THE CONTRIBUTING FACTORS ON THE USAGE OF ELECTRONIC WALLETS AMONG HIGHER EDUCATION STUDENTS

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Abstract*: The cashless payment system aims to minimise the exchange of physical currency by integrating digital transactions through electronic channels. Cashless payments have experienced significant growth in Malaysia, particularly in the education industry. Higher education students have a strong preference for cashless payment methods due to their aversion to carrying physical currency. However, at a local university, only 50% of the students indicate a preference for doing transactions electronically rather than using physical currency. Several public higher learning institutions have recently advocated for the implementation of a cashless environment, utilising e-wallet technology. Therefore, the objective of this study was to examine the relationship between the Perceived Usefulness, Perceived Ease of Use and Perceived Risk with the usage of Electronic Wallet among higher education students. The Technology Acceptance Model (TAM) and its extension, TAM3, were used to clearly define the impact of independent variables. This quantitative research is based on data obtained from survey questionnaire distributed to students at Politeknik Tuanku Syed Sirajuddin a higher education sector in northern Malaysia. A total of 347 data points were examined using the Statistical Package for the Social Sciences (SPSS). The multiple regression analysis was employed to evaluate the study hypothesis. As a result, perceived ease of use significantly influences the usage of electronic wallets among higher education students, while perceived usefulness and perceived risk do not exhibit a significant positive impact on electronic wallet usage among this demographic. The study concludes with a discussion of the research findings and their theoretical and practical contributions. It also discusses the study's limitations and offers suggestions for future research.*

Keywords*: Usage of electronic wallet, Technology Acceptance Model, Perceived Usefulness, Perceived Ease of Use, Perceived Risk*

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Introduction

The rapid growth of the digital economy has revolutionized business practices, leading to a global shift towards cashless transactions through electronic means. This transformation is driven by the modernization of financial tools such as bank cards, checks, internet banking, and e-wallets. An e-wallet, as defined by Bhatt et al. (2021), is a pre-funded account that allows users to store funds securely for future online purchases. The integration of smartphones with financial systems has engendered digital payment ecosystems, encompassing mobile payments, which are progressively supplanting conventional paper cash (Sharma et al., 2018). E-wallets, as a crucial component of electronic payment systems, are considered one of the most significant technological advancements of the 21st century (Karim et al., 2020).

The COVID-19 pandemic has been a major catalyst in increasing e-wallet usage, as it has encouraged consumers to adopt contactless payment methods to reduce the risk of virus transmission (Aji et al., 2020). In Malaysia, the e-wallet sector has seen rapid growth, with 53 e-wallet providers currently operating in the country. Government initiatives, like the e-Tunai Rakyat Campaign and e-Penjana, have expedited the adoption of e-wallets, resulting in a substantial increase in user numbers. The prevalence of e-wallets in Malaysia reflects the growing interest among consumers and businesses in digital payment methods, with e-wallets accounting for 19% of the country's overall Fintech market (Fintech News Malaysia, 2022).
E-wallets have become a key instrument in Malaysia's transition from a cash-based to a cashless society. The increase in e-wallet usage is attributed to factors such as the reduction of cash usage during the pandemic, the development of technology and e-commerce, and the convenience offered by digital payments. The study explores the determinants influencing e-wallet usage, focusing on three key factors: perceived usefulness, perceived ease of use, and perceived risk.

Perceived usefulness, which refers to the benefits and utility derived from using e-wallets, significantly influences individuals' adoption and engagement with these digital payment mechanisms. The perceived ease of use, indicating the simplicity and user-friendliness of e-wallet platforms, significantly influences users' views and intentions regarding their adoption. Conversely, perceived risk, which includes apprehensions regarding security, privacy, and possible financial consequences, acts as a considerable impediment to user acceptance. Elevated perceived risk may serve as an impediment, influencing consumers' inclinations to utilise e-wallet services.

Problem Statement

The rapid growth of e-wallet usage in Southeast Asia, particularly in Malaysia, has accelerated the country's digital transition, with 74% of consumers currently turning cashless and estimates of complete cashlessness within three years (Cashless society in Malaysia, 2022). However, a significant digital divide persists, particularly among college students. Despite the country's overall progress, only 50% of students prefer online payments, with many still reliant on physical cash (Going cashless is the way forward, 2023).

