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# Security in Focus: An Empirical Examination of Perceived Security's Impact on TAM-Based Use Behaviour of E-wallets

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**Abstract**

The present study investigates factors influencing the behavioural use of e-wallet among youths in Malaysia. It is necessary for fintech practitioners and policymakers to look into the factors that drive young users to adopt e-wallet given the rapid growth in Malaysia's digital financial services. This study is fuelled by the need to bridge the gap between user trust and e-wallet use, especially among security-conscious and technology savvy youths. Thus, the study aims to assess the effect of perceived usefulness and perceived ease of use in the Technology Acceptance Model (TAM) on youths' e-wallet behavioural use by extending it with perceived security. An online survey was conducted with 150 questionnaires distributed to youths around Malaysia. The data was then analysed using the Partial Least Square-Structural Equation Modelling (PLS-SEM) software. The findings revealed that perceived usefulness and perceived security have a significant positive effect on youths' e-wallet use behaviour, while perceived ease of use shows an insignificant effect. The study adds to the expanding literature on security in financial technology, i.e., the e-wallet, by determining the perceived security's role in e-wallet use behaviour. The outcome of this study would benefit policymakers, e-wallet providers, and academics in undertaking strategies that would enhance perceived security and encourage users' use behaviour.

**Keywords:** Perceived Security, Perceived Usefulness, Perceived Ease of Use, E-Wallets

## Introduction

Today's payment culture is trending towards cashless transactions over traditional cash payment. Driven by the proliferation of digitalization in businesses, E-wallets are among the cashless payments services that have witnessed a tremendous transformation in the payment landscape. The growing use behaviour of e-wallets around the world have become increasingly significant, prompting research in countries like India, Indonesia, China and Malaysia (Singh & Ghatak, 2021; Fanuel & Fajar, 2021; Yann et al., 2019; Vitug, 2023).

Electronic wallets, or best known as e-wallets, are a digital version of a physical wallet that is available as an app in a smartphone. It stores e-money and is displayed as a digital number inside an e-wallet, which can be used to make payments, as well as transfer and receive funds. E-wallets make payment transactions and commerce activities more convenient and accessible to both individuals and businesses. Online payments services like e-wallets play a crucial role in facilitating economic activity by boosting economic growth, encouraging trading and curbing illegal activities, and subsequently promoting financial inclusion.

To achieve financial inclusion, the Central Bank of Malaysia has sped up the transition from traditional payments to electronic payment methods. This is done to further accelerate the country's effort to reduce costs associated with the circulation of paper money in the market which is believed to contribute to 1% savings, annually, of the country's Gross Domestic Product (GDP) (Central Bank of Malaysia, 2022). In tandem with this move, the government of Malaysia is pushing for the widespread use of e-wallets as part of a larger plan to bring the nation into the digital economy, as outlined in the Sustainable Development Goal (SDG8). For instance, the government has initiated several initiatives to encourage adoption since 2020, i.e. e-Tunai Rakyat, e-Penjana, eBelia, ePemula, and eMadani.

Despite efforts by the government to promote e-wallet usage, widespread adoption has yet to be fully realized. A recent Ipsos Malaysia survey (2024) revealed that a large segment of the Malaysian population still prefers using cash for transactions. Among non-cash payment options, e-wallets rank third in popularity, trailing behind online banking, debit cards, and credit cards. While cash remains the dominant payment method, an increasing number of Malaysians, particularly in the Northern, Central and East Malaysia regions are beginning to favour digital payment methods. The Statista Digital Market Outlook projects that the number of e-wallet users in Malaysia will grow to 22.9 million by 2025, indicating steady and sustained growth of e-wallet adoption since its introduction in the country. This trend shows the potential for continued expansion of e-wallets as a viable payment method, despite current challenges.

Building on these insights, however, the e-wallet adoption in Malaysia remained low with a penetration rate of only 31.7%, lagging behind other Asian nations like China, Japan, South Korea, where e-wallet usage has reached 83.6%, 73.2% and 70.6% respectively in 2020 (Kaissi, 2021). Security concerns are a significant factor preventing many Malaysians from transitioning to digital payments. According to the Paynet Digital Payment Insight Study (2022), a considerable portion of the population remains hesitant to switch from cash to e-wallets due to fears over security. In 2022, nearly 40% of Malaysians reported being victims of fraud in 2022, resulting in RM16.1 billion in losses, as per the Commercial Crime Investigations (CCID) Malaysia. Over the course of the pandemic, around 51,000 online fraud

cases were documented, including phishing, impersonation, and e-wallet, which have raised concerns about account takeovers and unauthorized transactions.

