An Empirical Study on Acceptance of E-wallet among Malaysian University Students

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Abstract
During the COVID-19 pandemic, many consumers have resorted to contactless payment via e-wallet. This study aims to look into the acceptance of e-wallet applications among Malaysian university students. It investigates the relationship between lifestyle compatibility, perceived usefulness, perceived ease of use and trust and security in terms of their intention to use an e-wallet as a form of payment. Data was collected from 217 respondents in Malaysia using purposive sampling through an online survey. Modified Partial Least Square (PLS) version 3.3.5 was used to test all hypotheses. Trust and security are not the primary driver of e-wallet adoption among Malaysian university students, as most consumers are still hesitant to use mobile payments due to concerns about security. Nonetheless, it is discovered that the other parameters studied, which are lifestyle compatibility, perceived usefulness and perceived ease of use, have a positive influence on Malaysian university students' willingness to use e-wallets. This study gives e-wallet developers useful insights into how to improve their e-wallet application by taking into account the factors deemed important by users, especially since it was conducted during the pandemic when consumers preferred contactless payments.
Keywords: e-wallet, Lifestyle Compatibility, Usefulness, Ease of Use, Trust and Security.

Introduction

Contactless services have become an essential part of Malaysians' daily lives since the COVID-19 pandemic hit the country at the end of 2019. In order to maintain social distance and prevent the spread of the COVID-19 virus, people have turned to the digital route. Malaysians are engaging in more online activities as a result of smartphones' pervasiveness and accessibility. According to a 2021 report on digital use in Malaysia, 84.2% of the population uses the internet, 99.2% owns a smartphone, and 29.4% of internet users aged sixteen to sixty-four uses mobile payment services each month (We Are Social & Hootsuite, 2021). One of the digital methods that can be used to improve people's lifestyles during a pandemic is e-wallets. An e-wallet application stores sensitive information about the user, such as their ID card number, home address, and bank account number, which may include debit and/or credit cards. E-wallets are easily accepted by users because they are simply additional applications (apps) for smartphone users, and thus indirectly increase the use rate of e-wallets.

The popularity of e-wallets in Malaysia is due to a number of factors, the most important of which is the convenience of cash transactions, followed by security and cost savings (Nizam et al., 2018). E-wallets facilitate buying and selling processes by utilising smartphone apps, allowing users to conduct online purchases quickly and without hassle, particularly in the transportation, food delivery, and bill payment industries (Rosnidah et al., 2019). The e-wallet has proven to be extremely challenging to deny in many aspects of social life due to its integration into information technology and smart gadgets such as smartphones (Ardiansah et al., 2019).

Near Field Communication (NFC) is a smartphone built-in technology that allows two devices to connect in a very short distance to enable contactless payment (Shin & Lee, 2014). Customers only need a few touches and are close to the point-of-sale (POS) to complete a transaction. According to Bank Negara Malaysia (BNM), Malaysia has 47 approved non-bank and 6 bank e-money issuers (bnm.gov.my, 2022). Popular e-wallet apps used in Malaysia include Boost Pay, Touch and Go (TnG) e-wallet, JomPAY, GrabPay, and WeChat Pay.

Literature Review
Use of e-wallet

Electronic wallets (e-wallets), which are an integral part of electronic payment systems, are one of the best inventions of the twenty-first century. The term "e-wallet" refers to a type of electronic wallet that allows people to link their debit or credit cards to make online purchases of goods or services (Wulantika et al., 2020). Payments made through an e-wallet are said to be more time and money efficient than payments made through a traditional payment system, as well as being more convenient (Blockchains, 2018).

E-wallet payment systems are commonly used for transactions, and payments are made via mobile applications, as consumers find this method to be convenient and trustworthy (Gokilavani et al., 2018; Li et al., 2020). Furthermore, using an e-wallet not only provides convenience and speed, but it also gives consumers a sense of comfort and security in transactions conducted anywhere and at any time (Yang et al., 2021).

