Factors Influencing the Use of E-wallet as a Payment Method among Malaysian Young Adults

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Abstract

In recent years, there is a noticeable increase of cashless transactions due to the development of financial technology. As a result of being expansion of fintech products such as e-wallet, consumers are shifting from cash-based to cashless. Young adult consumers in 21st century are regarded as tech-savvy as they were born in the era of smartphone technology. This study aims to examine the influencing factors for Malaysian young adults to use e-wallet as a payment method by applying extended technology acceptance model (TAM). Total of 330 data were collected from the users of e-wallet in the area of Klang Valley of Malaysia and analyzed by deploying partial least squares structural equation modeling (PLS-SEM). By applying two-step approach for instance, measurement model for indicator loadings, convergent validity, reliability and structural model for path analysis the findings from this study reveal that perceived usefulness, perceived ease of use and privacy and security have positive and significant relationship with behavioral intention to use e-wallet. This study helps the service providers of the digital marketplace further to have better understanding of the usefulness of using e-wallet for transaction purposes.
Keywords: Financial Technology, e-wallet, TAM, PLS-SEM, Malaysia.

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Introduction

In today world internet has made life easier for people. Payments are being done using smart devices. One of the best inventions of the 21st century is the electronic wallets (e-wallets) an integral part of electronic payment system. The term "e-wallet" is a form of digital wallet that allows an individual to link their debit or credit cards to digital wallet in order to make any transactions (Digital Wallet , 2019). Apart from the debit or credit cards electronic cards enable consumers to store their physical cards information and bank account number to perform certain action towards payment (Ray, 2017).

It is pointed out that; payments done using e-wallet is more convenient and faster than conventional banking system as it saves time and money (Blockchains, 2018). The cellular-based payment system is widely being used for transactions and payments are being done through using mobile applications because consumer considers this method to be beneficial (Gokilavani et al., 2018). Payment using e-wallet not only provides a level of ease and speed but also gives consumers a sense of comfort and a sense of security in transactions elsewhere and anytime (Liébana-Cabanillas et al., 2014). The use of e-wallet offers small-scale transactions which is very easy to operate (Punwatkar, et al., 2018).

The rapid development of information technology facilitates by providing its distinct characteristics of payment system. Due to the increasing number of e-payment systems, consumers are shifting from cash-based to cashless, yet converting a non-cash economy is difficult, and existing cash-based trading practices are still firmly compacted (Yaokumah, Kumah & Okai, 2017). However, the growth of e-wallet in Malaysia is mainly due to the several facts one of them are effortless cash transactions followed by security and cost saving (Nizam, Hwang & Valaei, 2018). Malaysia has more than 42 e-wallets that have received official license from BNM (Bank Negara Malaysia) and among them six are the most popular and widely being used, namely AEON Wallet, Boost, BigPay, GrabPay, WeChat pay and Touch'n Go eWallet. However, these e-wallets play a dominant role in transforming nation towards a cashless future (Oh, 2018).

According to the Erik Eriksons' stage of human development, a young adult is between the ages of 19 and 39, while a teenager is between the ages of 13 and 18. Millennials (Born between 1981 and 1997) and Generation Z (Born from 1997 and onwards) are representing young adults and they are born in the era of new technology (Turner, 2015). In terms of technology Generation Y experienced a major change. The most technological change has been witnessed and globalization has brought them different perceptions and attitudes compared to previous generations (Cobanoglu et al., 2015). Generation Z grew up with the technology and internet and they are regarded as I-generation (Mohammed, 2018). As these young generations are currently surfing in the smart technology they desire to experience new applications and its ease of use, security and privacy (Wood, 2013). However, information security and privacy is crucial to think because information violation cases and issues are rising throughout the world like Malaysia (Mohamed, et al., 2012). Lack of knowledge regarding information protection leads a privacy intruder an opportunity to invade someone's privacy i.e. identity theft, credit card fraud and cybercrimes (Barrett-Maitland, Barclay & Osei-Bryson, 2016).