Given the government's ongoing efforts to encourage widespread e-wallet adoption, the ultimate success of these initiatives will depend on user confidence and acceptance. The motivation of this study lies in the increasing concern over e-wallet security among youths and the gap in the existing TAM related studies in Malaysia. Despite the widely established use of TAM as a foundation model in the technology adoption studies, there are a lack of studies focusing specifically on Malaysian youths, a demographic that is increasingly vulnerable to cybercrime. To fill this gap, this study proposes a conceptual framework based on the Technology Acceptance Model (TAM), incorporating perceived security as a key construct to evaluate e-wallet use among youths. By emphasizing the central role of perceived security, this study aims to contribute to a deeper understanding of how this factor influences the usage behaviour of young users toward e-wallet payment systems.

The article is organized as follows; i) summary of prior research and relevant literature ii) discussion of research methodology and findings iii) discussion of results and findings iv) implication of study and lastly, v) limitations and recommendations for future study.

**Literature Review**

*Theory*

To analyse the use behaviour of e-wallets, the Technology Acceptance Model (TAM) were used. The TAM model is a widely recognized model in the IS/IT adoption studies and has been validated for its effectiveness in explaining technology adoption in numerous empirical studies. The TAM model is a widely used model which was introduced by Fred Davis in 1989. The model is among the various theories designed to explain the user behaviour towards new technologies. The model was derived from the Theory of Reasoned Action (TRA) by Fishbein and Ajzen in 1975, and later developed into the Theory of Planned Behaviour (TPB) by Ajzen and Fishbein in 1980. The TAM model identified two factors that are central to user's behaviour towards new technology. Firstly, is the "perceived usefulness". It refers to the extent an individual feels that using a specific system would improve their job performance. "Perceived ease of use", on the other hand, is the extent a person feels that using a specific system would be effortless. These factors help to predict how likely users are to use a new system, making TAM a versatile and widely applicable model for understanding e-wallet use behaviour in this research context.

While Davis (1989) did find perceived usefulness and perceived ease of use are directly related to convenience features of using a technology, he did not find any measurements that is directly associated with how people feel about their intention to use the technology. As noted by Davis (1986), attitude mediated the relationship between behavioural intention to use. In contrast, Venkatesh and Davis (2000) in TAM2, disregarded attitude as mediator and proposed that the TAM constructs and intention to use belong in a direct relationship. The upgraded TAM, or TAM2 has been used in multiple studies on user's technology use behaviour and continuous usage (Venkatesh and Davis, 2000; Luarn and Lin, 2005). It has also reliably demonstrated strong predictive power when it comes to consumer intention. Originally, attitude was included as a mediator between constructs and intention to use in the TAM model, but it was later removed due to its weak influence (Mun, Joyce, Jae & Janice,

2006). Additionally, a meta-analysis conducted by Legris et al. (2003) found that, out of 22 studies, only three studies have included attitude in the study. Thus, attitude has been excluded from this study for the said reasons.

The Technology Acceptance Model (TAM) has seen extensive application across a wide range of studies focusing on emerging technologies, spanning sectors such as fintech, e-commerce, banking, and healthcare. Over time, TAM has not only been a foundation model but has evolved significantly, with researchers extending additional theories and factors to deepen the understanding of what influences technology acceptance and user behaviour. This expansion has enabled a more holistic approach to analysing how individuals interact with new technologies. For example, many studies have integrated TAM with other models or introduced new variables to address specific contexts or user groups. In this study, extending TAM with perceived security provides a more detailed understanding of e-wallet use behaviour, particularly among users. Since younger users may be more cautious about the risks linked to digital payments, adding perceived security helps the model better reflect their concerns and behaviours.

*Perceived Usefulness*

Perceived usefulness is the extent individuals feel they will benefit from using a new technology, resulting in better job performance. It was found in the research study by Denaputri et al., (2019), perceived usefulness is among the crucial factors that influence customers to use mobile payment. In a more recent literature on e-services at a university in Saudi Arabia (Bahaj et al., 2019), perceived usefulness was determined as a contributing factor influencing the use of e-services among university students. Perceived usefulness was found to have positive effect on the students' actual use of the university's e-services. Additionally, in a study on e-banking use behaviour (Salimon et al., 2020), it was discovered that perceived usefulness has a positive effect on e-banking use behaviour. The rate of use of the e-banking platform increases when they feel the e-banking platform will help them achieve their financial transaction goals. Therefore, the hypothesis is presented as follows:
H1: Perceived usefulness (PU) has a positive effect on e-wallet use behaviour.

