

FACTORS AFFECTING THE ADOPTION OF E-WALLETS AMONG FEMALES IN MALAYSIA

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ABSTRACT

Due to the evolution of financial technology, payment methods have evolved from cash to cashless. Electronic wallet (e-wallet) is one of the cashless payments that arises in recent years, and it provides a lot of benefits to consumers such as allowing consumers to perform rapid transactions and track transaction histories. Despite that the Malaysian government and ewallet service providers have put in much effort in promoting e-wallet, the adoption rate remains low. Therefore, this research paper aims to identify the unique factors which influences the uptake of e-wallets specifically among the females in Malaysia. The proposed factors include perceived ease of use, perceived usefulness, perceived security, and age group. This research has adopted the Technology Acceptance Model and intends to fill the research gap in the literature. A total of 100 surveys were administered to Malaysian women across various age groups. The collected data gathered were analysed using SPSS software. It was found that all four factors proposed impose significant effects with different strengths towards the adoption of e-wallets. The findings of this study can give valuable insights to various parties so that they can implement strategies to increase the adoption rate of e-wallets.

Key words: Financial Technology; Electronic Wallet; Malaysian Women

Reference to this paper should be made as follows: Lim, C. R. & Manual, V. (2023). Factors Affecting the Adoption of E-Wallets among Females in Malaysia. *Asia Pacific Journal of Emerging Markets*, 7(1), 43-63.

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1. INTRODUCTION

As technology advances, consumers are increasingly turning to digital alternatives, shifting from cash to cashless transactions. Fintech-driven cashless payments, notably electronic wallets (e-wallets), have surged in recent years. E-wallets are mobile apps that store funds, enable quick transactions and track payment histories. They consist of software for secure transactions and an information component for user data. Globally, the rise of mobile internet apps has boosted e-wallet adoption. In China, over 65 percent of the population is expected to use e-wallets by 2025, while Malaysia experiences substantial growth, driven by government initiatives like ePemula and support from providers like Boost and Touch 'n Go (Nawi et al., 2022). The central bank, “Bank Negara Malaysia (BNM), has issued electronic money licenses to encourage e-wallet usage” (BNM, 2022). Additionally, the COVID-19 pandemic and Movement Control Orders have driven an 80 percent increase in domestic e-wallet use, according to the Finance Minister of Malaysia (Birruntha, 2021).

Despite these efforts, e-wallet adoption in Malaysia remains challenging, with concerns about sustainability due to heavy reliance on promotions and discounts. In 2019, cashless payments accounted for only 20 percent of total payments in Malaysia, with just half involving e-wallets (Yaakop et al., 2021). Moreover, only 48 percent of female consumers adopted e-wallets (Sticpay, 2021). As technology advances, consumers are increasingly turning to digital alternatives, shifting from cash to cashless transactions. Fintech-driven cashless payments, notably electronic wallets (e-wallets), have surged in recent years. E-wallets are mobile apps that store funds, enable quick transactions, and track payment histories. They consist of software for secure transactions and an information component for user data. Globally, the rise of mobile internet apps has boosted e-wallet adoption. In China, over 65

percent of the population is expected to use e-wallets by 2025, while Malaysia experiences substantial growth, driven by government initiatives like ePemula and support from providers like Boost and Touch 'n Go. Additionally, the COVID-19 pandemic and Movement Control Orders have driven an 80 percent increase in domestic e-wallet use. Despite these efforts, e-wallet adoption in Malaysia remains challenging, with concerns about sustainability due to heavy reliance on promotions and discounts. In 2019, cashless payments accounted for only 20 percent of total payments in Malaysia, with just half involving e-wallets. Moreover, only 48 percent of female consumers adopted e-wallets. The purpose of this research is to examine those factors which can influence e-wallet adoption among Malaysian females. The widespread use of mobile technology has integrated mobile applications into our daily lives, with e-wallets gaining global attention due to advancements in mobile technology. In China, the leading country in the mobile economy, e-wallet adoption stands at an impressive 87.3 percent (Curry, 2022). Chinese society has shifted from cash to cashless payments with a 27-fold increase in e-wallet payments from 2013 to 2018 (Chuah et al., 2019). Dominating the market, Alipay and WeChat Pay collectively boast 711 million monthly active users and a monthly payment volume of 10 trillion Chinese Yuan (Cheng, 2022).

Across the Asia Pacific, China leads with a 72 percent adoption rate, followed by India and Indonesia (Leahy, 2021). In India, 40 percent of payments are made through e-wallets like PhonePe and Paytm. Indonesia has seen substantial growth, with 29 percent of total payments being e-wallet-based, and a 61 percent increase in e-money transactions from November 2020 to November 2021. In contrast, Malaysia lags behind in e-wallet adoption, with card payments accounting for 31 percent of total transactions (Fintechnews Singapore, 2022). Despite government efforts, Malaysians still prefer cash and card payments (Chuah et al., 2019), with only 8 percent adopting e-wallets due to security concerns (Nawi et al., 2022). E-wallet sustainability remains a concern, as relying on promotions and discounts may not ensure long-term success (Tan, 2018; Tan, 2019). Furthermore, female adoption of e-wallets in Malaysia is lower, with only 48 percent of females using them (Sticpay, 2021). Adoption rates also vary by age group, with Generation Z leading at 71 percent and Baby Boomers trailing at 43 percent. However, past studies provide inconsistent findings on the factors influencing e-wallet adoption, including perceived security, ease of use, usefulness, trust, promotion, and social influence (Kumar, 2018; Liu and Tai, 2016; Ridaryanto et al., 2019; Karim et al., 2020). To address these gaps and support Malaysia's transition to a cashless society, the primary focus of this research is to examine the factors influencing e-wallet adoption among females in Malaysia, using the Technology Acceptance Model (TAM).