Technology acceptance model (TAM) was first introduced by Davis (1989), which is adapted from Theory of Reasoned Action (TRA) developed by Fishbein & Ajzen (1975) and the Theory of Planned Behavior (TPB) by Ajzen (1991), these are particularly well-researched intention models that have proved successful in predicting technology acceptance behavior (Barry and Jan, 2018; Nasri and Charfeddine, 2012). The extended TAM model is including Perceived usefulness (PU), perceived ease of use (PEU), Behavioral intention (BI) and actual system use (ASU).

The main objective of this paper is to investigate factors that influence young adults' to use e-wallet as a payment method. To meet the special objective of this study three variables such as perceived usefulness (PU), perceived ease of use (PEU) and privacy and security (PS) are chosen to see effects on behavioral intention (BI) and actual system use (ASU).The remaining paper exhibits five sections include literature review, research methodology, results and findings and limitation and future research directions.

Literature Review

Extended Technology Acceptance Model
Several theories have been developed to understand the intention of the consumer to use an IS technology. TAM model have been studied extensively in several literature (Davis, 1989) and it is in fact the theory of information services that model how users adopt and use a particular technology (Dauda, et al., 2015). Number of researchers have extended the TAM model and applied it to many different technologies including e-learning (Cheung and Vogel, 2013; Al-Maroof and Al-Emran,

2018), m-commerce (Barry, et al., 2018) and short message service (Muk, et al., 2015). According to Vijayasarathy (2004), TAM variables are best suited for a decision regarding to accept new technology. To study the acceptance and usage intention of new technology, TAM is considered as well-recognized extensions in academic research (Aydin , et al., 2016). However, the original TAM variables may not sufficiently capture core beliefs that affect the attitude of consumers towards e-shopping. In order to strengthen the model it is further advised to include few additional variables to examine the appropriateness of the TAM (Jaradat, 2013). Privacy and security is one of the extended variable that was found to be positive on behavioral intention to use new technology (Barry, et al., 2018). Based on the above statements, this study includes privacy and security as one of the extended variables (Barry, et al., 2018) to examine the behavioral intention to use e-wallet. Other two variables are perceived usefulness and perceived ease of use.

E-wallet use

E-wallet is as an application that allows an individual to make any e-commerce transactions by storing their credit card information. Payment through e-wallet is considered as one of the most prominent transaction method at present because an electronic transaction using a digital wallet has the advantage of ease, flexibility and protection (Uddin , et al., 2014). Mobile wallet is also recognized for its innovative benefits such as customization and instant communication (Osakwe, et al., 2016). As the number of e-payment systems is increasing e-wallet has already gain fame by providing its vast number of services in riding sector, food delivery and bill payments (Rosnidah et al., 2019). It is not only advantageous for buyers; traders are accepting e-wallet as a payment method because of its fastest transaction process, efficient cash management and less cost of labor (Hayashi , et al., 2014). These types of transactions are commonly being done in physical stores where customers scan the (QR) code by using their mobile device to confirm the payment (Lu, 2018). In physical stores, NFC-supported devices (Near Field Communications) are being placed near to the payment terminal to make the transaction easier (Taylor , 2016). Based on the above literature, it can be described that the use of e-wallet among young adults is mainly because of its compatibility, flexibility and user friendly transactions that is done using smart devices.

Behavioral Intention

Intention can be defined as a course of action that an individual aims to achieve (Zhao, et al., 2010). Behavioral intention is a person's subjective probability that is intended to be attained within a time period (Ajzen , 1988). It refers to the way a person will act in the future (Fishbein, et al., 1975). E-wallet is a new form of payment systems that is widely accepted. In future it is expected to have a great expansion of e-wallet in Malaysia (Nizam et al., 2018). Many scholars found positive and significant relationship between behavioral intention (BI) and new technology use (Barry and Jan , 2018; Faqih and Jaradat , 2015; Jaradat, 2013). According to Mun and Hwang (2003), behavioral intention (BI) has positively and significantly affects actual use (AU). (Venkatesh et al., 2003) Postulates an extended Technology Acceptance Model with four variables; findings from the model reveals that behavioral intention to use has a significant and positive influence on usage behavior. Based on the statements above, the following hypothesis is formed:
H1: Behavioral intention to use e-wallet will have positive influence on e-wallet use.