*Perceived Ease of Use*

There are several definitions to describe the perceived ease of use. It refers to the degree an individual puts an effort into adopting a specific technology. If a person finds using technology is effortless, they are more likely to accept it (Davis, 1989). Many studies have confirmed perceived ease of use as a significant predictor in technology use behaviour studies such as, internet banking (Patel & Patel, 2017); smartphones (Arpaci et al., 2015); cybersecurity standards (Abdalla et al., 2021); e-banking (Salimon et al.,2020); and mobile wallet (Ibrahim et al.,2022). According to a study conducted on Gen Z's e-wallet use behaviour by Ibrahim *et al.* (2022), students' e-wallets use behaviour increases if they find the technology is easy to use. Thus, the following hypothesis is formulated:
H2: Perceived ease of use (PE) has a positive effect on e-wallet use behaviour.

*Perceived Security*

Perceived security appears as an important factor that affects consumers' decision to use e-wallets. The concern related to security in various e-wallet use behaviour literature is the concern for security and privacy when performing online transactions. Additionally, it was

revealed that perceived security has a strong impact on user's intention to adopt or use internet banking services (Patel & Patel, 2015). It was also found in past studies that insufficient security and privacy in e-commerce transactions discourage users from adopting technology (Marimuthu & Roseline, 2020; Karim et al. 2020; Salimon et al. 2020). Perceived security is an important determinant in many banking studies (Salimon et al., 2020 & Patel & Patel, 2015) and e-commerce (Basak et al., 2016). It is crucial for companies offering e-wallet services to safeguard their client's personal and financial data to encourage use behaviour of e-wallets. Based on the above discussion, the following hypothesis is developed:
H3: Perceived security has a positive effect on e-wallet use behaviour.

*E-wallet use Behaviour*
E-wallet adoption or use behaviour have been the subject of a great deal of research. E-wallets usage encourages market trading for its convenience and hassle-free feature. Factors like trust, convenience, compatibility, attitude, privacy risk and perceived security were identified to have influence on user's use behaviour of e-wallets (Yann, Saeedi and Meskaran, 2019). The convenience feature of e-wallet transactions coupled with the need for contactless transaction, promote further adoption of this technology. The extant literature on use behaviour and use behaviour has used various research methods, ranging from qualitative methods to systematic literature reviews, to investigate these factors. E-wallet service providers can benefit from the findings of this study by gaining better insights into the trend of customer use behaviour and further enhancing their services.

**Research Methodology**
The study sample comprised youths from Malaysia's public and private universities. A purposive sampling method were used for the purpose of respondents' selection, which is a common approach in studies on technology adoption behaviour, given the difficulty in determining the exact number of adopters (Calder, Phillips & Tybout, 1981). In this study, two key criteria were used to identify eligible respondents: first, they must be smartphone users with access to online banking services, and second, they must be between the ages of 18 and 40 years old.

The online survey was distributed to the target demographic using Google Forms. The survey link was then shared online via, Whatsapp and email. Respondents were asked to complete the questionnaire, which employed a 7-point Likert scale for responses, with options ranging from "strongly disagree" to "strongly agree". The measurement scales used in this study were adapted from the well-established Technology Acceptance Model (TAM) frameworks initially proposed by Davis (1989) and Davis et al. (1989). These scales were then specifically modified to fit the context of e-wallet adoption and usage, drawing on additional insights from studies by Agarwal and Prasad (2000) and Tan and Teo (2000), which provided further refinements to align with the evolving landscape of digital payment system.

For the perceived security construct, the measurement items were derived from prior research by Salisbury et al. (2001), which focused on web-based purchase intentions. Perceived usefulness and perceived ease of use were each assessed using four (4) items, while perceived security was evaluated using five (5) items. The data collected from respondents were processed and analysed using SPSS version 26, which included both descriptive analysis and further statistical assessments. Initially, the survey was distributed to a sample of 150

respondents across various regions in Malaysia. After a thorough data cleaning process, 133 responses were deemed valid for analysis. To examine the relationships among the variables, this study employed several statistical tools, with particular reliance on Partial Least Square-Structural Equation Modelling (PLS-SEM) for data analysis. The conceptual framework guiding this research is presented in Figure 1, showcasing the proposed relationships between the key constructs in the study.

