

Demystifying Touch n Go E-Wallet Acceptance using Technology Acceptance Model

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Abstract

This study examines the determinants of behavioral intention to use Touch n Go e-wallet. The survey was completed by two hundred and fifty respondents measuring six variables, which includes behavioral intention (BI), perceived usefulness (PU), perceived ease of use (PEOU), subjective norm (SN), perceived trust (PT) and perceived risk and security (PRS). Partial Least Squares Structural Equation Modelling (PLS-SEM) was used as the main technique for data analysis. The results of this study showed that all constructs were significant in explaining behavioral intention to use e-wallets, except perceived risk and security. This study provides an opportunity to explore the effectiveness of providing a better experience and convenience of e-wallet services in the Malaysian context.

Keywords: Technology Acceptance Model (TAM), Touch n Go e-wallet, behavioural intention

1. Introduction

Electronic payments have continued to grow in recent years due to the growing popularity of internet-based banking and e-commerce platforms. E-wallets also contribute to the rapid

growth of e-commerce by providing a new payment method that replaces the role of a traditional wallet (Shin, 2009). An e-wallet facilitates, enables, and verifies conventional transactions involving financial value and the exchange of goods and services through a modern mobile platform (Truc, 2024). It's widely recognized that e-wallets are increasingly replacing traditional banking methods, such as automated teller machines (ATMs) and credit cards. Users can use their e-wallets to pay their utility bills, cinema tickets, and parking fees at their leisure (Pham & Ho, 2015). The trend towards mobile technology is an important key to continuing to support and share economic activities. E-wallet is one of the technologically focused commercial organizations that has the potential to influence the landscape of monetary services in the twentieth century and beyond. As such, mobile payment systems play a significant role even in their nascent stages in Malaysia (Aldridge, 2013).

Most Malaysians are open to electronic payments, but 74 percent of them still have doubts about conducting certain transaction activities through technological devices (Coopers, 2016). Ismail (2021) stated that some people may still be hesitant to use digital wallets due to security concerns. However, one must be aware that the advantages of digital wallets outweigh the disadvantages (Ismail, 2021). This eventually created a technological gap between the e-wallet and its consumers. Increasing the adoption of e-wallets is important to reduce the circulation of physical currency (Kanimozhi & Kamatchi, 2017). Therefore, more awareness and perhaps incentives from service providers are needed to attract more users, not only the young and tech-savvy ones (Ismail, 2021).

This research aims to understand the intention to use the Touch n Go e-wallet from a Malaysian perspective. It also aims to identify the factors that influence consumers' acceptance of Touch n Go e-wallet in their daily activities. Therefore, it would be an opportunity to explore the efficiency of providing a better experience and convenience to the consumers (Devadevan, 2013). The outcomes of this study can also be applied in other regions, as long as cultural differences are carefully considered.

2. Literature Review and Hypotheses Development

2.1 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) was introduced by Fred Davis in 1989 (Legris et al., 2003, Holden and Karsh, 2010; Turner et al., 2010). TAM is widely used to identify the factors that lead to user acceptance or rejection of a technology (An te al., 2023; Alomary and Woollard, 2015). TAM includes perceived ease of use, perceived usefulness, attitude, behavioral intention to use and actual use (Wang et al., 2023). Turner et al. (2010) stated that TAM predicts the profitability of new technologies that are accepted and adopted within groups and organizations. Davis (1989) posited that the higher acceptance of IT was the key factor in improving the use of technology, which could be assessed by asking individuals about their intention to use IT.

2.2 Theory of Reasoned Action (TRA)

Theory of Reasoned Action (TRA) was developed by Fishbein & Ajzen (1977) to investigate individuals' intentions to conduct certain behavior. The theory suggests that individuals' decisions are primarily influenced by their intention to engage in a specific behavior, which is largely shaped by two key factors: (1) their personal attitudes and (2) the subjective norms surrounding that behavior (Harb et al., 2024). The TRA structure can predict an individual's use of technology through behavioral intention where it is linked to PU and PEOU. Venkatesh et al. (2000) mentioned the influence of attitude on the formation of behavioral intention was found to be insignificant by further modification of the structure of TAM. Based on the TRA, we can claim that an individual's use of technology can be predicted. However, by using the TRA structure, we can understand more about technology acceptance.