Perceived Usefulness

Perceived usefulness refers to a degree to which an individual believes that using a particular information system will lengthen their productivity (Davis, 1989). In TAM framework, perceived usefulness is hypothesized to predict the direct relationship with behavioral intention to use the technology (Park et al., 2014). Perceived usefulness also prescribed as a degree to which a person believes using a particular system will enhance his or her job performance. Perceived usefulness is a strongest factor of TAM that has a significant influence on behavioral intention (Davis, Bagozzi & Warshaw, 1989). Using TAM model Al-Maroof and Al-Emran (2018) found the significant relationship between perceived usefulness and behavioral intention to use particular technology.

However, prior studies found to have a positive relationship between perceived usefulness and behavioral intention to use in the context of electronic textbook (Baker-Eveleth and Stone, 2015; Stone and Baker-Eveleth, 2013), cellular service providers (Abbas & Hamdy, 2015), travel service online (Li & Liu, 2014) and e-learning (Lin , et al., 2012).

According to Venkatesh et al. (2003) extended TAM model, perceived usefulness found to be significant on behavioral intention and determine one of the strongest factors to predict intention to use particular system. Mun and Hwang (2003) found that, there is a positive and significant relationship between perceived usefulness and behavioral intention. With that abovementioned literature, the following hypothesis is formed:

H2: perceived usefulness of e-wallet will have positive influence on behavioral intention to use e-wallet.

Perceived Ease of Use
The term perceived ease of use signifies to "the extent to which using a particular system will be free from effort" (Davis, 1989). Behavioral intention to use technology is positively and significantly influenced by perceived ease of use (Jackson, Chow & Leitch, 1997). A study of Venkatesh et al. (2002) reveals that perceived ease of use and behavioral intention to use are positively and significantly associated. Similarly, behavioral intention to use information system is predicted by perceived ease of use (Eze, Ten & Poong , 2011). The study of Barry and Jan (2018) found positive and significant effect of perceived ease of use on perceived usefulness and perceived use of use on behavioral intention to use particular system. Four longitudinal field of TAM extended by (Venkatesh, et al., 2000) reveals that perceived ease of use is positively influence perceived usefulness and behavioral intention to use. Al-Maroof and Al-Emran (2018) conducted a study on undergraduate students who perceive that using web service technology is easy and user-friendly thus, it has positive influence on perceived usefulness and behavioral intention. Mun and Hwang (2003) posited that there is a significant relationship between perceived ease of use and behavioral intention to use information system. Based on the above statements the following hypothesis id formed:

H3a: perceived ease of use will have positive influence on perceived usefulness of e-wallet.
H3b: Perceived ease of use will have positive influence on behavioral intention to use e-wallet.

Privacy and Security
Privacy is described as an individual's ability to personally monitor self-relevant information (Cliquet et al., 2015). It is an important feature that everyone is aware off. Based on the study of (Soodan , et al., 2020), one of the factors that affect the use of e-wallet is privacy and security which is found to be more suggestive. Lack of security and privacy is one of the issues that keep customers away from purchasing goods unless it is protected (Milberg, Smith & Bruke, 2000). However, payment through e-wallet without security feature may lead an unauthorized access of personal information and a lucrative opportunity for cybercriminals to breach the data (Kaur et al., 2018).

According to Marimuthu and Roseline (2020) the e-wallet has gain its popularity due to have effortless transactions but still lack of knowledge and awareness among people and fear to make transaction due to have security issues are the major factors that should thought. Customer may not trust the information system provider and they will deny making any transaction through e-payment unless the privacy and security features are involved (Gitau , et al., 2014). Customer with no experience in the field of using technology may have concern regarding security and privacy. Because the rapid increase of technology and its security issues are a matter of serious concern among customer who uses smart technology for transactions. Ahmad et al. (2010) posits that due to the rapid evolution of technology, users have become much more concerned about privacy and security matters and this has contributed to their refusal to disclose their financial information (i.e. debit or credit card details) over internet and e-commerce sites. Based on the abovementioned literature, the following hypothesis is formed:

H4: Privacy and security will have positive influence on behavioral intention to use e-wallet.
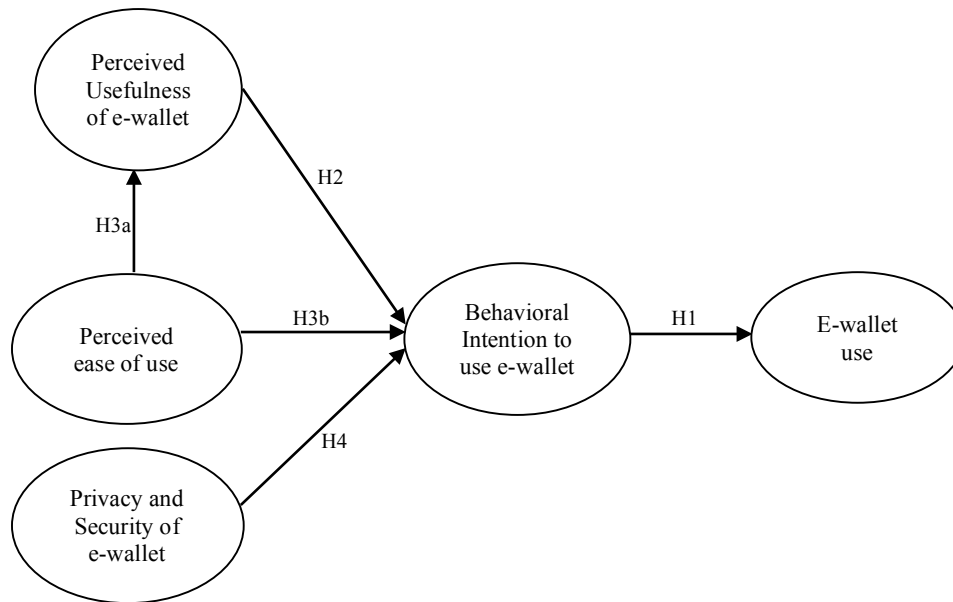
Proposed Model for this Study

Figure 1: Conceptual Framework

Methodology

Construct measurement

The research model comprises five constructs, including perceived usefulness, perceived ease of use, privacy and security behavioral intention to use and e-wallet use. The survey questionnaire for this analysis is formulated on the basis of TAM theory items and adapted mainly from (Barry and Jan, 2018; Davis, Bagozzi and Warshaw, 1989; Sadi and Noordin, 2011). The items from each variable were slightly modified to adjust the current study. All the measurement items were measured using five-point likert scale (i.e. 1= strongly disagree to 5= strongly agree) to express the statement of agreement.

All the items of the questionnaire were designed using English language only. For the purpose of this study, 30 set of questionnaire were distributed to the university students to conduct a Pilot Study with the aim of getting comments and feedback. The questionnaire was further modified to improve clarity and comprehensibility based on the comments and feedback received from the respondents.

Data Collection

Data was collected by applying two methods, first is online survey (i.e. sending Google form link to WhatsApp and instant messenger) and second is face-to-face conversation. These data were collected by utilizing throughout the month of January, 2020. The target respondents for this study are to those who have been using e-wallet for long. A total of 330 questionnaires are collected from Klang Valley area in Malaysia. From which only 289 were taken into consideration for data analysis. Rest was omitted as they left the survey form incomplete.

Data Analysis

In order to validate the measurement model and structural model this study used Smart PLS software version 3.0.`

Demographic Profile

The sample illustrates the responses collected from students from Klang Valley which were 330 in total. However, total of 289 valid data were analyzed after removing 41 missing values. Valid responses demonstrate 87.5% of the total questionnaire distributed. Table 1 shows that total numbers of female respondents were 184 which represent 63.6% of the total sample while male represents only 36.4%. Moreover, most of the students are aged between 25 and 29 and represents 51.6% of the total sample followed by aged between 18 and 24 (36.7%), aged between 30 and 34 (7.2%) and aged between 35 and 39 (4.5%). Furthermore, number of undergraduate students form the survey found to have 218 which explain 75.43% of the total sample and postgraduate students were 71 in total (24.57%). Lastly, GrabPay found to have most number of users with 101 and represents 34.94% followed by Touch'n Go users which explain 30.8%, boost 24.57%, AEON wallet 3.81%, others 3.46% and WeChat pay 2.42%.