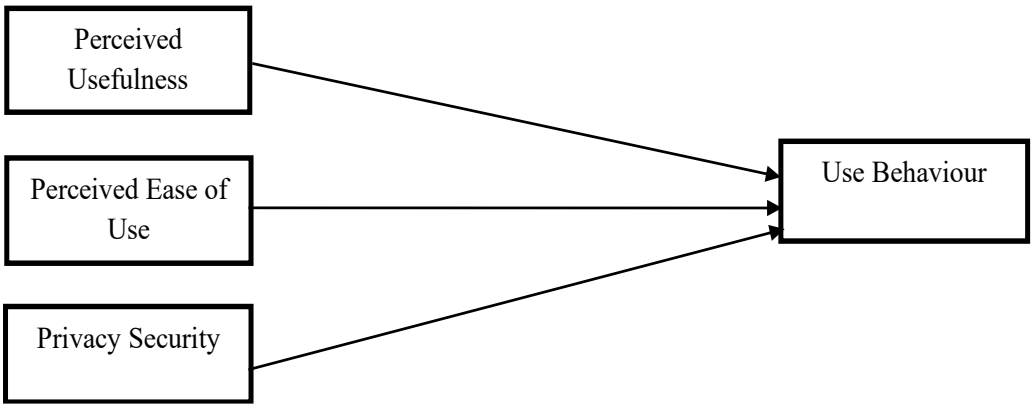


**Figure 1: Research Framework**

## Results and Discussion

*Descriptive Results*

Majority of the respondents or 104 respondents (69.3%) were females, and 90 respondents were from the East Coast (Sabah) region. With regards to age, 64% or 96 respondents are aged between 18-20 years, which falls under the youth age range bracket. In terms of highest education, 105 respondents or 70% have a Certificate/Diploma. Students make up the majority in terms of occupation.

*Collinearity Test*

The partial least squares (PLS) modelling with the SmartPLS 3.3.9 (Ringle et al., 2022) was used as the statistical tool to evaluate both the measurement model and structural model (Civelek, 2018) given that the survey data did not follow a normal distribution. Firstly, the researcher conducted a full collinearity assessment to check for common method bias, following guidelines of Kock & Lynn (2012) and Kock (2015). In this procedure, all constructs are regressed against a common variable, and the resulting Variance Inflation Factor (VIF) values are examined. If the VIF values are below the threshold of 3.3, it suggests that common method bias is unlikely to be a concern. The analysis revealed that all VIF values were well below this threshold. Therefore, the findings indicate that the data are free from significant single-source bias, supporting the validity of the results generated in the subsequent model evaluations.

*Measurement Model Assessment*

This validity and reliability test were conducted to assess the measurement model efficacy. Subsequently, the structural model assessment was then performed to test the proposed

hypothesis, following the guidelines by Hair et al. (2019) and Ramayah et al. (2018). The loadings, average variance extracted (AVE), and composite reliability (CR) for the measurement model were then assessed. As presented in Table 2, the AVE is above 0.5, and the CR are all greater than 0.7. The values of loadings should be ≥ 0.5, AVE should be ≥ 0.5, and CR should be ≥ 0.7. Convergent validity is the extent to which a measure correlates positively with an alternative measure of the same construct. In this step, convergent validity was assessed by examining the indicators' outer loadings the AVE. Meanwhile, indicators with loadings below 0.708 may be kept if the minimum AVE of 0.5 is achieved (Hair et al., 2019). Thus, there was no item deleted. Figure 1 shows the graphical measurement model assessment.

Table 2
*Measurement Model Assessment*

| Construct | Item | Loadings | CA | CR | AVE |
|---|---|---|---|---|---|
| Perceived Ease of Use | PE1 | 0.870 | 0.917 | 0.941 | 0.800 |
| | PE2 | 0.883 | | | |
| | PE3 | 0.902 | | | |
| | PE4 | 0.924 | | | |
| Perceived Usefulness | PU1 | 0.878 | 0.842 | 0.895 | 0.681 |
| | PU2 | 0.867 | | | |
| | PU3 | 0.821 | | | |
| | PU4 | 0.725 | | | |
| Perceived Security | PS1 | 0.916 | 0.921 | 0.942 | 0.766 |
| | PS2 | 0.901 | | | |
| | PS3 | 0.943 | | | |
| | PS4 | 0.723 | | | |
| | PS5 | 0.875 | | | |
| Use Behaviour | UB1 | 0.915 | 0.919 | 0.949 | 0.826 |
| | UB2 | 0.937 | | | |
| | UB3 | 0.932 | | | |