Given that this generation would influence Malaysia's economy going forward, it is imperative to comprehend the elements driving the use of e-wallets (Chan & Ng, 2020). The unequal distribution of e-payment usage has been noted in earlier studies, especially in rural areas like Perlis, where issues like poor internet access at establishments like Politeknik Tuanku Syed Sirajuddin (PTSS) make the adoption gap worse (Chan & Ng, 2020; Ariffin et al., 2021). A closer examination of the obstacles faced by students in rural areas is necessary in light of this

lack of infrastructure and geographical differences in e-wallet usage (Vernon & Phaik See, 2022).

While previous studies have investigated e-wallet adoption in Malaysia, particularly the Perlis region, they frequently miss undergraduate students' distinctive perspectives (Janteng and Dino, 2022). This research aims to fill that gap by examining the factors influencing e-wallet usage among students at PTSS, focusing on perceived usefulness, perceived ease of use, and perceived risk within the framework of the Technology Acceptance Model (TAM). Understanding these dynamics is essential for addressing the challenges to e-wallet adoption and refining digital payment strategies in rural educational settings.

Literature Review

Electronic Wallet Usage Behavior

Electronic wallet (e-wallet) usage behavior refers to how individuals interact with digital payment platforms, typically accessed via smartphone to facilitate financial transactions. These platforms, which function similarly to traditional credit or debit cards, offer considerable benefits in terms of convenience, security, and incentives like discounts, loyalty points, and exclusive offers (Tan, 2018). E-wallets allow users to store a range of personal and financial information, streamlining the payment process and reducing reliance on physical wallets (Abdul Kadir et al., 2022).

Previous studies have primarily examined broad consumer perceptions, such as convenience and security, influencing e-wallet adoption (Khan & Abideen, 2023). However, these studies often overlook context-specific barriers, especially in underrepresented regions like rural Malaysia, where digital infrastructure is limited (Hung Kee et al., 2022). While factors like privacy concerns and perceived risk are recognized challenges, their impact in educational settings, particularly in rural areas, remains underexplored.

Additionally, most research generalizes findings from urban populations, ignoring the regional digital divide in less-connected regions like Perlis (Nizam et al., 2019). This study aims to fill this gap by investigating the factors influencing e-wallet adoption among university students in rural Malaysia. By exploring these localized factors, this research offers new insights into e-wallet usage behavior in under-researched populations, contributing to more targeted digital payment strategies.

Perceived Usefulness

Perceived usefulness (PU) is a fundamental variable in the Technology Acceptance Model (TAM) and is essential for e-wallet acceptance. Perceived usefulness (PU), defined as the extent to which an individual believes that utilising a system will improve their performance (Davis, 1989), strongly affects the desire to adopt e-wallets. Studies show that PU provides accurate predictions of IT usage by reflecting the complexities of modern systems (Ambalov, 2021). Research consistently shows that PU drives positive attitudes towards technology and e-wallets (Huyen & Uyen, 2020), especially among students (Mohamad et al., 2022) and in contexts like Malaysia (Abdul Kadir et al., 2022).

Few research has examined PU's impact in rural areas with poor digital infrastructure, like Malaysia's Perlis, even though studies have emphasized its significance in urban areas and during the Covid-19 pandemic (Jesuthasan & Umakanth, 2021; Astari et al., 2022). This study

addresses this gap by investigating how PU interacts with regional barriers, internet access, and perceived risks in shaping e-wallet adoption among undergraduates in rural educational settings, offering new insights into e-wallet usage in underrepresented populations.

Perceived Ease of Use

Perceived ease of use (PEoU) indicates the extent to which an individual believes that utilising a system will necessitate minimal effort (Davis, 1989) is critical in enhancing user-friendliness and reducing complexity (Mois & Beer, 2020). PEoU affects the intention to utilise electronic wallets, as individuals are more inclined to embrace solutions that are user-friendly (Mohamad et al., 2022; Krisnawati et al., 2021; Chan & Ng, 2020). Research has consistently shown that the simplicity of e-wallets promotes their adoption, especially among undergraduates (Tan & Ng, 2020). Factors like flexibility, ease of payment, and convenience are key drivers of this trend (Kasirye & Masum, 2021). During the COVID-19 pandemic, PEoU became even more important, supporting the adoption of contactless payments (Jesuthasan & Umakanth, 2021; Moreno et al., 2022).