2. LITERATURE REVIEW

The rapid advancement of digital technology has transformed the way financial transactions are conducted. One such transformation is the emergence of electronic wallets, commonly known as e-wallets. E-wallets provide a convenient and secure platform for making online and offline payments, leading to their increasing popularity in Malaysia. This overview of literature aims to explore the factors influencing the intention to adopt e-wallets, specifically focusing on perceived ease of use, perceived usefulness, perceived security, and the impact of different age groups

2.1 E-wallet and its Usage in Malaysia

An e-wallet is a digital tool allowing instant electronic transactions after users top up their electronic money from financial institutions (Osakwe and Okeke, 2016). It streamlines payments by enabling users to add card or online banking details to the e-wallet, facilitating quick transactions via electronic devices (Lu, 2018). E-wallets offer numerous advantages over physical wallets, including time savings, security from theft, and transaction tracking (Junadi, 2015; Subaramaniam et al., 2020). Considered a significant fintech innovation (Karim et al., 2020), e-wallets benefit both users and merchants by saving time, labor costs, and improving cash management (Hayashi and Bradford, 2014).

The Malaysian government has actively promoted e-wallet adoption, issuing electronic money licenses to 6 banks and 47 non-banks (BNM, 2022). Boost, GrabPay, and TnG are among the most widely used e-wallets in Malaysia. Despite these efforts and increased usage in various sectors like food and beverage, transportation, and bill payments (Kasirye and Masum, 2021), Malaysia's overall e-wallet adoption rate remains low (Yaakop et al., 2021). Studies by Chuah et al. (2019) and Edeh et al. (2021) indicate that Malaysians still prefer cash and card payments, with only 36% using e-wallets in their daily transactions.

2.2 Intention to Adopt E-wallets

The intention to adopt e-wallets, termed as behavioral intention, represents the desired course of action a person aims to achieve (Zhao et al., 2010). Behavioral intention encompasses various parameters defining what an individual does, how they perform the behavior, and what they accomplish (Schwartz, 2019). According to the Theory of Planned Behavior (Ajzen, 1991), an individual's intention to use new technology like e-wallets is influenced by their attitude towards it, along with factors like perceived behavioral control and subjective norms. This intention, in turn, influences the actual behavior of the individual. Additionally, the Technology

Acceptance Model (TAM) is used to gauge the acceptance of new technology (Davis, 1989). According to this model, users' behavioral intention impacts their intention to use new technology, thereby affecting their perceived security and attitude toward the technology, as is the case with e-wallets in Malaysia. E-wallets, still emerging in Malaysia, are expected to play a significant role in the future (Nizam et al., 2018), with numerous studies confirming the significant influence of behavioral intention on e-wallet usage (Barry and Jan, 2018).

2.3 Perceived Ease of Use and the Intention to Adopt E-wallets

Perceived ease of use, a component outlined in the Technology Acceptance Model (TAM) (Davis, 1989), signifies the user's perception that minimal effort is required to operate a system, or as described by Sunny and George (2018), it reflects freedom from struggle when using new technology. It falls under the category of effort expectations, indicating the perceived difficulty of system usage (Venkatesh, 2003). Ease of use is a crucial catalyst for the acceptance of new technology, as noted by Halim et al. (2021), who expect that user-friendliness and convenience positively influence technology adoption. Factors such as system design, instructional materials, and training play roles in shaping users' perceptions of ease of use, and simplicity and convenience often drive the adoption of new technology (Liu and Tai, 2016). Past research consistently demonstrates the positive connection among “perceived ease of use and the intention to adopt new technology”. For example, Singh and Srivastava (2018) found a positive link among perceived ease of use and the intent of adopting online banking, while Yang and Wang (2019) reported a similar relationship with the intention to adopt machine translation. Turja et al. (2020) also affirmed that perceived ease of use correlates positively with the intention to adopt care robots.

Applying these findings to e-wallets, numerous studies show that the “intention to adopt this new technology is indeed influenced by perceived ease of use”. Bee and Ying (2021) also highlight a positive impact of these factors on e-wallet adoption, a sentiment echoed by Yeow et al. (2017) and Tahar et al. (2020), who emphasize its significant role. Singh et al. (2020) also assert that perceived ease of use positively affects the intention to adopt e-wallets. A user-friendly guide and an easy-to-understand payment process enhance user trust and attract users to e-wallets (Al-Amri et al., 2018). Effective e-wallet application design is another key factor in attracting and retaining users (Malik et al., 2019), supported by Zhang et al. (2019), who emphasize the positive impact of a user-friendly interface on e-wallet adoption.

However, it's important to note that perceived ease of use primarily affects the early adoption stage of e-wallets and doesn't significantly influence their continuous usage (Cao, 2016). Makanyeza (2017) also suggests that while perceived ease of use initiates e-wallet use, it doesn't impact continuous usage. Additionally, Natarajan et al. (2017) point out that users from different cultural backgrounds may perceive this relation of perceived ease of use and the intention of adopting e-wallets differently. Given these diverse findings, further examination is warranted to better understand this relationship.

2.4 Perceived Usefulness and the Intention to Adopt E-wallets

Perceived usefulness, a critical component of the Technology Acceptance Model (TAM) (Davis, 1989), denotes the user's belief that adopting a particular system can enhance their job performance. It is recognized as the TAM's most influential factor impacting behavioral intention. Cheng et al. (2018) emphasize the strong correlation between perceived usefulness and productivity, categorizing it under performance expectancy, where users perceive technology as beneficial and performance-enhancing (Bee and Ying, 2021).