According to Dahlberg et al (2015), mobile payment adoptions help mobile service providers understand customer preferences and why they are shifting to use technology enabled services. The investigation, which collected data from 2007 to 2014, a period of eight years, enables the mobile service provider to better serve its customers. Dahlberg et al (2015) found that the most commonly used models were the technology acceptance model (TAM),

the unified theory of acceptance and use of technology (UTAUT), and the diffusion of innovation (DOI) theory. Along with the studies, trust, security, and cost factors were included.

Independent Variables (IV)
Lifestyle Compatibility
Due to the rapid advancement of technology, as well as the ever-changing population and lifestyle of people, the traditional payment channel is giving way to the e-wallet channel. In line with this, Cobanoglu et al (2015) stated that mobile payment is an unavoidable payment method in today's digital environment, and that consumers' intention to use e-wallets as payment methods has become part of their lifestyle. Consumers who are more tech-savvy are more likely to believe that technology makes purchasing a product easier (Yang et al., 2021).

Compatibility refers to the degree to which an innovation is perceived as being consistent with the existing values, needs and past experiences of potential adopters (Rogers, 1983). Hussain et al (2019) investigates the lifestyle compatibility of mobile payment adoption in Bangladesh. The study discovered that lifestyle compatibility is a strong predictor of low-income consumers' intention to use m-payment in Bangladesh. Similarly, Chawla and Joshi (2021) found that lifestyle compatibility plays a key role in India's uptake of mobile payments. As a result, lifestyle compatibility is critical for reducing the likelihood of ambiguity when using technology in terms of a user's experiences and preferences, and it has a direct impact on how an e-wallet is used. Therefore, the following hypothesis is proposed:
H1: Lifestyle compatibility positively influence Malaysian university students' acceptance of e-wallet.

Perceived ease of use (PEOU)
One of the key reasons why users continue to utilise a new technology is due to how simple it is to use (Amin et al., 2014; Ramayah & Lo, 2007). Likewise, Morosan (2014) also stated that the ease of use of a technology influences users' attitudes toward the adoption of new technology. In their investigation into the variables impacting the adoption of M-commerce, Barry and Jan (2018) found that PEOU and perceived usefulness (PU) were both significant and favourable. Reddy and Rao (2019), on the other hand, discovered that users' intents were a key driving force for their continued usage of e-wallet apps. Other researchers have also consistently discovered that the use of an e-wallet is primarily determined by the ease of use of the technology provided (Sarmah et al., 2021, Singh et al., 2020; Karim et al., 2020; Chawla and Joshi, 2020; Chopra and Ranjani, 2020; Saura et al., 2020). Therefore, PEOU may have a significant impact on users' decision to keep using an e-wallet (Yang and Wang, 2019). PEOU in this study refers to the degree to which students expect using an e-wallet to be simple and effortless. Therefore, the following hypothesis is proposed:
H2: Perceived ease of use positively influences Malaysian university students' acceptance of e-wallet.

Perceived usefulness (PU)
According to Davis (1986); Liao et al (2009), PU refers to users' subjective perceptions that certain technologies can enhance their ability to accomplish their jobs. Consumers expect that using the technology will, at the very least, make their lives easier than they were

before. It has been found that PU is an important indicator in the research of the propensity to use an e-wallet continuously (Shaw and Sergueeva, 2019). In a study of car dashcams, Vafaei-Zadeh et al (2021) discovered that PU has a favourable influence on users' willingness to use dashcams. Furthermore, previous research has shown a positive correlation between consumer interest in using e-payment systems, particularly during COVID-19. During this uncertain time, students were motivated to use e-wallets with the support of basic infrastructure. Therefore, the following hypothesis is proposed:

H3: Perceived usefulness positively influences Malaysian university students' acceptance of e-wallet.

