub>:** *Self-efficacy has a positive effect on the adoption of e-wallets.*



**Fig. 1.** Proposed Conceptual Framework

### 3. Methodology

#### *Research Design*

This study applied a quantitative research method, which refers to a systematic study of a phenomenon via the collection of measurable data and the application of statistical methods (Apuke, 2017). In terms of the survey method, it plays a crucial role in enabling the researcher to measure the views of the respondents toward the usage of e-wallets.

#### *Sampling procedure*

This study utilized purposive sampling for acquiring responses from the user who has experience using the e-wallets as the respondents. Purposive sampling, as explained by Tongco (2007), was a non-random sampling technique relying on the judgment of researchers. Hence, the respondents of the study must have experience using the e-wallets, where researchers have included a screening question "Do you use e-wallets?" to assist in filtering the actual responses. The target sample is working adults in Kuala Lumpur, Malaysia. Lonare et al., (2018) pointed out that the proportion of e-wallet users in metropolitan cities is more as compared to the tier-2 cities. That makes it suitable to conduct the study in Kuala Lumpur. This research also has chosen working adults to represent the respondents as this is the standard age of working and they are technology savvy and able to accept e-platforms. Since the study is not able to get the entire population list of the users who use e-wallets, researchers utilized G-power analysis to identify the suitable sample size. Based on the G-power analysis, with (predictors: 6, effect size, 0.15; power: 0.95) (Maccallum et al., 1996), the minimum sample size needed for this research is 146. However, this study secured 253 useful responses, hence, it is sufficient for statistical analysis.

#### *Instrument*

The questionnaire was developed by adapting previous literature to suit the current research context. For instance, the items for relative advantage were adapted from (Osei-Assibey, 2015; Al-Rahmi et al., 2019), compatibility items were modified from (Al-Rahmi et al., 2019; Talukder et al., 2019), hedonic motivation items were adapted from (Hussain et al., 2019; Nikou & Economides, 2017), items for habit were modified from (Mosquera et al., 2018; Tiara Imani & Herlanto Anggono, 2020), personal innovativeness items adapted from (Nikou & Economides, 2017; Kaewratsameekul, 2018), self-efficacy items were adapted from (Chang et al., 2018; Nikou & Economides, 2017), and items for use behavior were adapted from Mosquera et al., (2018). *(The details of the items for each construct can refer to in Table 2).* The data were collected using five-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire consisted of three sections: the first section captures the 6 factors or exogenous variables. The second section records the respondents' perception of their use/adoption behavior of the e-wallets. The last section collected the demographic information of the respondents, such as gender, age, educational background, income categories, and type of e-wallets used.

### Data collection procedures

The primary data was collected via online questionnaires (the link was saved in the QR code) and shared via various social media platforms such as WhatsApp, and Facebook. The survey is used to collect information about Malaysian e-wallet users' perceptions, opinions, and attitudes toward e-wallets. Researchers granted the respondents confidentiality and anonymity of the research through the cover page of the online questionnaire.

### Data Analysis & Statistical Significance

PLS-SEM is a multivariate analysis approach used to estimate path models with latent variables (Rigdon, 2016). Since the current research involves integrating multiple variables to extend the existing theories/ model (Hair et al., 2019), the PLS-SEM method is considered suitable for the analysis of this model. The analytical procedures were conducted in two phases: the first phase was measurement model testing to assess the reliability and validity of the measurement instruments, and the second phase was structural model evaluation to examine the hypothesized relationships.

## 4. Results

Based on Table 1, there is a relatively equal gender distribution, where 50.6% of the respondents were female and 49.4% were male. Among the respondents, nearly half of the respondents (45.8%) were between 24 - 29 years old, 28.5% were aged between 18-23 years, 15% were between 30 and 35 years old, and only 10.7% were between 36-50 years old. This result is in line with Morgan (2019) who stated that the largest group of e-wallet users is millennials (Gen Y) between 26-40 years old. For education, more than half of the respondents have Bachelor's degree (54.5%), which indicated the respondents are educated and able to make wise judgments. For the income category, 32.4% of the respondents' income ranged from RM3000 – RM4500, and the most popular e-wallet platform is Touch n Go (45.1%).