The acceptance of new technology is more likely when individuals perceive it as useful (Nawi et al., 2022). Numerous prior studies have underscored the significant relation among perceived usefulness and the adoption of new technology. For instance, Altin-Gumussoy et al. (2018) found that perceived usefulness significantly influences adoption of mobile banking, while Revyathi and Tselios (2019) highlight its importance in e-learning adoption. Zadeh et al. (2021) reported that perceived usefulness positively impacts user attitudes towards automotive dash cameras. Consistent findings across multiple studies affirm that perceived usefulness is positively associated with the intention to adopt e-wallets. It boosts the adoption rate of e-wallets (Liu and Tai, 2016), with Nag and Gilitwala (2019) emphasizing its significant relationship. Aji et al. (2020) noted that perceived usefulness enhances user willingness to adopt e-wallets in India, a sentiment echoed by Karim et al. (2020).

Furthermore, perceived usefulness plays a crucial role in retaining users' intentions to continue using e-wallets. Users exhibit loyalty to e-wallet services when they perceive them as useful (Cheng, 2018), a notion supported by Yang and Wang (2019). Shaw and Sergueeva (2019) also stress that perceived usefulness predicts continued e-wallet usage. Users tend to view e-wallets as useful when they can accomplish quick and contactless payments (Bee and Ying, 2021). However, it's worth noting that this is not only factor influencing the intention to adopt new technology. Users may refrain from adopting e-wallets, even if they consider them useful, if they find them

difficult to use (Yaakop et al., 2021). Hence, it is vital to investigate the relationship between the perceived usefulness and the intention to adopt e-wallets in this study.

2.5 Perceived Security and the Intention to Adopt E-wallets

Perceived security, defined as the extent to which online users believe their personal information is safeguarded during web transactions (Zhang et al., 2019), is vital in instilling user confidence in system privacy (Mun et al., 2017). Security concerns are a major obstacle to e-wallet adoption in Malaysia (Nawi et al., 2022). To enhance e-wallet security, Near Field Communications technology is employed to ensure safe transactions (Teo et al., 2020). Despite studies demonstrating e-wallets' security advantages over physical wallets, users often perceive them as less secure (Johnson et al., 2018).

As technology advances, users increasingly prioritize security, hesitating to disclose financial information online (Ahmad et al., 2010), which deters e-wallet adoption. Several studies affirm that perceived security significantly influences the intention to adopt e-wallets. Maimuthu and Roseline (2020) report that security concerns discourage users from making e-wallet transactions. Kumar (2018) identifies perceived security as a key indicator for e-wallet adoption. Users are reluctant to embrace e-wallet services if they perceive risk associated with their use (Khedmatgozar and Shahnazi, 2018). While many studies support the notion that perceived security significantly influences e-wallet adoption intention, some contradict this. Liu and Tai (2016) contend that perceived security does not affect users' intention to use e-wallets. Teoh et al. (2013) also argue that perceived security does not exhibit a correlation with the adoption of e-wallet in Malaysia. Moreover, debates persist regarding whether perceived security influences post-adoption behavior (Shao et al., 2019), with conflicting views on its impact on continuous e-wallet usage intention (Zhang et al., 2019).

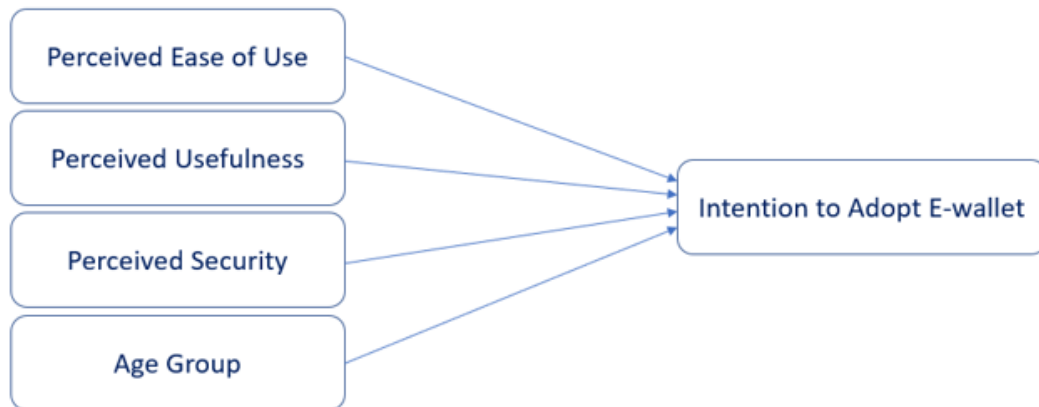
2.6 Age groups toward the Intention to Adopt E-wallets

Demographic factors like age have been identified as influential in e-wallet adoption, as highlighted in prior studies. Trocchia et al. (2012) underscore the significance of age in shaping e-wallet adoption intentions, while Faqih and Jaradat (2015) emphasize age as a moderator affecting e-wallet adoption. Singh et al. (2018) found that age impacts user satisfaction and the pace of e-wallet adoption, with Chong (2013) noting its significance, especially in Chinese society.

Different age groups exhibit distinct perspectives on e-wallet ease of use, security, and cost, which in turn influence their adoption intentions (Riquelme and Rios, 2010). Generally, older generations perceive e-wallets

as difficult to use and risky, while younger generations tend to have more trust in e-wallets (Chawla and Joshi, 2018). The younger generation typically experiences fewer technology-related anxieties than the older with older users displaying greater reluctance to adopt new technologies (Wang and Sun, 2016). Phang et al. (2006) also found that younger users are less affected by e-wallet technology-related issues compared to older users. However, some past studies suggest that age groups do not necessarily have a significant relationship with e-wallet adoption intentions. Similarly, Kasirye and Masum (2021) reported no significant difference in adoption intentions between age groups. Therefore, it is crucial to examine the variations in intention to adopt e-wallets based on age groups.

Figure 1: Research Framework



3. DATA AND METHODOLOGY

3.1 Research Design

This study adhered to positivism, employing statistical testing and controlled data collection to achieve its research objectives. It followed a deductive approach by formulating hypotheses based on existing theory and testing them through research. Data collection involved distributing questionnaires to respondents. Additionally, the study employed a mono-method approach, using quantitative methodology for a comprehensive understanding of the research issue. The study also utilized a cross-sectional design.