While existing studies emphasize PEoU in urban settings, this study adds novelty by exploring how PEoU interacts with specific regional challenges limitations in rural Malaysia in shaping students' adoption of e-wallets. This focus on rural, less digitally connected areas provides new insights into the role of user-friendliness in underrepresented populations.

Perceived Risk

Online shopping involves inherent risks as customers cannot physically examine products before purchasing, which can lead to uncertainty and discomfort (Panjaitan et al., 2019). Trust plays a crucial role in mitigating these risks, especially in the context of digital payments like e-wallets when they perceive secure transactions (Krisnawati et al., 2021; Wiradinata, 2019). Perceived risk refers to the potential losses consumers anticipate, including monetary losses, privacy breaches, safety concerns, and negative experiences (Bauer, 1960; Widodo et al., 2019). This perceived risk may lead to reluctance, especially for high-value purchases (Razif et al., 2020). Consumers may worry about the reliability of online vendors, hackers, or the efficacy of new technology, all contributing to their risk perception (Krisnawati et al., 2021).

While research has established that perceived risk negatively influences e-wallet adoption (Lai & Zainal, 2015; Winarto & Panjaitan, 2018), limited attention has been given to how region-specific factors, like internet access and digital infrastructure, impact perceived risk in rural regions. This study offers new insights by focusing on students in rural Malaysia, exploring how perceived risk interacts with trust and security concerns in areas with limited technological resources. By doing so, it provides a deeper understanding of the unique barriers to e-wallet adoption in underrepresented populations.

Background Theory

The Technology Acceptance Model (TAM), proposed by Fred Davis in 1989, is a prevalent paradigm that elucidates the process by which individuals adopt and utilise new technology. The Technology Acceptance Model (TAM) outlines two primary characteristics that affect technology adoption: perceived utility (PU) and perceived ease of use (PEoU). The paradigm posits that the greater the ease of use of a technology, the higher the perceived utility by users. TAM has been applied extensively in various fields, including education and technology adoption studies, to predict user behavior. Researchers like Armanditya & Rahmiati (2020) and Pertiwi et al. (2020) have demonstrated its effectiveness in understanding e-wallet usage.
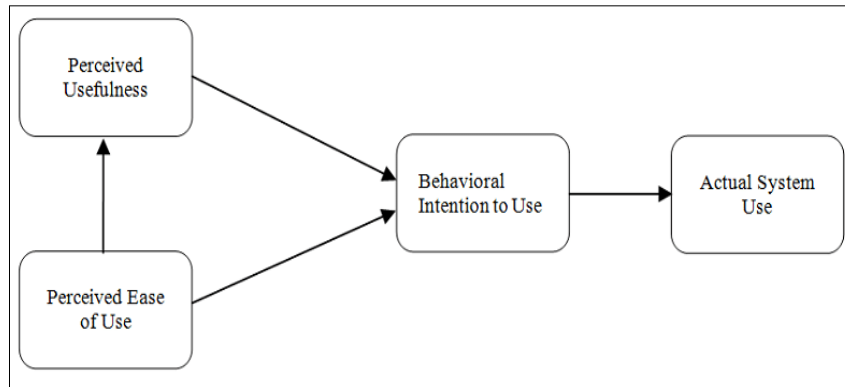
Figure 1: Diagram on Technology Acceptance Model (TAM) (Davis, 1989)