**Table 1**  
Profile of respondents (n=253)

Variables	Items	Frequency	%
Gender	Male	125	49.4
	Female	128	50.6
Age	18-23 years old	72	28.5
	24-29 years old	116	45.8
	30-35 years old	38	15.0
	>35 years old	27	10.7
Education	SPM/ O-level	5	2.0
	STPM/ A-level/ Foundation/ Diploma	16	6.3
	Bachelor's degree	138	54.5
	Master's degree	76	30.0
	Ph.D	18	7.1
Income	< RM1,500	40	15.8
	RM1,500 – RM3,000	61	24.1
	RM3, 000 – RM4, 500	82	32.4
	>RM4,500	70	27.7
E-wallets	Touch n Go	114	45.1
	Boost	8	3.2
	Grab Pay	71	28.1
	Fave Pay	3	1.2
	Paypal	17	6.7
	CIMB pay	10	4.0
	Lazada Wallet	8	3.2
	AEON Wallet	3	1.2
	Maybank Pay	15	5.9
	Setel	2	0.8
	Others	2	0.8

### Measurement Model

This study used Smart-PLS to test the convergent validity and discriminant validity of all constructs applicable to this study. Table 2 shows the results of convergence validity, item loading, extracted average variance (AVE), and composite reliability (CR). The results show that all AVE values are higher than 0.5, and CR values are higher than 0.7, indicating that the model has acceptable reliability and convergence (Hair et al., 2017).

**Table 2**  
Loading, composite reliability, and AVE measures

Variables	Items	Loadings	CR	AVE
<b>Relative advantage (RA)</b>	RA1: E-wallets are more convenient than cash.	0.794	0.851	0.588
	RA2: E-wallets are more efficient than cash.	0.750		
	RA3: E-wallets are more accurate than cash regarding the payment process.	0.720		
	RA4: E-wallets have more relative advantages than cash.	0.801		
<b>Compatibility (C)</b>	C1: E-wallet suits the way I make payment.	0.819	0.882	0.715
	C2: E-wallet suits my lifestyle.	0.870		
	C3: E-wallet meets my payment needs.	0.846		
<b>Hedonic Motivation (HM)</b>	HM1: Using e-wallet is fun.	0.892	0.871	0.693
	HM2: Using e-wallet is enjoyable.	0.818		
	HM3: Using e-wallet is entertaining.	0.784		
<b>Habit (HB)</b>	HB1: I always use e-wallets to make payments.	0.764	0.913	0.677
	HB2: I prefer to use e-wallets to make payments.	0.893		
	HB3: When I need to make a payment, e-wallets are my first choice.	0.821		
	HB4: I often make payments with e-wallet.	0.771		
	HB5: I am used to using e-wallet.	0.859		
<b>Personal innovativeness (PI)</b>	PI1: Among my peers, I am usually the first one to try out new information technologies.	0.807	0.848	0.651
	PI2: In general, I am willing to try out new information technologies.	0.802		
	PI3: I would like to experiment with new information technologies.	0.812		
<b>Self-efficacy (SE)</b>	SE1: I can use e-wallets without the help of others.	0.824	0.906	0.617
	SE2: I am confident that I can use e-wallets to make payments.	0.792		
	SE3: I am confident that I can use the functions of e-wallets (top-up, transfer, etc.).	0.782		
	SE4: I am knowledgeable about e-wallets.	0.807		
	SE5: I have the necessary skills for using e-wallets.	0.783		
	SE6: My experience helps me understand the use of e-wallets better.	0.721		
<b>Use behavior (UB)</b>	HB1: I am currently using e-wallets.	0.775	0.891	0.672
	HB2: I use e-wallets frequently.	0.842		
	HB3: E-wallets have become my main payment method.	0.839		
	HB4: I rely on using e-wallets when making payments.	0.821		

In addition, the Heterotrait-Monotrait (HTMT) was used to check the discriminant validity. All values are lower than the 0.85 threshold as suggested by (Henseler et al., 2014), indicating that the discriminant validity has been determined, as shown in Table 3. All the constructs in this study have determined the convergence of the measures and the validity of the discrimination. Therefore, this research can continue with the testing of the structural model.

**Table 3**  
Heterotrait-Monotrait Ratio (HTMT)

	C	HB	HM	PI	RA	SE	UB
<b>C</b>							
<b>HB</b>	<b>0.770</b>						
<b>HM</b>	0.555	<b>0.595</b>					
<b>PI</b>	0.524	0.492	<b>0.603</b>				
<b>RA</b>	0.827	0.688	0.455	<b>0.362</b>			
<b>SE</b>	0.679	0.684	0.613	0.620	<b>0.640</b>		
<b>UB</b>	0.807	0.813	0.697	0.580	0.704	<b>0.839</b>	

Note: RA= Relative Advantage; C= Compatibility; HM= Hedonic Motivation; HB= Habit; PI= Personal Innovativeness; SE= Self-efficacy; UB= Use Behaviour

### Structural Model Assessment

To further analyze the results, this study used the variance inflation factor (VIF) to evaluate multicollinearity (Table 4). The VIF value of the seven exogenous variables in this study was below the value of 5 thresholds, thus indicating that there is no multicollinearity problem in this study (Akinwande et al., 2015). In addition, to evaluate the structural model, a bootstrapping resampled to 5,000 was run to generate  $R^2$ ,  $f^2$ , and the corresponding t-values. The result showed that the  $R^2$  value was 0.854, which means that the model can explain 85.4% of the e-wallet use behavior. Results also show that, except for relative advantage ( $t=0.753$ ,  $p > 0.05$ ) and personal innovativeness ( $t=0.288$ ,  $p > 0.05$ ), all constructs positively and significantly impact the use behavior of e-wallets. Thus, H1 and H5 were rejected, while H2, H3, H4 and H6 were supported.