3.2 Target Population and Sample Size

In line with the research purpose, the questionnaires were only be distributed to the targeted population, which is Malaysian Female. As this is a quantitative study, the probability sampling technique was adopted to ensure everyone in the population has an equal opportunity of being chosen in the sample. The sample size was calculated based on the formula in Tabachnick

and Fidell (1996), '50+8m' where 'm' is the total number of independent variables. As there are four independent variables, the minimum sample size required for this research study is 82 respondents. However, 100 questionnaires were distributed for this study to ensure that there are at least 82 usable questionnaires.

3.3 Data Processing

The questionnaire responses, collected through Google Forms, were imported into SPSS for analysis. SPSS was chosen as the analysis software due to its capability to perform various statistical tests and its user-friendly interface. Care was taken to ensure that all data loaded into SPSS were valid and usable to prevent any discrepancies. Subsequently, a series of SPSS tests were conducted to evaluate the stated hypotheses.

3.4 Data Analysis

Various SPSS tests were performed in the data analysis process. Firstly, a descriptive analysis was conducted to analyze the collected data in the demographic section. Then, a reliability test was performed to measure the reliability of the questionnaire by identifying its ability to produce consistent outcomes (Bolarinwa, 2015; Shahid et al., 2020). Cronbach Alpha test was used to conduct the reliability test. Next, a normality test was performed to verify that the collected data is normally distributed so that "Pearson's correlation test and multiple regression test" can be conducted. The Pearson correlation test was then performed to evaluate the level of linear association between variables and investigate how strong is the relationship between variables. Then, a multiple regression test was conducted to forecast the value of the dependent variable based on the independent variables. Finally, a t-test was performed to make a comparison between the means of the two groups. T-value, degree of freedom, and p-value were obtained when performing the t-test.

4. RESULTS AND DISCUSSION

The study exclusively focuses on female respondents to explore their e-wallet usage patterns and preferences. The respondents were divided into three age groups: '16 to 30', '31 to 45', and '46 to 60'. The distribution includes 43 respondents in the 16 to 30 age group, 35 in the 31 to 45 age group, and 22 in the 46 to 60 age group, enabling a comprehensive analysis of e-wallet adoption across different age ranges.

Among the 100 female respondents, 56% reported using e-wallets daily throughout the week, indicating strong integration into their daily routines. Approximately 34% reported using e-wallets once or twice a week, indicating moderate adoption for specific transactions or occasions. Lastly, 10% of

respondents reported never using e-wallets in a week, potentially representing those relying on traditional payment methods or not yet embracing e-wallet technology.

Table 1: Descriptive Analysis

Variables		Frequency	Percentage (%)
Gender	Male	0	0.0
	Female	100	100.0
Age	16 to 30	43	43.0
	31 to 45	35	35.0
	46 to 60	22	22.0
Usage of E-wallets in a week	Never	56	56.0
	Once or twice	34	34.0
	Daily	10	10.0

Source: Prepared by the authors (2023)

Table 2: Normality Test

		Shapiro-Wilk		
		Statistic	df	Sig.
Perceived Ease of Use		.940	100	.176
Perceived Usefulness		.946	100	.242
Perceived Security		.960	100	.408
Age group		.961	100	.482
Intention to Adopt E-wallet		.900	100	.025

Source: Prepared by the authors (2023)

According to table 2, the significant level for all variables tested in this study are more than 0.05 ($p > 0.05$), it indicated that the data is distributed normally. Pearson correlation coefficient determines “the direction and strength of the association between variables”, assuming normal distribution. The correlation value should range between -1.0 and +1.0, with +1.0 indicates a perfect positive correlation and -1.0 shows a strong negative correlation (Hair et al., 2015). Table 3 summarizes the Pearson correlation data, showing positive r-values between factors and the intention to adopt e-wallets. This confirms the hypotheses' validity. Perceived usefulness has the strongest correlation ($r=0.845$; $p = 0.001$) with adoption intention, implying a robust relationship. Malaysian women are more inclined to adopt e-wallets when they find them useful, aligning with Teng et al.'s (2018) findings. Perceived ease of use also strongly correlates with adoption intention ($r=0.773$; $p =$

0.001), consistent with Aydin and Burnaz's (2016) view that user-friendly e-wallet designs boost adoption intent. In contrast, perceived security ($r = 0.396$; $p = 0.001$) and age group ($r = 0.628$; $p = 0.001$) exhibit weaker relationships. Perceived security's weak strength suggests a limited impact, while age group, although still relatively strong, influences adoption decisions, in line with Cao et al.'s (2016) findings.

Table 3: Pearson Correlation Coefficient

Hypotheses	Pearson Correlation (r-value)	Significance level (p-value)
H1: There is a relationship between perceived ease of use and intention to adopt e-wallets among females in Malaysia.	0.772***	0.001
H2: There is a relationship between perceived usefulness and intention to adopt e-wallets among females in Malaysia.	0.845***	0.001
H3: There is a relationship between perceived security and intention to adopt e-wallets among females in Malaysia.	0.396***	0.001
H4: There is a difference based on age group toward the intention to adopt e-wallets among females in Malaysia.	0.628***	0.001

Note:*** $p \leq 0.001$

Source: Prepared by the authors (2023)

Table 4: Multiple Regression Test

Variables	Standardized Coefficients Beta (β)	Beta (t)	Sig.
(Constant)		4.251***	0.001
Perceived Ease of Use	0.363	5.651***	0.001
Perceived Usefulness	0.611	11.886***	0.001
Perceived Security	-0.272	-2.960***	0.001
Age Groups	0.348	4.896***	0.001

Note: DV = Intention to adopt E-wallet among females in Malaysia

Source: Prepared by the authors (2023)