The Technology Acceptance Model (TAM) was extended to TAM3 by Venkatesh and Bala (2008), incorporating factors like trust and perceived risk to better understand e-commerce and system use. TAM3 emphasises the significance of experience in moderating essential relationships, indicating that as experience accumulates, the effect of perceived ease of use on behavioural intention decreases, whilst its influence on perceived usefulness escalates. Chelvarayan et al. (2022) determined that university students' propensity to utilise e-wallets is influenced by perceived usefulness, ease of use, perceived risk, and trust, indicating that ease of use retains its significance despite experience.
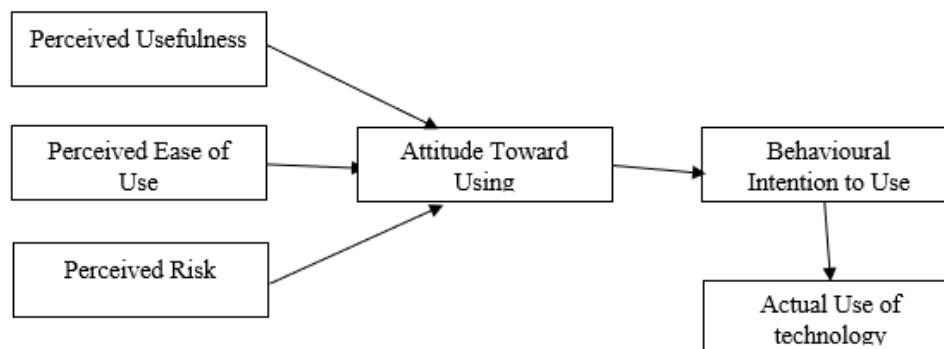

Figure 2: Diagram on extended Technology Acceptance Model (TAM).

This research applies TAM and TAM3 to examine the factors influencing e-wallet usage among higher education students, focusing on perceived usefulness, ease of use, and risk.

Methodology

Population and Sample Procedure

The study's target population comprises 3,537 students from Polytechnic Tuanku Syed Sirajuddin (Statistik Pelajar Politeknik Tuanku Syed Sirajuddin, 2023). The sample size comprises 346 respondents, as established by Krejcie and Morgan's table (1970). The polytechnic was selected because of its association with the Higher Education Sector. A non-probability sampling method was utilised, which does not guarantee equal selection probabilities for all people within the population. When time and money are scarce, non-probability sampling techniques are frequently selected for their affordability and ease of use (Silver & Kelsay, 2021; Wiśniowski et al., 2020; Turban et al., 2022). A simple random

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sampling procedure was employed to ensure equal and impartial participation opportunities for each student in the study (Stratton, 2021).

Data Collection Procedures

This research employs primary data collected by a self-administered questionnaire, disseminated offline, to investigate e-wallet utilisation. The survey comprises four sections: Section A comprises demographic enquiries (e.g., gender, age, e-wallet usage experience). Section B examines the dependent variable, e-wallet usage (UEW), comprising five questions derived from Abdul Kadir et al. (2022). Section C encompasses three independent variables: perceived usefulness (PU) comprising five questions from Abdul Kadir et al. (2022) and Mohamad et al. (2022), perceived ease of use (PEoU) consisting of five questions from Abdul Kadir et al. (2022), and perceived risk (PR) featuring six questions from Razif et al. (2020).

Pilot Study

A pilot study was performed to evaluate the validity and reliability of the research instruments prior to the primary data collection. The main objectives were to identify and eliminate any ambiguous or biassed items in the questionnaire and to assure the clarity and suitability of the questions for responders. The research comprised 30 students from Politeknik Tuanku Syed Sirajuddin, utilising questionnaires modified from earlier research. Pilot study results may not accurately predict larger efficacy/effectiveness trials, highlighting the need for careful design and interpretation of pilot studies (Beets et al., 2020). And according to Hair et al (2006), face validity can be assessed not only through ratings by expert judges, but also by pretests with multiple sub-populations. And further to this, face validity is the extent to which the content of the items is consistent with the construct definition, based solely on the researcher's judgment (Hair et al, 2006). However, factor analysis was not conducted on pilot samples because according to Hair et al (2006), a minimum sample of 50 is needed before a factor analysis can be carried out.

Data were analysed via SPSS to assess reliability and face validity. The pilot test validated the instruments' face validity and reliability, with Cronbach's alpha coefficients between 0.815 and 0.938, exceeding the permissible range of 0.50-0.60. The instruments were considered reliable and valid for the final data collection.