Trust and Security
Concerns about security and privacy appear to be more serious when money is transferred via mobile devices because personal and private data is stored on such devices (Sharma and Sharma, 2019). According to the Edge Markets website, there have been 51,631 online fraud cases reported in Malaysia from 2019 to 2021, resulting in losses totalling RM1.61 billion (theedgemarkets.com). At the same time, the Malaysia Computer Emergency Response Team (MyCERT) website reported a total of 10,016 cases involving cyber security incidents. The occurrences involving cyber security included spam, intrusion, cyber harassment, vulnerability, intrusion attempt, denial of service, harmful codes, content-related, and fraud (www.mycert.org.my). As a result, trust is a key factor in the success of technology adoption, according to Hanafizadeh et al. (2014) and Luo et al. (2010). Furthermore, Zhou et al. (2018) added, for customers to select an e-wallet while making a payment, they must have faith in the e-payment system. Therefore, the following hypothesis is proposed:

H4: Trust and security positively influence Malaysian university students' acceptance of e-wallet.

Methodology
The study puts forth four independent variables, i.e. lifestyle compatibility, perceived ease of use, perceived usefulness and trust and security; and one dependent variable; use of e-wallet (Refer to research framework in Figure 1).
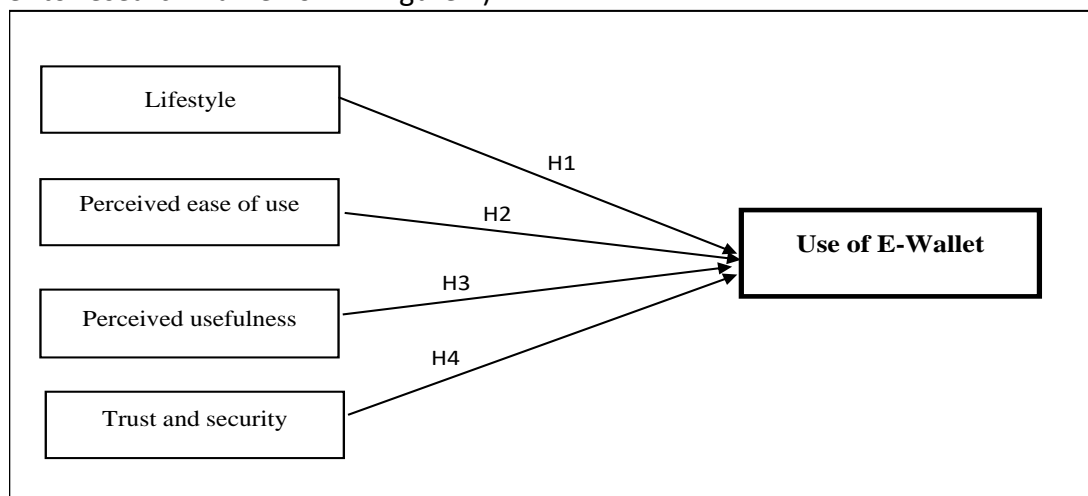

Figure 1: Conceptual Framework

This study proposed a quantitative research design for data collection. An online survey with close-ended questions was designed using Google form to examine the research hypotheses. Purposive sampling was used to select the sample of respondents, which is made up of students from Malaysia's higher education institutions. This is a cross-sectional study, and data were collected from the respondents who gave their consent when filling out the Google form.

The G-power software was used to determine sample size. The F-test was used as a test family, and linear multiple regression was used to calculate sample size. The G*Power 3 analysis was used to determine the minimum required sample size, with an effect size of 0.15 at a significance level of 5% and a statistical power level of 95% (Cohen, 1988). According to the findings, the sample size required is 129. The questionnaire was distributed to the targeted students through email and WhatsApp over five months from December 2021 to April 2022. All five variables in this study were assessed using a 5-point Likert scale, with responses ranging from (1) Strongly Disagree to (5) Strongly Agree. A total of 20 validated measurement items were adapted from previous studies, and modified Partial Least Squares (PLS) version 3.3.5 was used to test all hypotheses.