**No items were deleted as loading Composite Reliability >.708 (Hair et al., 2018)*

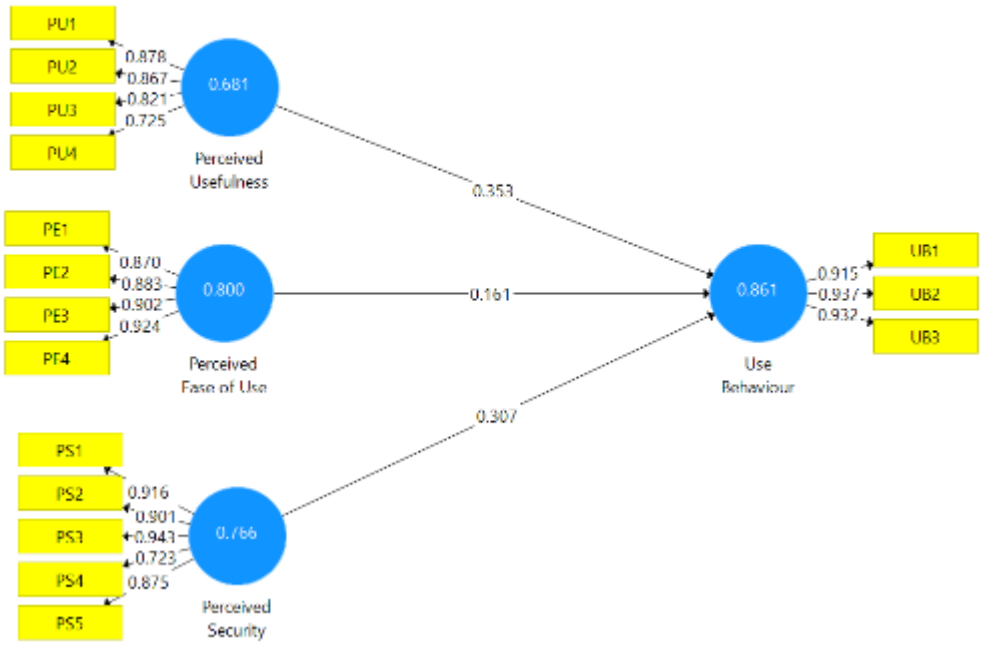


Figure 1: Measurement Model

The Heterotrait-Monotrait (HTMT) ratio of correlations were used to assess the discriminant validity of the measurement model, following the procedure outlined by Hair et al. (2019) and Henseler's (2015) as displayed in Table 6 (Ringle et al., 2020). This method is known for its robustness in assessing whether the constructs in the model are distinct from one another. The values of HTMT in this study were all lower than the 0.85 threshold, as recommended by (Diamantopoulos & Siguaw, 2006), indicating that each construct shares stronger correlations within itself than with other constructs. These findings confirm that discriminant validity has been adequately established. Additionally, Table 3 (Ringle et al., 2020), supports these results by indicating that the correlation values align appropriately with their corresponding constructs. Furthermore, there was no evidence of multicollinearity among indicators associated with different constructs in the outer model. Based on this outcome, the data meet the necessary criteria to proceed with the structural model assessment for testing the study's hypotheses.

Table 3
*HTMT Criterion*

| | Perceived Ease of Use | Perceived Security | Perceived Usefulness | Use Behaviour |
|---|---|---|---|---|
| Perceived Ease of Use | | | | |
| Perceived Security | 0.294 | | | |
| Perceived Usefulness | 0.737 | 0.440 | | |
| Use Behaviour | 0.504 | 0.531 | 0.650 | |

**Criteria: Discriminant validity is established at HTMT0.85 (Diamantopoulos & Siguaw, 2006)*

**Structural Model Assessment**

The data were resampled with 5000 bootstrap samples to examine the hypotheses (Hair et al., 2017). The Beta values for each path coefficient in Table 4 indicate that perceived usefulness and perceived security affects e-wallet use behaviour positively. In Table 4, the proposed relationship (H1): perceived usefulness has a substantial impact on e-wallet use behaviour. Specifically, the study revealed support for Hypothesis 1 (perceived usefulness -> use behaviour, $\beta$ = 0.353, p = 0.000, LLCI = 0.160, ULCI = 0.514). The same goes with Hypothesis 3 (perceived security -> use behaviour, $\beta$ = 0.307, p=0.000, LLCI = 0.171, ULCI = 0.435). In this study, perceived ease of use did not support use behaviour.

Table 4
*Path Coefficient*

| Direct Effect | Beta | S.E | t-value | p-value | LLCI | ULCI | Decision |
|---|---|---|---|---|---|---|---|
| H1: PU →UB | 0.353 | 0.091 | 3.882 | 0.000 | 0.160 | 0.514 | Supported |
| H2: PE →UB | 0.161 | 0.087 | 1.855 | 0.067 | -0.005 | 0.338 | Not Supported |
| H3: PS→UB | 0.307 | 0.067 | 4.593 | 0.000 | 0.171 | 0.435 | Supported |

*Note: *p<0.05, **p<0.01, Bias Corrected, LL=Lower Limit, UL=Upper Limit, p-value of 0.01, 0.05 (Hair et al.., 2017)*
*PU: Perceived usefulness; PE: Perceived ease of use; PS: Perceived security; UB: Use behaviour*

As asserted by Hair et al., (2017) and Cain et al., (2017), if the inner VIF values of the independent variables (perceived usefulness, perceived ease of use and perceived security) are below 5 or 3.3, therefore collinearity is not a concern (Hair et al., 2017). Once collinearity is ruled out, the next step involved evaluating the significance and relevance of the structural model by analysing the path coefficients through bootstrapping process. Additionally, the predictive accuracy of the model was assessed using the R-Square ($R^2$) coefficient, which reflects the influence of all exogenous variables on the endogenous constructs. The $R^2$ signifies the proportion of variance in the endogenous variables explained by the associated exogenous constructs. The $R^2$ values ranges between 0 to 1. A higher of $R^2$ values indicates a better predictive accuracy of the model.