Table 1: Reliability Analysis

Variable	No items	Cronbach's Alpha
Usage of Electronic Wallet	5	0.815
Perceived Usefulness	5	0.753
Perceived Ease of Use	6	0.836
Perceived Risk	5	0.938

Results

Response Rate

This study distributed 370 face-to-face questionnaires, achieving a 99% response rate with 365 completed questionnaires. The sample size of 346 students, based on Krejcie and Morgan's table, was met. The questionnaires provided responses that are summarized in Table 2. This table collects information about the demographic information which includes the gender, age, ethnicity and electronic wallet experience.

Table 2 : Profiles of Respondents.

Profiles of Respondents	Frequency	%
Gender:		
Male	115	33.1
Female	232	66.9
Total	347	100
Age:		
Below 18 years old	110	31.7
19 – 21 years old	227	65.4
22 -24 years old	8	2.3
Above 24 years old	2	0.6
Total	347	100
Ethnicity		
Malay	267	76.9
Chinese	28	8.1
Indian	42	12.1
Others	10	2.9
Total	347	100
Electronic Wallet usage experience		
Below 1 year	66	19
1 – 2 years	135	38.9
2 – 3 years	96	27.7
Above 3 years	50	14.4
Total	347	100

The Goodness of Measures: Factor Analysis and Reliabilities

Principal Component Analysis (PCA) was utilised to investigate the dimensional structure of the data. The study, with a sample size of 347, surpassed the suggested threshold of 50, hence ensuring credible results. Assumptions were satisfied, since Bartlett's Test of Sphericity produced a p-value below 0.01 and the Kaiser-Meyer-Olkin (KMO) measure beyond 0.5. PCA identified one dimension accounting for 66.473% of the variance, influenced by component 1. Factor loadings exceeded the 0.3 criterion, signifying a strong and legitimate factor structure. These results, summarized in Table 3, confirm the suitability of the factor model for analyzing electronic wallet usage.

Table 3: Factor Analysis and Component Matrix for Usage of Electronic Wallet

	Component 1
EUW1. I always use electronic wallet for any payment.	0.862
EUW2. I used electronic wallet for convenient purpose.	0.832
EUW3. I use electronic wallet because of its flexible payments.	0.802
EUW4. I used electronic wallet for easy money transfer.	0.792
EUW5. I actively use the electronic wallet for online shopping	0.786
Eigenvalues	3.324
Percentage of Common Variance	66.473
Cumulative %	66.473

Extraction Method: Principal Component Analysis.
a. 1 component extracted.

A reliability test was performed on the items, resulting in a Cronbach's Alpha coefficient of 0.867 for the 347 samples. The results validate the reliability of the study's variables, since they surpass the 0.7 criterion.

Table 4: Reliability Test (Cronbach's Alpha) and the Dimension for Electronic Wallet Usage

Principal Component	Cronbach's Alpha	Items	Dimension
1	0.867	EUW1 I always use electronic wallet for any payment. EUW2 I used electronic wallet for convenient purpose. EUW3 I use electronic wallet because of its flexible payments. EUW4 I used electronic wallet for easy money transfer. EUW5 I actively use the electronic wallet for online shopping.	Usage of Electronic Wallet

Factor analysis using PCA with varimax rotation revealed three distinct dimensions, with eigenvalues greater than 1.0 and loading factors ≥ 0.3. The results, shown in Table 5, confirm the suitability for analysis.

Table 5: Factor Analysis and Rotated Component Matrix Independent Variables

	Component		
	1	2	3
PEoU2. Purchasing by using electronic wallet is easy for me.	**0.785**	0.228	0.234
PEoU3. I can easily use electronic wallet application whenever I like.	**0.745**	0.198	0.186
PEoU4. Top-up electronic wallet account is easy for me.	**0.722**	0.276	0.105
PEoU6. Log on to electronic wallet application is fast and easy.	**0.704**	0.349	0.216
PEoU1. Downloading electronic wallet application using Smartphone is easy for me.	**0.663**	0.341	0.175
PU5. Electronic wallet minimizes the time I usually spent on payment.	**0.661**	0.212	0.386
PEoU5. Generally, using electronic wallet is effortless.	**0.610**	0.344	0.189
PU1. can make payment faster using electronic wallet compared to using cash money.	**0.569**	0.085	0.394
PR4. I believe using electronic wallet platform for any financial transaction is secure.	0.273	**0.820**	0.156
PR5. There is less risk of privacy breach with payment process using electronic wallet platform	0.234	**0.820**	0.090
PR3. I believe using electronic wallet platform for any financial transaction is secure.	0.292	**0.815**	0.199
PR2. I feel secure using my credit/debit card information through electronic wallet platform.	0.292	**0.814**	0.189
PR1. I believe my personal information is secure when using electronic wallet platform system.	0.235	**0.794**	0.274