A multiple regression test was performed to identify the most influential factor in females' e-wallet adoption intentions in Malaysia. The results in Table 4 indicate significant effects when all variables are considered together. The model's F-statistic value of 163.88 with a significance level of 0.001 (less than 0.01) confirms its statistical significance, indicating a strong fit. The determination coefficient (R^2) is 0.771, signifying that the independent variables in the regression model explain approximately 77.1% of the variance in the dependent variable. Additionally, the adjusted R^2 (ΔR^2) is 0.766, demonstrating that the additional independent variable(s) account for about 76.6% of the variance beyond what was already explained by existing variables. Further analysis reveals that perceived ease of use ($\beta=0.363$, $p=0.001$), perceived usefulness ($\beta=0.611$, $p=0.001$), and age groups ($\beta=0.348$, $p=0.001$) are the key predictors of e-wallet adoption intention among Malaysian females. Perceived usefulness has the greatest impact with the highest regression coefficient ($\beta=0.611$), consistent with prior studies (Mun et al., 2017 & Toh et al., 2009), highlighting its central role in influencing e-wallet adoption intentions. In contrast, perceived security has a Standardized Coefficients Beta (β) of -0.272 and p-value of 0.004, suggesting that higher perceived security reduces the intention to adopt e-wallets among Malaysian females by 0.125 units for each unit increase.

4.1. Relationship between perceived ease of use and intention to adopt e-wallets among females in Malaysia.

The findings show a significant positive correlation among perceived ease of use and intention to adopt e-wallets among females in Malaysia. "Perceived ease of use" is a key factor influencing the adoption of e-wallets, as indicated by its standardized coefficient (β) of 0.363 and the significant t-value of 5.651 ($p < 0.001$). The positive β coefficient suggests that as the use of e-wallets increases, the intention to adopt e-wallets among females also increases. This indicates that women in Malaysia are more likely to adopt e-wallets if they perceive them as easy to use. The significant t-value and p-value provide strong evidence to support this relationship, indicating that the findings are statistically significant and not likely to have occurred by chance. The positive relationship between ease of use and sn intention to adopt e-wallets aligns with the (TAM), which suggests that "users are more likely to adopt and use technology if they perceive it as easy to use". In the context of e-wallets, if females perceive them as user-friendly, intuitive, and convenient, they are more inclined to adopt and use them for their financial transactions. The significance of ease of use implies that e-wallet providers should focus on improving the user experience and simplifying the processes associated with using their platforms. This can include providing clear instructions, intuitive interfaces, and seamless transaction flows. By addressing potential

barriers and enhancing the perceived ease of use, e-wallet providers can encourage greater adoption among females in Malaysia.

In summary, the findings suggest that perceived ease of use plays a crucial role in influencing the intention to adopt e-wallets among females in Malaysia. E-wallet providers should prioritize user-friendly designs and simplified processes to enhance ease of use, ultimately encouraging greater adoption among the target demographic.

4.2. Relationship between perceived usefulness and intention to adopt e-wallets among females in Malaysia.

The findings indicate a strong positive correlation among perceived usefulness and intention to adopt e-wallets among females in Malaysia. Perceived usefulness is a key factor influencing the adoption of e-wallets, as evidenced by its standardized coefficient (β) of 0.611 and the highly significant t-value of 11.886 ($p < 0.001$). The positive β coefficient suggests that as the perceived usefulness of e-wallets increases, the intention to adopt e-wallets among females also increases. This implies that females in Malaysia are more likely to adopt e-wallets if they perceive them as valuable and beneficial for their financial transactions. The significant t-value and p-value provide strong statistical evidence to support this relationship. Notable, perceived usefulness has the highest standardized coefficient among the four factors tested, and this indicates that it has most effect on the intent of adopting e-wallets among females in Malaysia. This significant positive relationship aligns with the Technology Acceptance Model (TAM), which mentioned that users are more inclined to adopt and use technology if they perceive it as useful and advantageous. In the context of e-wallets, if females perceive them as more convenient, efficient, and beneficial compared to traditional payment methods, they are more likely to adopt them. The significant role of perceived usefulness suggests that e-wallet providers should emphasize the practical advantages and benefits of their platforms. This can include features such as fast and secure transactions, rewards and incentives, budgeting tools, and integration with other services. By highlighting the usefulness and value proposition of e-wallets, providers can effectively affect females' intention to adopt e-wallets. In conclusion, the findings suggest that perceived usefulness plays a vital role in driving the intention to adopt e-wallets among females in Malaysia. E-wallet providers should emphasize the practical benefits and advantages of their platforms to attract and persuade female users. By demonstrating the usefulness of e-wallets for financial transactions, providers can enhance adoption rates and promote the integration of e-wallets into the daily lives of females in Malaysia.

4.3. Relationship between perceived security and intention to adopt e-wallets among females in Malaysia.

The results reveal a significant negative relationship among perceived security and intention to adopt e-wallets among females in Malaysia. Perceived security is a crucial factor influencing the adoption of e-wallets, as indicated by standardized coefficient (β) of -0.272 and the significant t-value of -2.960 ($p = 0.004$). The negative β coefficient suggests that as the perceived security of e-wallets increases, the intention to adopt e-wallets among females decreases. This implies that females in Malaysia are more hesitant to adopt e-wallets if they perceive them as insecure or prone to risks. The significant t-value and p-value provide statistical evidence to support this relationship. Notably, perceived security has the lowest standardized coefficient among the four factors tested, and this indicates that it has least effect on the adoption of e-wallets among females in Malaysia. The negative correlation among perceived security and the intention to adopt e-wallets highlights the importance of trust and confidence in the security measures implemented by e-wallet providers. Females in Malaysia may be concerned about potential risks such as unauthorized access, fraud, or data breaches associated with e-wallets. Addressing these security concerns is crucial for fostering trust and encouraging adoption among this demographic. To enhance the perceived security of e-wallets, providers should prioritize implementing robust security features and measures. This can include encryption technologies, two-factor authentication, secure transaction protocols, and clear privacy policies. By demonstrating a strong commitment to user security and privacy, e-wallet providers can alleviate concerns and instil confidence in females considering e-wallet adoption.