Table 1 Demographic profile

Measure	Items	Frequency	Percentage
Gender	Male	105	36.4
	Female	184	63.6
Age	18-24	106	36.7
	25-29	149	51.6
	30-34	21	7.2
	35-39	13	4.5
Level of study	Undergraduate	218	75.43
	Postgraduate	71	24.57
Which e-wallet do you use most?	AEON Wallet	11	3.81
	Boost	71	24.57
	Touch 'n Go	89	30.8
	GrabPay	101	34.94
	WeChat Pay	7	2.42
	Others	10	3.46

Measurement model

Convergent and discriminant validity were conducted to assess the measurement model. To evaluate convergent validity, the value of both composite reliability and cronbach's alpha are suggested to be higher than 0.7 (Chin, 1998). Additionally, average variance extracted (AVE) values should be greater than 0.5 as recommended by Hair et al. (2006). Table 2 shows the test results of this study that indicates all the items of the measurement model have good reliability and sufficient convergent validity. The study indicates the value ranging from 0.944 to 0.972 for CR and 0.921 to 0.966 for all cronbach's alphas. The value ranging from 0.809 to 0.892 for average variance extracted (AVE) and outer loadings value for this model is ranging from 0.793 to 0.954 Thus, the test result from the current study can conclude the good reliability of all the items.

To illustrate discriminant validity, it refers the degree to which factors are uncorrelated and distinct (Hair et al., 2013). Measures of different constructs should not correlate highly with each other (Fornell and Larcker, 1981). Table 2 shows the good discriminant validity as it illustrate the square AVE of each factor are larger than any of its correlations with the other factors.

Table 2: Convergent Validity and Reliability

	AVE	CR	α	AU	BI	PEU	PS	PU
AU	0.892	0.961	0.940	**0.944**				
BI	0.837	0.963	0.951	0.711	**0.915**			
PEU	0.857	0.960	0.944	0.617	0.616	**0.926**		
PS	0.809	0.944	0.921	0.572	0.679	0.591	**0.900**	
PU	0.835	0.972	0.966	0.616	0.644	0.676	0.545	**0.914**

Structural model

The structural model reflects the relationship between the constructs or the latent variables that were hypothesized in this study. Both path coefficients and R^2 score were determined by the structural model analysis. According to Hair et al. (2017), R^2 values of 0.75, 0.50 and 0.25 which describes substantial, moderate and weak levels of predictive accuracy. The t-value> 1.96 is significant at p< 0.05 and t-value> 2.58 is significant at p< 0.01 (Hair et al., 2017). So Figure 1 shows the R^2 value in this model is 45.6% for PU, 57.5% for BI and 50.4% for AU.

Figure 1 and table 3 illustrates the path coefficient (β), *t*-statistics and *p*-value of each hypothesis. Based on the analysis all the hypotheses are found to be significant thus supported. *H1* (β= 0.711, t= 13.917) indicates the path between behavioral intention to use e-wallet and actual use; describing the positive and significant relationship among BI and AU of e-wallet. *H2* (β= 0.308, t= 4.461) shows the path between perceived usefulness and behavioral intention; representing positive relationship between PU and BI to use e-wallet. *H3a* (β= 0.676, t= 14.774) demonstrates the positive relationship between perceived ease of use and perceived usefulness of e-wallet. *H3b* (β= 0.162, t= 0.018) explains that perceived ease of use have positive and significant influence on behavioral intention to use e-wallet. Lastly *H4* (β= 0.415, t= 5.677) demonstrates that, positive and significant relationship is associated between perceived security and behavioral intention to use e-wallet.
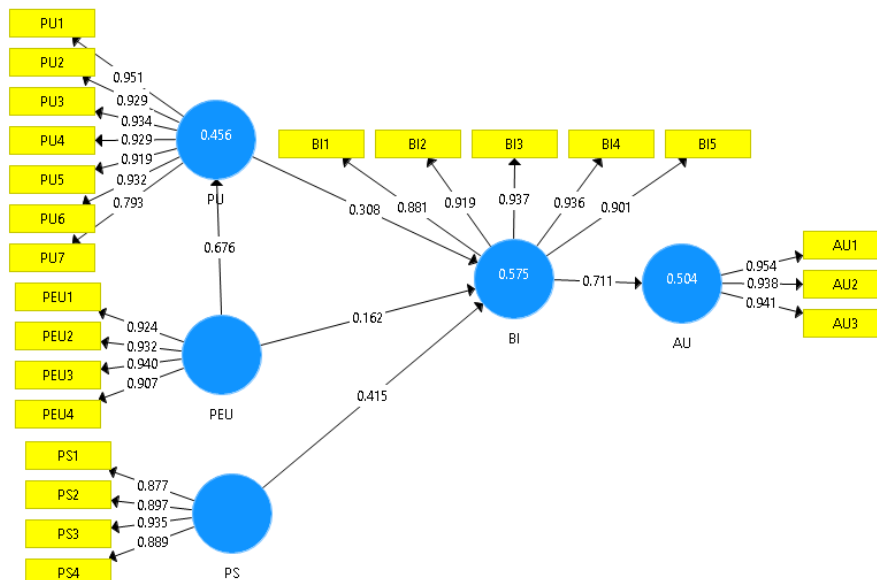