PU3. I can save my money more by using electronic wallet compared to cash money.	0.254	0.263	**0.794**
PU2. I can track my spending better using electronic wallet compared to cash money	0.251	0.174	**0.776**
PU4. Electronic wallet is a better alternative mode of payment compared to cash money.	0.524	0.264	**0.562**

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 5 iterations.

Following the prior component analysis, the initial values for the two items from Perceived Usefulness (PU5 and PU1) were merged into the Perceived Ease of Use (PEoU) variable. The summarised findings of the prior factor analysis are displayed in Table 6 below.

Table 6 : Summary of factor analysis

Original items in each variable	Items remained	New items added	Renamed constructs
PU1, PU2, PU3, PU4 & PU5	PU2, PU3 and PU4	-	**Perceived Usefulness**
PEoU1, PEoU2, PEoU3, PEoU4, PEoU5 & PEoU6	All PEoU items	PU1, PU5	**Perceived Ease of Use**
PR1, PR2, PR3, PR4 & PR5	All PR items	-	**Perceived Risk**

The reliability test on the 16-dimensional items showed that the Cronbach's Alpha values for components 1, 2, and 3 were 0.784, 0.899, and 0.924, respectively, indicating satisfactory internal consistency. These values exceed the minimum threshold of 0.7, confirming the reliability of the scale for perceived usefulness, ease of use, and risk.

Table 7: Reliability Test (Cronbach's Alpha) and the Dimension for Perceived Usefulness, Perceived Ease of Use, and Perceived Risk

Principal Component	Cronbach's Alpha	Items	Dimensions
1	0.784	PU2.I can track my spending better using electronic wallet compared to cash money PU3.I can save my money more by using electronic wallet compared to cash money. PU4.Electronic wallet is a better alternative mode of payment compared to cash money.	Perceived Usefulness
2	0.899	PEoU1.Downloading electronic wallet application using Smartphone is easy for me. PEoU2.Purchasing by using electronic wallet is easy for me. PEoU3.I can easily use electronic wallet application whenever I like. PEoU4.Top-up electronic wallet account is easy for me. PEoU5.Generally, using electronic wallet is effortless. PEoU6.Log on to electronic wallet application is fast and easy. PU1.I can make payment faster using electronic wallet compared to using cash money.	Perceived Ease of Use

		PU5.Electronic wallet minimizes the time I usually spent on payment.	
3	0.924	PR1.I believe my personal information is secure when using electronic wallet platform system. PR2.I feel secure using my credit/debit card information through electronic wallet platform. PR3.I believe using electronic wallet platform for any financial transaction is secure. PR4.I believe using electronic wallet platform for any financial transaction is secure. PR5.There is less risk of privacy breach with payment process using electronic wallet platform	Perceived Risk

Descriptive statistics, comprising mean, standard deviation, minimum, and maximum values, were computed for all variables to elucidate the distribution and variability of the data. The dependent variable, electronic wallet usage, was examined using the five questions from the questionnaire. The minimum and maximum values for electronic wallet utilisation were computed to furnish numerical representations of the target variable. Likewise, the independent variables—perceived usefulness (PU), perceived ease of use (PEoU), and perceived risk (PR)— were evaluated by means and statistical metrics of minimum, maximum, and standard deviation for the sample of 347 participants. The findings are summarised in Table 8.