In conclusion, the findings suggest that perceived security plays a role in the intention to adopt e-wallets among females in Malaysia. E-wallet providers should prioritize and communicate robust security measures to alleviate concerns and build trust among potential female users. By addressing security issues and establishing a strong sense of security, providers can enhance adoption rates and promote the widespread adoption of e-wallets among females in Malaysia.

4.4. Differences based on age groups toward the intention to adopt e-wallets among females in Malaysia.

The findings indicate that there are significant differences in the intention to adopt e-wallets among females in Malaysia based on different age groups. Age groups were found to have a significant relationship with the adoption of e-wallets, as indicated by the standardized coefficient (β) of 0.348 and the significant t-value of 4.896 ($p < 0.001$). This implies that younger females,

belonging to the 16-30 age group, exhibit a higher intention to adopt e-wallets compared to those in the 31-45 and 46-60 age groups. The significant t-value and p-value provide statistical evidence to support these differences. The findings suggest that younger females in Malaysia are more inclined to adopt e-wallets, possibly due to their greater familiarity with technology, higher exposure to digital payment methods, and greater comfort with using mobile applications. Younger age groups are typically more tech-savvy and open to adopting new digital solutions for their financial transactions. On the other hand, older females in the 31-45 and 46-60 age groups may exhibit lower intention to adopt e-wallets due to factors such as a perceived learning curve, resistance to change, or preference for traditional payment methods. These older age groups might have established routines and habits related to their financial transactions, making them less likely to adopt new digital payment technologies. To encourage adoption among older females, e-wallet providers should focus on addressing concerns related to usability, simplicity, and security. Offering user-friendly interfaces, clear instructions, and personalized support can help older females feel more confident and comfortable in adopting e-wallets.

In summary, the findings suggest that “age groups have a significant influence on the intention to adopt e-wallets among females in Malaysia”. Younger females demonstrate a higher intention to adopt e-wallets compared to older females. E-wallet providers should tailor their strategies to address the specific needs, concerns, and preferences of different age groups to foster wider adoption among females of all ages in Malaysia. The analysis and discussion of the results should characterize the context of the research, either through the description of the environment, conjuncture or economic sector. Present the development of the research. Structuring subsections in the sense of “responding” to the objectives to which the work proposes. It can be structured in subsections in order to respond to the objectives to which the work proposes.

5 CONCLUSION

In summary, this study focused on factors influencing e-wallet adoption among Malaysian females. Key findings include the positive impact of perceived ease of use and perceived usefulness, while perceived security negatively affects adoption intention. Age groups also play a significant role, with younger females showing higher adoption intention. However, this study has limitations, including its focus on a specific demographic and location, the cross-sectional method used, and potential biases in self-reported data. Future research should diversify samples and consider factors like geographic location, education, and culture. Longitudinal studies could track adoption behavior over time. Combining qualitative methods like focus

groups and interviews with quantitative surveys can provide a more holistic understanding of adoption factors. Additionally, researchers should explore other potential influencers such as social influence, education, and gender. In conclusion, this study contributes valuable insights into e-wallet adoption among Malaysian females, offering a foundation for future research and strategies to promote e-wallet usage in this demographic. Understanding these factors is essential for e-wallet providers, policymakers, and researchers seeking to enhance adoption rates.

REFERENCES

- Ahmad, K., Khan, M. I., & Jan, M. T. (2010). Online banking acceptance in Malaysia: a students' behaviour perspective. *Malaysian Management Review*, 45(2), 1-14.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Al-Amri, R., Maarop, N., Jamaludin, R., Samy, G. N., Magalingam, P., Hassan, N. H., ... & Daud, S. M. (2018). Correlation analysis between factors influencing the usage intention of NFC mobile wallet payment. *Journal of Fundamental and Applied Sciences*, 10(2S), 215-228.
- Altin-Gumussoy, C., Kaya, A., & Ozlu, E. (2018). Determinants of mobile banking use: an extended TAM with perceived risk, mobility access, compatibility, perceived self-efficacy and subjective norms. In *Industrial Engineering in the Industry 4.0 Era: Selected Papers from the Global Joint Conference on Industrial Engineering and Its Application Areas, GJCIE 2017, July 20–21, Vienna, Austria* (pp. 225-238). Springer International Publishing.
- Aydin, G., & Burnaz, S. (2016). Adoption of mobile payment systems: a study on mobile wallets. *Journal of business economics and finance*, 5(1), 73-92.
- Barry, M., & Jan, M. T. (2018). Factors influencing the use of m-commerce: An extended technology acceptance model perspective. *International Journal of Economics, Management and Accounting*, 26(1), 157-183.
- Bank Negara Malaysia. (2022). List of Regulatees. Retrieved 11 June 2022, from <https://www.bnm.gov.my/list-of-regulatees>
- Birruntha, S. (2021). Pandemic pushes more than 80% growth for e-wallet players.
- BNM, B. N. M. (2022). An Exploration of Nature-Related Financial Risks in Malaysia.
- Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing

FACTORS AFFECTING THE ADOPTION OF E-WALLETS

- of questionnaires used in social and health science researches. *Nigerian postgraduate medical journal*, 22(4), 195-201.
- Cao, T. K., Dang, P. L., & Nguyen, H. A. (2016). Predicting consumer intention to use mobile payment services: Empirical evidence from Vietnam. *International Journal of Marketing Studies*, 8(1), 117-124.
- Cao, W. (2016). *FinTech acceptance research in Finland-Case company Plasts* (Master's thesis).
- Chawla, D., & Joshi, H. (2018). The moderating effect of demographic variables on mobile banking adoption: an empirical investigation. *Global Business Review*, 19(3_suppl), S90-S113.
- Cheng, E. (2022). China's digital yuan notches \$8.3 billion in transactions in 6 months, taking a tiny share of payments. Retrieved 16 June 2022, from <https://www.cnn.com/2022/01/18/chinas-digital-yuan-notches-8point3-billion-transactions-in-half-a-year.html>
- Cheng, F. M., Phou, S., & Phuong, S. (2018). Factors Influencing on Consumer's Digital Payment Adaptation—A Comparison of Technology Acceptance Model and Brand Knowledge. In *Proceedings of the 21st Asia-Pacific conference on global business, economics, finance & social sciences (API8Taiwan conference) Taipei-Taiwan*.
- Chuah, S. C., Stella, S. C., Trey, J. G., & Ivey, Z. L. (2019). Consumers' adoption of mobile payment: Comparison between China and Malaysia. *Advances in Business Research International Journal*, 5(2), 43-50.
- Chong, A. Y. L. (2013). Mobile commerce usage activities: The roles of demographic and motivation variables. *Technological forecasting and social change*, 80(7), 1350-1359.
- Curry, D. (2022). Mobile payments app revenue and usage statistics. *Business of Apps*.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
- Edeh, F. O., Aryani, D. N., Kee, D. M. H., Samarth, T., Nair, R. K., Tan, Y. S., & Teh, Y. C. (2021). Impact of COVID-19 pandemic on consumer behavior towards the intention to use E-wallet in Malaysia. *International Journal of Accounting & Finance in Asia Pasific (IJAFAP)*, 4(3), 42-59.
- Fintechnews Singapore. (2022). China, India and Indonesia Record Highest Digital Wallet Adoption Rates Across APAC - Fintech Singapore. Retrieved 20 June 2022, from <https://fintechnews.sg/58718/e-commerce/china-india-and-indonesia-record-highest-digital-wallet-adoption-rates-across-apac/>

- Halim, N. A., Vafaei-Zadeh, A., Hanifah, H., Teoh, A. P., & Nawaser, K. (2021). Understanding the determinants of e-wallet continuance usage intention in Malaysia. *Quality & quantity*, 1-27.
- Hayashi, F., & Bradford, T. (2014). Mobile payments: Merchants' perspectives. *Economic review*, 99(1), 5-30.
- Johnson, V. L., Kiser, A., Washington, R., & Torres, R. (2018). Limitations to the rapid adoption of M-payment services: Understanding the impact of privacy risk on M-Payment services. *Computers in Human Behavior*, 79, 111-122.
- Junadi^a, S. (2015). A model of factors influencing consumer's intention to use e-payment system in Indonesia. *Procedia Computer Science*, 59, 214-220.
- Karim, M. W., Haque, A., Ulfy, M. A., Hossain, M. A., & Anis, M. Z. (2020). Factors influencing the use of E-wallet as a payment method among Malaysian young adults. *Journal of International Business and Management*, 3(2), 1-12.
- Kasirye, F., & Masum, S. M. H. (2021). The effects of e-wallet among various types of users in Malaysia: A comparative study. *Asian Journal of Research in Business and Management*, 3(2), 26-41.
- Khedmatgozar, H. R., & Shahnazi, A. (2018). The role of dimensions of perceived risk in adoption of corporate internet banking by customers in Iran. *Electronic Commerce Research*, 18(2), 389-412.
- Kumar, A., Adlakaha, A., & Mukherjee, K. (2018). The effect of perceived security and grievance redressal on continuance intention to use M-wallets in a developing country. *International Journal of Bank Marketing*, 36(7), 1170-1189.
- Liu, G. S., & Tai, P. T. (2016). A study of factors affecting the intention to use mobile payment services in Vietnam. *Economics World*, 4(6), 249-273.
- Lu, L. (2018). Decoding Alipay: mobile payments, a cashless society and regulatory challenges. *Butterworths Journal of International Banking and Financial Law*, 40-43.
- Makanyeza, C. (2017). Determinants of consumers' intention to adopt mobile banking services in Zimbabwe. *International Journal of Bank Marketing*, 35(6), 997-1017.
- Malik, A. N., & Syed Annuar, S. N. (2019). The effect of perceived usefulness, perceived ease of use, trust and perceived risk toward E-wallet usage. *Insight Journal (IJ)*, 5(21), 183-191.