Results and Discussion

217 targeted responses were received within the specified time frame, yielding an 85.5 percent response rate. This study's respondents are 76% female, with the majority of respondents aged 20 to 29. On the other hand, the distribution of Higher Education Institutions (HEI) reveals that a larger part of respondents (150) is from public universities (IPTA), while 67 are from private universities (IPTS), as shown in Figure 2.
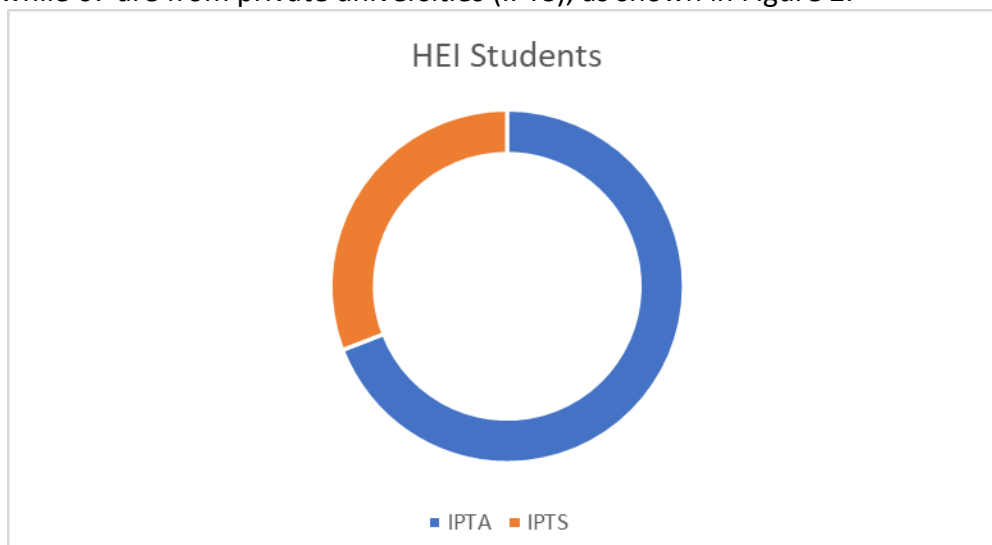

Figure 2: Higher Education Institutions (HEIs)

To meet the quality feasibility, this data is then analysed by considering the values: Cronbach's Alpha (0.7), Composite Reliability (0.7), AVE (0.5) and Loading Factor (0.7) (Hair et al. 2013; Quoquab et al. 2017). As shown in Table 1, all convergent validity for Use of E-Wallet, Lifestyle compatibility, Perceived ease of use, Perceived usefulness, and Trust and security, are meeting the minimum requirements.