The quality of the structural model was assessed and presented in Table 5. This study utilized the coefficient of determination ($R^2$) as a measure of predictive precision, following the guidelines established by Cohen (1988), where $R^2$ values are categorized as follows: considerable (0.26), moderate (0.13), and low (0.02) respectively. Specifically, the study evaluates both the coefficient of determination ($R^2$) and the effect size ($f^2$) to determine the influence of exogenous variables on the endogenous construct, use Behaviour. Based on the result, perceived usefulness and perceived security have a minor effect size on use Behaviour (as indicated by low $f^2$ values), while perceived ease of use shows a medium effect size. This is based on Cohen's (1988), where the values of 0.02, 015 and 0.35 represents small, medium and large effects respectively. Similarly, $R^2$ value of 0.430 for the constructs associated with hypotheses H1-H3 namely perceived usefulness, perceived ease of use, and perceived security shows a substantial effect on use behaviour, in line with the threshold suggest by Chin (1998). The study also assessed multicollinearity among the indicators to ensure the robustness of the model. The Variance Influence Factor (VIF) values for all indicators were

found to be well within acceptable limits, thereby indicating no significant multicollinearity concerns. Specifically, the VIF values were below the commonly accepted thresholds of 5.0 (Hair et al., 2014) and 3.3 (Hair et al., 2014; Diamantopoulos & Siguaw, 2006) respectively.

Table 5
*Model Quality Assessment*

| Direct Effect | $f^2$ | $R^2$ | VIF |
|---|---|---|---|
| H1: Perceived Usefulness→ Use Behaviour | 0.114 | 0.430 | 1.907 |
| H2: Perceived Ease of Use → Use Behaviour | 0.026 | | 1.747 |
| H3: Perceived Security → Use Behaviour | 0.140 | | 1.180 |

*$f^2 \geq 0.35$ consider Substantial (Cohen, 1988)*
*$R^2 \geq 0.26$ consider Substantial (Cohen, 1989)*
*VIF ≤ 3.3 (Diamantopoulos & Siguaw, 2006) or ≤ 5.0 (Hair et al.., 2017)*

*PLS-Predict*
The PLS-Predict method was used to assess the endogenous construct's predictive relevance (refer to Shmueli et al., 2019). As stated by Shmueli et al., (2019), the linear (LM) had higher RMSE and MAE values than all Use Behaviour values in Table 6. This suggests that Use Behaviour had a strong ability to predict outcomes.

Table 6
*PLS-Predict*

| Construct | Items | PLS-RMSE | MAE | LM-RMSE | MAE | PLS-LM RMSE | MAE | $Q^2$ predict | Predict Power |
|---|---|---|---|---|---|---|---|---|---|
| Use Behaviour | UB1 | 1.218 | 0.966 | 1.269 | 0.985 | 0.051 | 0.019 | 0.372 | Strong |
| | UB2 | 1.399 | 1.089 | 1.492 | 1.178 | 0.093 | 0.089 | 0.287 | |
| | UB3 | 1.286 | 1.004 | 1.340 | 1.061 | 0.084 | 0.057 | 0.356 | |

**Discussion**
This study addresses the effect of perceived usefulness, perceived ease of use and perceived security on the use behaviour of e-wallets. The findings of this study indicate that only perceived ease of use did not contribute significantly to youth's use behaviour of e-wallets. Alternatively, both perceived usefulness and perceived security makes significant contribution to e-wallet use behaviour. These findings support the findings of Soodan & Rana (2020) and Madan & Yadav (2016) that perceived ease of use as insignificant factor in predicting e-wallet use behaviour. E-wallet is an application that operates under technological constraints, requiring the users to be connected to a mobile network, dependent on the user's device speed and small screen. Additionally, users with minimal technological experience and interest could feel overwhelmed with this technology (Bommer et al., 2022). On the other hand, the significant effect of perceived usefulness on youth's e-wallet use behaviour is consistent with the findings by Ibrahim et al., (2022) and Arpaci et al. (2015). A possible reason why people use e-wallets is because it allows them to achieve specific outcomes. E-wallets are useful as they offer quicker transactions due to the convenience of smartphones being easily accessible than physical wallets stored in purses or pockets. Additionally, the e-wallet

provides the ease of keeping record of digital receipts, transaction history and online vouchers. Finally, perceived security has a positive effect on e-wallet use behaviour. Similar findings were found in previous studies by Arpaci et al. (2015), Soodan et al. (2020) and Lim et al. (2023). This implies that higher levels of e-wallet security significantly affect the adoption of e-wallet. Consumers' concern over security has a greater impact on their decisions to adopt e-wallet rather than their fear of losing their private information. This study provides insights into the extension of TAM as a baseline model with perceived security added into the context of e-wallet use behaviour in Malaysia. Therefore, this study has contributed to the body of knowledge by improving the model's parsimony.