Figure 2: Path analysis, outer loadings and R Squared

Discussion

This study aims to explore e-wallet usage intention among Malaysian young adults by applying technology acceptance model. The study also examined behavioral intention and its influence on

actual use. The role of perceived usefulness, perceived ease of use and privacy are also key determinant to examine the behavioral intention to use e-wallet.

Study found behavioral intention to be significant influence on actual use of e-wallet thus, current study is in line with the findings of (Barry and Jan, 2018; Venkatesh, Speier and Morris, 2002; Al-Maroof and Al-Emran, 2018; Davis, 1989). PU have significant influence on BI because, the use of e-wallet saves time and it is convenient in order to make any payment thus, findings from this study is in line with the prior study of (Baker-Eveleth, et al., 2015). However, PEU found to be positive and significant influence on PU and BI, and indicating strong relationship among PEU and PU. The easier an e-wallet is to use, the more useful it can be thus, result is consistent with the previous study by (Venkatesh, et al., 2000). So it is important for e-wallet providers to bear in mind that applications which are easy to use may have positive impact on consumers' behavioral intention to use. Privacy and security found to have positive relationship with behavioral intention. Less privacy and security may lead consumer feel unprotected to use e-wallet application for transactions (Barry, et al., 2018).

Table 3: Results of Proposed Model

Hypotheses	Path	β	T-stats	p-Value	Decision
H1	BI→ AU	0.711	13.917	0.000	Supported
H2	PU→ BI	0.308	4.461	0.000	Supported
H3a	PEU→ PU	0.676	14.771	0.000	Supported
H3b	PEU→ BI	0.162	2.365	0.018	Supported
H4	PS→ BI	0.415	5.677	0.000	Supported

Conclusion and Future Direction

It should be noted that this analysis has few limitations. Firstly, due to a finite time of researcher, this study focused on students pursuing university degrees in Klang Valley which may not best representing Malaysia. As the usage of digital payment system has widely being expanded it is further suggested that the study should be executed throughout Malaysia including rural and urban areas. Secondly, young adults are not only pursuing their degrees in different universities they are also being employed in different job sectors and institutions. The decision of using e-wallet however may vary based on different income scales of young adults.

This study was conducted to see the behavior among young adults regarding an intention to use e-wallet. Perceived usefulness, perceived ease of use and behavioral intention are previously used to determine the actual usage behavior. As privacy and security become a major concern among young generations for using digital technology, this study employed privacy and security variable to examine the effects on behavioral change. Privacy and security is one of the prerequisite dimensions that e-wallet providers should emphasize in order to create a positive intention among consumers. Without proper protection of privacy and security customers will be cautious about using e-wallet technology (Wei et al., 2009).

It is suggested further to include few more variables to examine the usage intention of electronic wallet. Distinct features such as trust, cost, and reliability are recommended further to apply in the study on behavioral intention to use electronic wallet. So the future study can be replicated by using the same concept but different context to study the behavioral intention to use e-wallet.

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