Table 1

Measurement model

| Research Construct	PLS Code Item	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	Loading Factor
Use of e-Wallet	UE1	0.859	0.905	0.705	0.879
	UE2				0.878
	UE3				0.874
	UE4				0.717
Lifestyle compatibility	LS1	0.920	0.943	0.806	0.849
	LS2				0.915
	LS3				0.911
	LS4				0.914
Perceived ease of use	PEU1	0.861	0.914	0.781	0.901
	PEU2				0.878
	PEU3				0.871
Perceived usefulness	PU1	0.885	0.916	0.685	0.830
	PU2				0.844
	PU3				0.851
	PU4				0.834
	PU5				0.777
Trust and security	TS1	0.850	0.898	0.687	0.794
	TS2				0.837
	TS3				0.851
	TS4				0.832
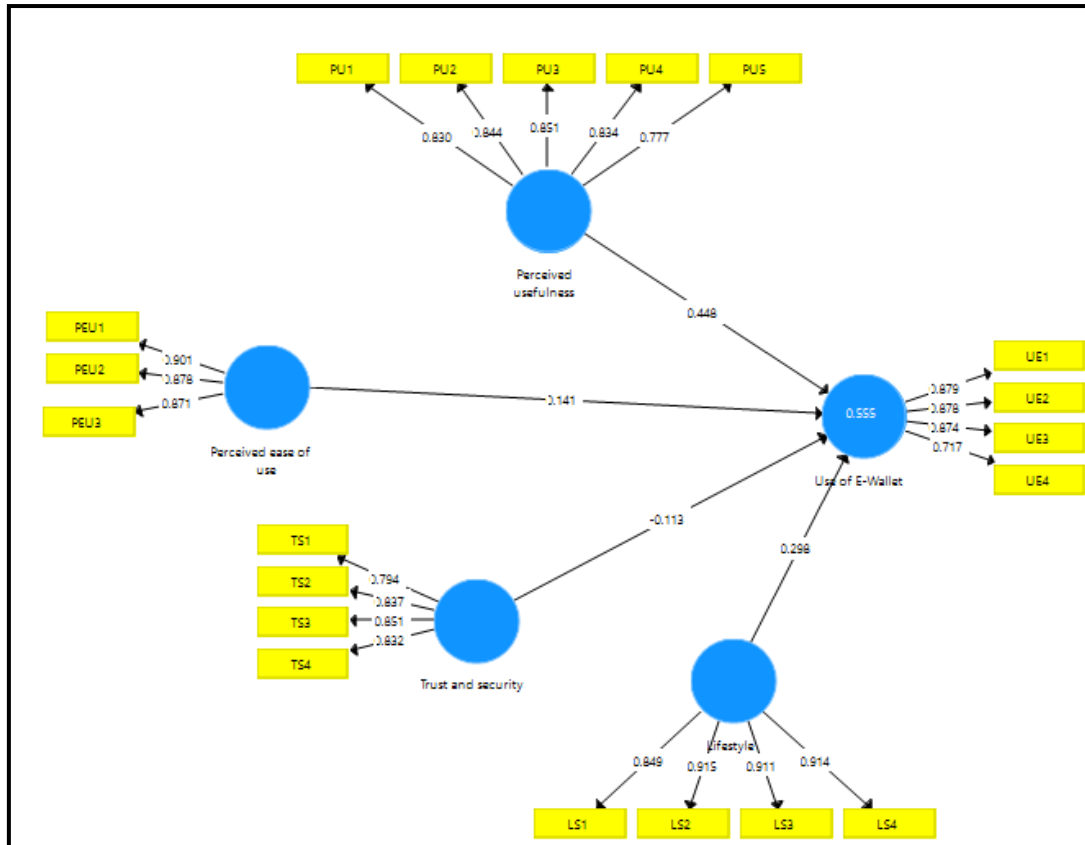
Figure 3: Measurement model

The square root of the AVE value for each construct has exceeded its correlation with other constructs. This indicates that our model is sufficient to support for discriminant validity at the construct level (Fornell & Larcker, 1981). The loading and cross-loadings for the measurement model for this study are shown in Table 2.

Table 2

Loadings and cross-loadings for the measurement model

	Lifestyle	Perceived ease of use	Perceived usefulness	Trust & security	Use of e-Wallet
LS1	**0.849**	0.558	0.604	0.460	0.514
LS2	**0.915**	0.577	0.700	0.452	0.665
LS3	**0.911**	0.544	0.669	0.486	0.598
LS4	**0.914**	0.573	0.678	0.532	0.570
PEU1	0.593	**0.901**	0.620	0.514	0.561
PEU2	0.545	**0.878**	0.524	0.476	0.445
PEU3	0.516	**0.871**	0.546	0.488	0.440
PU1	0.584	0.548	**0.830**	0.434	0.575
PU2	0.573	0.466	**0.844**	0.342	0.603
PU3	0.683	0.527	**0.851**	0.380	0.641
PU4	0.626	0.583	**0.834**	0.351	0.597
PU5	0.593	0.539	**0.777**	0.333	0.507
TS1	0.488	0.448	0.426	**0.794**	0.310
TS2	0.347	0.416	0.288	**0.837**	0.214
TS3	0.452	0.526	0.381	**0.851**	0.299
TS4	0.460	0.440	0.345	**0.832**	0.223
UE1	0.649	0.496	0.668	0.318	**0.879**
UE2	0.506	0.489	0.625	0.280	**0.878**
UE3	0.566	0.463	0.620	0.266	**0.874**
UE4	0.474	0.401	0.442	0.218	**0.717**

Based on Hair et al., (2013), the statistical significance of the path coefficients of the structural model was then determined by using the bootstrap procedure. Table 3 shows that lifestyle compatibility ($\beta=0.298$, $p<0.01$), perceived ease of use ($\beta=0.141$, $p<0.05$) and perceived usefulness ($\beta=0.448$, $p<0.001$) all have a significant positive relationship with e-wallet use. Meanwhile, trust and security ($\beta=-0.113$, $p>0.05$) were found to have no significant relationship with the use of e-wallet among HEI students.