The theoretical model proposed in this study by combining the three models/ theories can explain 85.4% of user behavior ( $R^2$  value = 0.854). It can be concluded that compatibility, hedonic motivation, habits, and self-efficacy have all been found to be significantly related to the user behavior in adopting e-wallets in Malaysia, while relative advantage and personal relatedness were found not significantly related to the user behavior in adopting e-wallets.

**Table 4**  
Direct Effects of hypothesis testing

	Relationship	Std Beta	Std Error	t-value	P values	Decision	VIF	R <sup>2</sup>	f <sup>2</sup>
H1	RA - UB	0.050	0.060	0.753	0.451	Rejected	3.555	0.854	0.002
H2	C - UB	0.245	0.073	2.978*	0.003	Supported	4.643		0.108
H3	HM - UB	0.164	0.066	2.463*	0.014	Supported	2.002		0.114
H4	HB -UB	0.233	0.069	3.679**	0.000	Supported	2.984		0.111
H5	PI -UB	0.016	0.046	0.288	0.774	Rejected	2.003		0.010
H6	SE - UB	0.350	0.086	3.983**	0.000	Supported			0.418

Note: RA= Relative Advantage; C= Compatibility; HM= Hedonic Motivation; HB= Habit; PI= Personal Innovativeness; SE= Self-efficacy; UB= Use Behaviour; \*p<0.05; \*\* p< 0.01; 1-tailed test

## 5. Discussions

The direct impact of compatibility on use behavior was supported in this study and was congruent with numerous past studies (Al-Jabri & Sohail, 2012; Hidayat-ur-Rehmen et al., 2022; Mew & Millan, 2021; Yapp et al., 2022). Higher e-wallet compatibility means that consumers can get more choices and value in the payment system. When an e-wallet enters the cashless payment system, the overall payment system must be considered, because there will be corresponding conflicts occurring in the process of integration, and the degree of such conflicts will directly affect consumer adoption. Besides, the influence of hedonic motivation on user behavior further proves its significant relationship with user behavior, which supported the results of (Salimon et al, 2017; Muzaldin et al., 2022; Mater et al., 2022; Wong & Ong, 2021). Hedonic motivation is like a stimulus for consumers to actively establish emotional connections with the brand. The pleasure and enjoyment that consumers get after using e-wallets can make consumers willing and directly associate it with brand equity. Emotional connection is often strong and continuous, and this connection can also stimulate the formation of consumption habits to a certain extent, which further affects consumers' direct adoption of electronic wallets. This study found that hedonic motivation can effectively affect potential adopters' subjective feelings about e-wallets because the fun or pleasure of using e-wallets makes consumers unconsciously inclined or like e-wallets, which affects the customer's adoption of e-wallets. Habit also shows a significant impact on use behavior, which further proves its direct influence on use behavior, and supports the finding of (Abdul Halim et al., 2022; Hong & Le, 2020; Kumar & Bervell, 2019). The positive effect of habit on the adoption of e-wallets is reflected in its conscious trust. The gain of this trust is based on the influence of learning. After seeing others using electronic wallets, human nature makes consumers learn this behavior, and in the process of learning to use electronic wallets, consumers may be attracted by its unique advantages and user-friendly operations. In this process, trust might be generated, and if this trust is repeatedly strengthened, it will form a habit, which will guide consumers to respond to e-wallets. In addition, self-efficacy is considered to be the strongest predictor of the electronic wallet's use behavior (path coefficient = 0.35). It is consistent with the research of (Daragmeh et al., 2021; Mater et al., 2021; Wang et al., 2013; Hettiarachchi, 2014). In terms of applications, the most important thing for e-wallet providers is to convince consumers to believe that they can use e-wallets. When consumers find that they are confident in using certain technologies or innovations, they are more likely to consider adopting them. However, the relative advantage did not find a significant effect on user behavior, which aligned with the study of Akib et al., (2022). The relative advantage of the DOI model used in this study fails to predict Malaysian consumers' use behavior in adopting e-wallets. The reason might be the impact of the Malaysian payment background. Based on the research by Morgan (2019), Malaysians are more familiar with bank payment systems and they are used to paying with bank systems and cards, which account for 46% and 29% of total transactions respectively, in terms of relative advantages, for Malaysians, the advantages of e-wallets are not obvious or insignificant compared to bank payments. Malaysia's banking system has deeply rooted in the payment methods of Malaysians, which somehow hinder consumers from perceiving the advantages of e-wallets, which explains the insignificant results.