**Implications and Conclusion**

This study uses the TAM model as the conceptual model to examine the Malaysian youth's consumers use behaviour of e-wallets. The main determinants that influence the e-wallet use among youths are perceived usefulness and perceived security. However, in the aspect of perceived ease of use, there was no significant influence on use behaviour. In other words, users believe that using e-wallet requires a lot more effort. Despite the convenience features that have already been built into the system, the e-wallet still requires a more focused exertion. E-wallet service providers should focus on making the platform payment process easier and more streamlined for customers, such as storing bank cards or auto reload features. In terms of security, e-wallet service providers should also emphasize on educating users on the security aspect of e-wallets and measure to safeguard their private information. Additionally, to encourage further adoption and financial inclusion, policymakers should invest in enhancing cybersecurity measures, through the development of better digital infrastructure.

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**References**

Abdalla, M., Jarrah, M., Abu-Khadrah, A., & bin Arshad, Y. (2021). Factors influencing the adoption of cyber security standards among public listed companies in Malaysia. International Journal of Advanced Computer Science and Applications, 12(11).

Agarwal, R., & Prasad, J. (2000). A field study of the adoption of software process innovations by information systems professionals. IEEE Transactions on Engineering Management, 47(3), 295-308.

Ajzen, I., and Fishbein, M. (1980), Understanding Attitudes and Predicting Social Behavior, Prentice-Hall, Englewood Cliffs, NJ.

Al-Alawi, A. I., Al-Hammam, A. H., Al-Alawi, S. S., & AlAlawi, E. I. (2021). The Adoption of E-Wallets: Current Trends and Future Outlook. In Innovative Strategies for Implementing FinTech in Banking (pp. 242-262). IGI Global.

Arpaci, I., Yardimci Cetin, Y., & Turetken, O. (2015). Impact of perceived security on organizational adoption of smartphones. Cyberpsychology, Behavior, and Social Networking, 18(10), 602-608.

Bahaj, S., Aljaaidi, K., & Ahmed, T. (2019). Using TAM model to empirically examine students' attitudes towards e-services in college of business administration. Management Science Letters, 9(5), 651-660.

Basak, S. K., Govender, D. W., & Govender, I. (2016, December). Examining the impact of privacy, Security, and trust on the TAM and TTF models for e-commerce consumers: A

pilot study. In 2016 14th Annual Conference on Privacy, Security and Trust (PST) (pp. 19-26). IEEE.

Bommer, W. H., Rana, S., & Milevoj, E. (2022). A meta-analysis of eWallet adoption using the UTAUT model. International Journal of Bank Marketing, 40(4), 791-819.

Calder, B. J., Phillips, L. W., & Tybout, A. M. (1981). Designing research for application. Journal of consumer research, 8(2), 197-207.

Central Bank of Malaysia. (2022). Financial Inclusion. https://www.bnm.gov.my/financial-inclusion.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. Modern methods for business research, 295(2), 295-336.

Cohen, J. (1988). Statistical power analysis for the behavioural sciences, 2nd edn.(Hillsdale, NJ: L. Erlbaum Associates).

Davis, F. D. (1986). A technology acceptance model for empirically testing new end-user information systems. Cambridge, MA, 17.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly, 319-340.

Davis, F. D. (1989). Technology acceptance model: TAM. Al-Suqri, MN, Al-Aufi, AS: Information Seeking Behavior and Technology Adoption, 205-219.

Denaputri, A., & Usman, O. (2019). Effect of perceived trust, perceived security, perceived usefulness and perceived ease of use on customers' intention to use mobile payment. Perceived Security, Perceived Usefulness and Perceived Ease of Use on Customers' Intention to Use Mobile Payment (December 16, 2019).

Diamantopoulos, A., & Siguaw, J. A. (2006). Formative versus reflective indicators in organisational measure development: A comparison and empirical illustration. British Journal of Management, 17(4), 263-282.

Fanuel, P. N., & Fajar, A. N. (2021). Digital wallet war in Asia: Finding the drivers of digital wallet adoption. Journal of Payments Strategy & Systems, 15(1), 79-91.

Fishbein, M., & Ajzen, I. (1977). Belief, attitude, intention, and behavior: An introduction to theory and research.

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. Journal of the Academy of Marketing Science, 45(5), 616-632.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. European Business Review, 31(1), 2-24.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM). European Business Review, 26(2), 106.