Table 3
Results of the Hypothesis Testing

Hypothesis	Path	Beta Value	Standard Deviation	t – Value	p – Value	Result
H1	Lifestyle compatibility → use of e-wallet	0.298	0.092	3.258**	0.001	Supported
H2	Perceived ease of use → use of e-wallet	0.141	0.070	2.020*	0.044	Supported
H3	Perceived usefulness → use of e-wallet	0.448	0.083	5.408***	0.000	Supported
H4	Trust and security → use of e-wallet	-0.113	0.065	1.738*	0.083	Not supported

p<0.01,*p<0.05, p<0.001* Bootstrapping

To validate the measurement model's significance, the coefficient of determination (R^2) and effect size (f^2) were calculated, analysed, and assessed. To measure the explanatory power of the dependent variable, the coefficient of determination R^2 is used. If the R^2 result falls between 0 and 1, the regression model accurately fits the observed data or model. Table 4 displays the results of confirming the coefficient of determination R^2 using the PLS algorithm.

Table 4
Evaluation R Square

	R Square	R Square Adjusted
Use of e-Wallet	0.555	0.547

Cohen's f^2 (Cohen, 1988) is appropriate for calculating the effect size in a multiple regression model with a continuous independent variable and a dependent variable. Table 5 shows the results of confirming the evaluation of effect size f^2 using the PLS algorithm. The effect size is represented by f-square (>=0.02 is small, >= 0.15 is medium, and >= 0.35 is large) (Cohen, 1988). According to Table 5, the perceived usefulness effect size is medium, followed by lifestyle compatibility and perceived ease of use. Trust and security effect size is small with f^2 value less than 0.15 for e-wallet use.

Table 5
Evaluation effect size (f^2)

	Use of E-Wallet
Lifestyle compatibility	0.077
Perceived ease of use	0.021
Perceived usefulness	0.181
Trust and security	0.018

Conclusion

This study has identified the factors that influence Malaysian university students' intention to use an e-wallet. The findings revealed that lifestyle compatibility, perceived ease of use and perceived usefulness have positive relationship with the intention to adopt e-wallet among the students. This is consistent with technological advancements which is steering toward cashless payment, and it is particularly useful during the COVID-19 pandemic, when contactless payment is strongly encouraged. In addition,

today's youth prefer instant gratification and minimal effort. Furthermore, even the older generation, who are less familiar with technological gadgets, seek an e-wallet application that is easy to navigate and use. Besides that, there is a widespread belief

that contactless e-wallet payment methods offer convenience and make life easier, especially during the pandemic when people visit banks less frequently to withdraw cash due to the lockdown and fear of contracting the COVID-19 virus.

However, trust and security are not the primary motivators for e-wallet adoption among Malaysian university students, as most consumers are still wary of using mobile payments due to security concerns. Because consumer information and financial details are required to make an e-wallet payment, many people are still hesitant to use it for fear of someone hacking or intercepting their payment information and gaining unauthorised access to their personal information, which could lead to cybercrime.

This study provides e-wallet developers with useful insights into how to improve their e-wallet application by considering the factors deemed important by users, especially since it was conducted during the pandemic when consumers preferred contactless payments. Electronic devices have made digitalization of services possible, and consumers may soon adopt e-wallet usage into their lifestyle, making it a norm in the coming years. However, this study did not consider all the possible factors that could influence e-wallet adoption. More factors, such as convenience motivation, time saving orientation, and social influence, can be added to the model in the future to improve it. Furthermore, this study only includes Malaysian university students. In the future, the study could be expanded to include a larger consumer group.

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