Table 8 : Descriptive Statistic of Constructs in the Study

	N	Minimum	Maximum	Mean	Std. Deviation
EUW1. I always use electronic wallet for any payment.	347	1.00	5.00	4.1614	0.88821
EUW2. I used electronic wallet for convenient purpose.	347	2.00	5.00	4.4640	0.66780
EUW3. I use electronic wallet because of its flexible payments	347	2.00	5.00	4.3228	0.72497
EUW4. I used electronic wallet for easy money transfer.	347	2.00	5.00	4.4611	0.66763
EUW5. I actively use the electronic wallet for online shopping	347	1.00	5.00	4.2277	0.87518
PU1. I can make payment faster using electronic wallet compared to using cash money	347	2.00	5.00	4.2190	0.84893
PU2. I can track my spending better using electronic wallet compared to cash money.	347	1.00	5.00	4.1556	0.91170
PU3. I can save my money more by using electronic wallet compared to cash money	347	1.00	5.00	3.7003	1.13640
PU4. Electronic wallet is a better alternative mode of payment compared to cash money.	347	1.00	5.00	4.1787	0.88161
PU5. Electronic wallet minimizes the time I usually spent on payment.	347	2.00	5.00	4.1268	0.85413

PEoU1. Downloading electronic wallet application using Smartphone is easy for me.	347	2.00	5.00	4.3429	0.74916
PEoU2. Purchasing by using electronic wallet is easy for me.	347	2.00	5.00	4.4294	0.75076
PEoU3. I can easily use electronic wallet application whenever I like.	347	2.00	5.00	4.4207	0.71840
PEoU4. Top-up electronic wallet account is easy for me	347	2.00	5.00	4.2017	0.84299
PEoU5. Generally, using electronic wallet is effortless.	347	1.00	5.00	4.0663	0.87923
PEoU6. Log on to electronic wallet application is fast and easy	347	1.00	5.00	4.0720	0.94838
PR1. I believe my personal information is secure when using electronic wallet platform system.	347	1.00	5.00	3.9135	0.98750
PR2. I feel secure using my credit/debit card information through electronic wallet platform.	347	1.00	5.00	3.8300	0.98393
PR3. I believe using electronic wallet platform for any financial transaction is secure.	347	1.00	5.00	3.8761	0.89905
PR4. I believe using electronic wallet platform for any financial transaction is secure.	347	1.00	5.00	3.8646	0.93832
PR5. There is less risk of privacy breach with payment process using electronic wallet platform.	347	1.00	5.00	3.8444	0.90853

Pearson's correlation analysis revealed significant associations between the dependent variable (usage of electronic wallets) and the independent variables: perceived usefulness (PU), perceived ease of use (PEoU), and perceived risk (PR). The correlation between electronic wallet usage and PU was moderate positive ($r = 0.526$, $p < 0.01$), PEoU was moderate positive ($r = 0.697$, $p < 0.01$), and PR was low positive ($r = 0.439$, $p < 0.01$). None of the correlations exceeded 0.9, indicating no multicollinearity concerns. Additionally, reliability values above 0.95 suggest no undesirable response patterns, ensuring the accuracy of the results (Hair et al., 2019).

Table 9: Pearson Correlation

	EUW	PU	PEoU	PR
Usage of Electronic Wallet (DV)	1			
Perceived Usefulness (PU)	0.526**	1		
Perceived Ease of Use (PEoU)	0.697**	0.697**	1	
Perceived Risk (PR)	0.439**	0.551**	0.642**	1

**. Correlation is significant at the 0.01 level (2-tailed).

A multiple regression analysis was performed to evaluate the influence of perceived usefulness (PU), perceived ease of use (PEoU), and perceived risk (PR) on the utilisation of electronic wallets. The R-squared value was 0.489, signifying that 48.9% of the variance in electronic wallet usage is accounted for by these three predictors (Table 10).