Henseler, J., Ringle, C., and Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1).

Ibrahim, N. F., Hasan, N. H. M., Rusli, P. N. A., Shahreki, J., & Hasim, M. A. (2022). Technology Acceptance Model in E-Wallet Adoption Among Generation Z Students: The Covid-19 Endemic Phase in Malaysia. International Journal of Advanced Research in Technology and Innovation, 4(4), 30-39.

IPSOS. (2024, January 10). Non-Cash Economy & Payment Evolution. https://www.ipsos.com/en-my/press-release-non-cash-economy-payment-evolution.

Kaissi, N. (2021, October 28). Mobile wallets will reach 2.6 billion users in Asia Pacific by 2025. https://www.theasianbanker.com/updates-and-articles/mobile-wallet-will-reach-2.6-billion-users-in-asia-pacific-by-2025

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.

Kock, N., & Lynn, G. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. Journal of the Association for information Systems, 13(7).

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. International Journal of e-Collaboration (ijec), 11(4), 1-10.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. Information & management, 40(3), 191-204.

Lim, W., Munikrishnan, U. T., Leong, C. M., Hiew, L. C., Leong, M. W., & Yang, L. (2023). Do you want a secure e-wallet? Understanding the role of risk and security in e-wallet continuance intention. Information & Computer Security.

Luarn, P., & Lin, H. H. (2005). Toward an understanding of the behavioral intention to use mobile banking. Computers in human behavior, 21(6), 873-891.

Madan, K., & Yadav, R. (2016). Behavioural intention to adopt mobile wallet: a developing country perspective. Journal of Indian Business Research, 8(3), 227-244.

Marimuthu, M. and Roseline, A. (2020), “A study on consumer perception towards E-Wallet”, Our Heritage, Vol. 68 No. 17, pp. 283-288.

Menon, M. M., & Ramakrishnan, H. S. (2019). Revolution of E-wallets usage among Indian millennial. Int. J. Recent Technol. Eng, 8(3), 8306-8312.

Mun, Y. Y., Jackson, J. D., Park, J. S., & Probst, J. C. (2006). Understanding information technology acceptance by individual professionals: Toward an integrative view. Information & management, 43(3), 350-363.

Patel, K. J., & Patel, H. J. (2018). Adoption of internet banking services in Gujarat: An extension of TAM with perceived security and social influence. International Journal of Bank Marketing, 36(1), 147-169.

PayNets-Payments Network Malaysia. (2022, April 6). Weathering the Pandemic - PayNet Digital Payment Insights Study 2022. PayNet. https://paynet.my/publications/Digital-Payments-Insights-Study-2022.pdf

Ramayah, T., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). Partial least squares structural equation modeling (PLS-SEM) using smartPLS 3.0.

Ringle, C. M., Sarstedt, M., Mitchell, R., & Gudergan, S. P. (2020). Partial least squares structural equation modeling in HRM research. The International Journal of Human Resource Management, 31(12), 1617-1643.

Salimon, M. G., Mohd Mokhtar, S. S., & Yusr, M. M. (2020). E-Banking as a financial supply chain system: can e-TAM improve trust and the rate of adoption?. International Journal of Supply Chain Management (IJSCM), 9(2), 216-226.

Salisbury, W. D., Pearson, R. A., Pearson, A. W., & Miller, D. W. (2001). Perceived security and World Wide Web purchase intention. Industrial Management & Data Systems, 101(4), 165–177. https://doi.org/10.1108/02635570110390071

Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J. H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. European journal of marketing.

Singh, S., & Ghatak, S. (2021). Investigating E-Wallet adoption in India: Extending the TAM model. International Journal of E-Business Research (IJEBR), 17(3), 42-54.

Soodan, V., & Rana, A. (2020). Modeling customers' intention to use e-wallet in a developing nation: Extending UTAUT2 with security, privacy and savings. Journal of Electronic Commerce in Organizations (JECO), 18(1), 89-114.

Tan, M., & Teo, T. S. (2000). Factors influencing the adoption of Internet banking. Journal of the Association for information Systems, 1(1), 5.

Venkatesh, V. and Davis, F.D. (2000), "A theoretical extension of the technology acceptance model: four longitudinal field studies", Management Science, Vol. 46 No. 2, pp. 186-204.

Vitug, E. G. (2023). E-wallets as Forefront of Future Payment Platforms: Technology Adoption and Utilization of Businesses in Central Luzon, Philippines. Partnership, 16, 28.

Yann, J. W., Saeedi, M., & Meskaran, F. (2019). A literature review on factors influencing intention to adopt E-wallet. Journal of Advanced Research in Dynamical and Control Systems, 11(11-SPECIAL ISSUE), 895-903. https://doi.org/10.5373/jardcs/v11sp11/20193113