In terms of personal innovativeness, it is very unexpected for researchers to see that H5 is rejected, and personal innovativeness failed to affect user behavior. This result is supported by Hoque (2016), who found that the effects of personal innovativeness in IT on mHealth adoption were insignificant. The current results also aligned with (Campbell & Singh, 2017; Senali et al., 2022; Shetu et al., 2022), where they found that technological innovativeness does not have a significant relationship with other constructs understudied, including intention and actual behavior. The possible explanation is that the knowledge of the innovation of Malaysian consumers when it comes to adopting e-wallets is still at the infancy stage (Che Nawi et al., 2022; Teoh et al., 2020), where the e-wallets companies must come out with a plan and educate the users on how to operate the mobile wallets effectively.

## 6. Conclusion

In conclusion, this study aimed to investigate the factors influencing the adoption of e-wallets in Malaysian settings by applying UTAUT2, DOI models, and self-efficacy theory as an integrated framework. The results found that compatibility, hedonic motivation, habit, and self-efficacy are the predictors of e-wallets adoption/ use, whereas relative advantage and personal innovativeness were not predictors.

## 7. The Implication of the Study

### *Theoretical Implication*

This research has contributed to bridging the gaps in consumers' adoption of e-wallets. The conceptual model developed in this study has made important contributions to the literature of past "user behavior" studies, and by integrating UTAUT 2, DOI, and Self-efficacy theory, and applying it to the e-wallets and providing the knowledge development in the technology marketing scholarship.

This study incorporated many subjective and human factors into the model and tested user behavior, although many existing studies in the field of user behavior of e-wallets have tested various models separately. In short, this research helps to incorporate or integrate the consumer subjective factors in explaining the user behavior, where it shows that hedonic motivation, habits, and self-efficacy have a significant impact on consumers' use behavior in adopting e-wallets, and unfortunately, another subjective construct, (e.g. personal innovativeness) was rejected.

### *Practical Implication*

The results of the study can be utilized by various e-wallet brands to better understand Malaysian consumers' trends, thereby, correctly guiding consumers to adopt e-wallets and contributing to the realization of a cashless society in Malaysia. For the government, encouraging the development of e-wallets is a facilitating condition for promoting the goal of a cashless society. The results of this study provide useful suggestions for Malaysian policymakers to accelerate the development of brands through policy formation to facilitate the company that provides e-wallet services. This will inevitably lead consumers to use e-wallets better. In short, the results of this study can be used as a blueprint for policymakers to help them focus their technology marketing strategy effectively and in the right direction to promote and encourage the goal of a cashless society.

For society, the results of this study can also be used as a reference for other industries which apply new technologies to their business operation. At the same time, it also improved the perception and change of various consumer groups on new technologies. Encourage the whole society to take a more open and acceptable attitude to accept various new technologies.

This study also benefited the provider of e-wallet services and entrepreneurs interested in developing e-wallet services in the future. This research can help e-wallet services providers to understand the current consumer views and needs of e-wallets, to better adjust the application of e-wallets, thereby, providing more value in design, operation, and user interface for consumers. Therefore, the existing business personnel can pay more attention to the important elements adopted in the research to improve their existing e-wallet services.

## 8. Limitations and Recommendations for Future Research

A few limitations require recommendations for future research. First, the study was only conducted within the Federal State of Kuala Lumpur region. Thus, future researchers can consider other cities and federal states to represent a bigger sample of the Malaysian context, so that the results can be generalized in the future. This research also suggests that future research can include consumers of different age groups. Based on the research of Morgan (2019), the usage rate of e-wallets among consumers of different age groups is significantly different, and the main users are concentrated in Gen Y, while consumers over the age of 50 who used e-wallets are less. Therefore, knowing the elderly potential adopters can also contribute to the development of the Malaysian e-wallet industry and multigroup (MGA) analysis can be applied to test and further enhance the generational cohorts' studies in the marketing field. Finally, the study only tests the direct relationship, where there are other potential variables such as perceived risks, perceived security and other potential determinants such as family culture, lifestyle, education, and socioeconomic status, which urged the future researchers to incorporate those elements to expand the research framework by testing mediating and moderating effects and contribute to the technology marketing scholarship. It is also interesting that future research can focus on metaverse wallets, which allow consumers to customize the features based on their preferences, as consumers are dynamic and their preferences change according to time and environment.

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