FACTORS AFFECTING THE ADOPTION OF E-WALLETS

- Marimuthu, M., & Roseline, A. (2020). A study on consumer perception towards e-wallet. *Our Heritage*, 68(17), 283-288.
- Ming-Yen Teoh, W., Choy Chong, S., Lin, B., & Wei Chua, J. (2013). Factors affecting consumers' perception of electronic payment: an empirical analysis. *Internet Research*, 23(4), 465-485.
- Moradi, H. (2013). Factors Affecting Customer Confidence in Using E-Banking. *European Online Journal of Natural and Social Sciences*, 2(3), 2769–2776.
- Mun, Y. P., Khalid, H., & Nadarajah, D. (2017). Millennials' perception on mobile payment services in Malaysia. *Procedia Computer Science*, 124, 397-404.
- Nag, A. K., & Gilitwala, B. (2019). E-Wallet-factors affecting its intention to use. *International Journal of Recent Technology and Engineering*, 8(4), 3411-3415.
- Natarajan, T., Balasubramanian, S. A., & Kasilingam, D. L. (2017). Understanding the intention to use mobile shopping applications and its influence on price sensitivity. *Journal of Retailing and Consumer Services*, 37, 8-22.
- Nawi, N., Mamun, A. A., Hayat, N., & Seduram, L. (2022). Promoting sustainable financial services through the adoption of eWallet among Malaysian working adults. *Sage Open*, 12(1), 21582440211071107.
- Nizam, F., Hwang, H. J., & Valaei, N. (2018, July). Measuring the effectiveness of E-wallet in Malaysia. In *3rd IEEE/ACIS International Conference on Big Data, Cloud Computing, and Data Science Engineering* (pp. 59-69). Springer, Cham.
- Osakwe, C. N., & Okeke, T. C. (2016). Facilitating Commerce growth in Nigeria through mMoney usage: A preliminary analysis. *Interdisciplinary Journal of Information, Knowledge, and Management*.
- Phang, C. W., Sutanto, J., Kankanhalli, A., Li, Y., Tan, B. C., & Teo, H. H. (2006). Senior citizens' acceptance of information systems: A study in the context of e-government services. *IEEE transactions on engineering management*, 53(4), 555-569.
- Ridaryanto, F., Firmansyah, R. K., & AM, S. (2019). Factors affecting the use of E-Wallet in JABODETABEK Area. *International Journal of Advanced Trends in Computer Science and Engineering*, 8(6), 3645-3651.
- Riquelme, H. E., & Rios, R. E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of bank marketing*, 28(5), 328-341.
- Revythi, A., & Tselios, N. (2019). Extension of technology acceptance model by using system usability scale to assess behavioral intention to use e-

- learning. *Education and Information technologies*, 24, 2341-2355.
- Schwartz, W. (2019). *Descriptive psychology and the person concept: Essential attributes of persons and behavior*. Academic Press.
- Shao, Z., Zhang, L., Li, X., & Guo, Y. (2019). Antecedents of trust and continuance intention in mobile payment platforms: The moderating effect of gender. *Electronic Commerce Research and Applications*, 33, 100823.
- Shaw, N., & Sergueeva, K. (2019). The non-monetary benefits of mobile commerce: Extending UTAUT2 with perceived value. *International journal of information management*, 45, 44-55.
- Singh, N., Sinha, N., & Liébana-Cabanillas, F. J. (2020). Determining factors in the adoption and recommendation of mobile wallet services in India: Analysis of the effect of innovativeness, stress to use and social influence. *International Journal of Information Management*, 50, 191-205.
- Singh, S., & Srivastava, R. K. (2018). Predicting the intention to use mobile banking in India. *International Journal of Bank Marketing*, 36(2), 357-378.
- Sticpay. (2021). Biggest E-Wallet Trends in Malaysia. Retrieved 16 June 2022, from https://www.sticpay.com/en-US/news/news_detail/ewallet-trends-malaysia
- Shahid, M. N., Abrar, M., & Aftab, F. (2020). Academic efficacy mediates Teaching methodology and academic Performance of business education Students. *New Horizons*, 14(2), 97.
- Siew Bee, T., & Yan Ying, K. (2021). An examination of determinants for e-wallet adoption in Malaysia: a combined approach. *F1000Research*, 10, 1155.
- Subaramaniam, K., Kolandaisamy, R., Jalil, A. B., & Kolandaisamy, I. (2020). The impact of E-Wallets for current generation. *J. Adv. Res. Dyn. Control Syst*, 12(1), 751-759.
- Sunny, P., & George, A. (2018). Determinants of behavioral intention to use mobile wallets--a conceptual model. *Journal of Management (JOM)*, 5(5), 52-62.
- Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics*. 3rd Edition. HarperCollins.
- Tabachnick, B. G., & Fidell, L. S. (1983). *Using multivariate statistics*. Harper Collins Publishers.
- Tahar, A., Riyadh, H. A., Sofyani, H., & Purnomo, W. E. (2020). Perceived ease of

FACTORS AFFECTING THE ADOPTION OF E-WALLETS

- use, perceived usefulness, perceived security and intention to use e-filing: The role of technology readiness. *The Journal of Asian Finance, Economics and Business*, 7(9), 537-547.
- Tan, B., & Yee, J. (2019). Nielsen Sees Security Concerns as Main Barrier To E-Wallet Adoption. Digital News Asia.
- Tan, Y. (2018). Malaysia a hotbed for e-wallets. Retrieved 16 June 2022, from <https://www.pwc.com/my/en/perspective/deal-strategy/181003-banking-on-the-e-wallet-in-malaysia.html>
- Trocchia, P., & Janda, S. (2012). A phenomenological investigation of Internet usage among older individuals. *Journal of Consumer Marketing*, 17(7), 605-616.
- Turja, T., Aaltonen, I., Taipale, S., & Oksanen, A. (2020). Robot acceptance model for care (RAM-care): A principled approach to the intention to use care robots. *Information & Management*, 57(5), 103220.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.
- Wang, Q., & Sun, X. (2016). Investigating gameplay intention of the elderly using an Extended Technology Acceptance Model (ETAM). *Technological Forecasting and Social Change*, 107, 59-68.
- Yaakop, A., Shi, Y., Foster, B., & Saputr, J. (2021). Investigating e-wallet adoption of COVID19 intra-period among Malaysian youths': Integrated task-technology fit and technology acceptance model framework. *International Journal of Data and Network Science*, 5(3), 295-302.
- Yang, Y., & Wang, X. (2019). Modeling the intention to use machine translation for student translators: An extension of Technology Acceptance Model. *Computers & Education*, 133, 116-126.
- Vafaei-Zadeh, A., Ng, S. X., Hanifah, H., Teoh, A. P., & Nawaser, K. (2021). Safety technology adoption: predicting intention to use car dashcams in an emerging country. *International Journal of Innovation and Technology Management*, 18(05), 2150022.
- Zhao, W., & Othman, M. N. (2010). Predicting and Explaining Complaint Intention and Behavior of Malaysian Consumers: An Application of The Planned Behavior Theory. *Advances in International Marketing*, 9(1), 229-252.