Table 10: Results of Multiple Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	1.419	0.163		8.700	<0.001
Perceived Usefulness	0.063	0.042	0.083	1.521	0.129
Perceived Ease of Use	0.646	0.059	0.657	11.010	<0.001
Perceived Risk	-0.021	0.039	-0.028	-0.544	0.587
R Square	0.489				
Adjusted R-Square	0.485				
Std. Error of the Estimate	0.44678				
F Value	109.583				
Significant	<0.001				

The regression analysis reveals that Perceived Ease of Use significantly impacts electronic wallet usage, with a standardized coefficient (β) of 0.657 (p < 0.05), supporting Hypothesis H2. However, Perceived Usefulness (β = 0.083, p > 0.05) and Perceived Risk (β = -0.028, p > 0.05) do not significantly influence usage, and thus, Hypotheses H1 and H3 are not supported. These findings suggest that ease of use is the primary factor affecting electronic wallet usage, while usefulness and risk have insignificant effects. The hypothesis testing results are summarized in Table 5.11.

Table 5.11 : Summary of Hypothesis Testing Results in the Study

No.	Study Hypotheses	Results
1.	*H1: Perceived usefulness has a significant relationship with the Usage of Electronic Wallet*	*Not Supported*
2.	*H2: Perceived ease of use has a significant relationship with the Usage of Electronic Wallet*	*Supported*
3.	*H3: Perceived risk has a significant relationship with the Usage of Electronic Wallet*	*Not Supported*

Conclusion

Recapitulation of Study Findings

This study aimed to investigate the relationships between perceived usefulness, perceived ease of use, and perceived risk concerning the use of electronic wallets by higher education students. The study employed TAM and TAM3 for an in-depth analysis, surveying 347 students. Results indicated that the majority of students possessed one to two years of usage experience. Of the hypotheses examined, only perceived ease of use (RO.2) received support, indicating a substantial positive correlation with electronic wallet usage. The finding is consistent with research conducted by Kustono et al. (2020) and others. In contrast, perceived usefulness (RO.1) and perceived risk (RO.3) exhibited no significant correlations with usage, aligning with previous studies by Ai et al. (2021) and Candy et al. (2022). The findings indicate that although usability is a vital element, utility and risk do not substantially influence the adoption of electronic wallets among students.

Research and Practical Contribution

This study enhances understanding of electronic wallet adoption among higher education students by validating theories like the Technology Acceptance Model (TAM), emphasizing perceived usefulness, ease of use, and risk. It reveals that perceived usefulness is crucial for increasing adoption, highlighting the need for user-friendly designs and strong security measures. Practically, the findings offer guidance for educational institutions, industry stakeholders, and regulators to tailor strategies that meet user needs and boost adoption rates. Overall, the research bridges theoretical insights with practical applications, contributing to both academic knowledge and effective implementation of electronic wallet technologies.

Limitations of the Study

The present study encounters multiple constraints, particularly a limited and non-representative sample size from a singular higher education institution, thus impeding the generalisability of results regarding electronic wallet usage among students. Furthermore, dependence on self-reported data introduces biases, including social desirability and recollection biases, which may compromise the accuracy of results. Ultimately, the analysis examined merely three independent variables, constraining the investigation of additional relevant factors affecting electronic wallet usage. To improve the study's scope and validity, subsequent research ought to incorporate a larger, more heterogeneous sample and supplementary factors from various higher education institutions in Malaysia.

Suggestions for Future Research

After careful consideration of the fundamental limitations defined in the present study, it is crucial to recognize that its design and implementation are subjected to numerous limitations. To begin with, concerns regarding the practicality of the study's results have been generated by its dependence on a limited sample size. The restricted application of conclusions may result from the limitations of a sample that is absent of diversity and solely represents one institution of higher education. To bolster the external validity of the study, future studies may benefit from a broader range of Malaysian higher education institutions as participants, thereby constituting a more representative cross-section of the student population.

Furthermore, potential biases, such as social desirability and recall bias, are introduced by the extensive reliance on self-reporting as a data collection method. Future investigations could consider utilizing a mixed-methods strategy that integrates self-reported data with objective measurements or observations to mitigate these biases. By doing so, the findings would be more resilient and precise.

Lastly, the study's limitation in incorporating only three independent variables to identify characteristics influencing electronic wallet usage due to time constraints highlights an avenue for future research expansion. Further study in this area could potentially disclose additional variables that could enhance the general understanding of the predictors affecting the use of electronic wallets among students in higher education sector. By expanding the scope, a more comprehensive analysis of the adoption trends could be achieved by incorporating a broader range of demographic, psychological, and contextual factors.

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