2.3 Unified Theory Acceptance and Use of Technology Model (UTAUT)

Venkatesh et al. (2003) developed a unified theory that combines different theories and models of technology acceptance, integrating the components of eight technology acceptance models. UTAUT has four main determinants of behavioral intention and actual usage, namely performance expectancy, effort expectancy, social influence and facilitating conditions. UTAUT is widely used to examine technology acceptance across various industries, including ChatGPT adoption (Lai et al., 2024), blockchain (Shukla et al., 2024), electric vehicle (Alwadain et al., 2024), etc. This model is considered more powerful than other technology acceptance models for evaluating technology acceptance (Venkatesh et al., 2003).

2.4 Behavioral Intention (BI)

An individual's intention can be described as a course of action that he or she intends to take (Zhou, et al., 2010). Ajzen (2006) mentioned that an individual's subjective likelihood of achieving a goal within a given time frame is referred to as behavioral intention. It describes how an individual will behave in the future (Fishbein, et al., 1977). The e-wallet is a relatively new type of payment system that has gained widespread acceptance.

Perceived ease of use refers to the ease with which a particular device can be used without effort (Davis, 1989). It has a positive and important influence on behavioral intentions to use technology (Jackson, Chow & Leitch, 1997). Venkatesh et al. (2003) found a positive and significant relationship between perceived ease of use and behavioral intention to use. Similarly, Eze, Ten & Poong (2011) stated that behavioral intention to use an information system predicts perceived ease of use. Barry and Jan (2018) discovered that perceived ease of use has a positive and important effect on perceived utility and perceived use of behavioral intention to use a particular device. Al-Marroof and Al-Emran (2018) studied undergraduate students who believe that using web application technology is simple and user-friendly, and this perception has a positive impact on perceived utility and behavioral intention. Therefore, the extension of TAM highlighted that perceived ease of use has a positive impact on perceived usefulness and behavioral intention to use (Venkatesh, et al., 2000). However, the

researchers propose the following hypothesis.

H1: Perceived ease of use (PEOU) will have a significant influence on behavioral intention of using e-wallet (BI).

H2: Perceived ease of use (PEOU) will have a significant influence on perceived usefulness (PU).

The degree to which a person assumes that using a specific information system would increase their efficiency is referred to as perceived usefulness (Davis, 1989). This variable is the strongest factor in TAM and has a significant impact on BI (Davis, Bagozzi & Warshaw, 1989). Al-Marroof and Al-Emran (2018) found that there is a significant relationship between perceived usefulness and behavioral intention to use a particular technology by using the TAM model. Mun and Hwang (2003) mentioned that there is a positive and significant relationship between perceived usefulness and behavioral intention. The statement below shows the proposed hypothesis.

H2: Perceived usefulness (PU) will have a significant influence on the behavioral intention of using e-wallets (BI).

When discussing subjective norm factors, there are studies that state that it has a very significant influence in today's society. The implication of subjective norms for business is to communicate effectively with citizens. It will indicate the benefits of using certain devices. It seems that word of mouth (social influence) is very influential on people. Apart from that, it will influence the behavioral intention in this sample. If people can see the benefits of using an e-wallet, then they can act as promoters for this application. E-wallet will become a status symbol among people (Svendsen et al., 2013). It is also important to show consumers that using the e-wallet will be easy and does not require any technical knowledge (Khan & Alshare, 2015). Hence, the researchers proposed the following hypothesis.

H3: Subjective norms (SN) will have a significant influence on behavioral intention of using e-wallet (BI).

E-wallets have become increasingly popular due to their ease of use, but there is still a lack of knowledge and awareness among the general public, as well as a fear of making transactions due to security concerns (Marimuthu and Roseline, 2020). Customers may lack trust in information system providers and refuse to make e-payment transactions unless privacy and security features are included (Gitau, et al., 2014). Customers with no previous experience of technology may be concerned about security. Therefore, the following hypothesis is proposed.

H4: Perceived trust (PT) will have a significant influence on the behavioural intention of using e-wallets (BI).

Cliquet et al. (2015) define privacy as the right of individuals to personally control

information relevant to them. It is a crucial function that everyone recognizes. Soodan, et al. (2020) highlighted that one of the suggestive factors influencing the use of an e-wallet is privacy and protection. A lack of protection and privacy is one of the issues that discourages consumers from purchasing products unless they are covered (Milberg, Smith & Burke, 2000). Paying through an e-wallet without security features could lead to unauthorized access to personal data and a lucrative opportunity for cybercriminals to breach the data (Kaur et al., 2018). Consumers have become much more concerned about privacy and security issues as a result of the rapid development of technology (Ahmad et al., 2010). This will result in their reluctance to disclose financial information (debit or credit card details) over the Internet and e-commerce sites. The researchers proposed the following hypothesis.

H5: Perceived risk and security (PRS) will have a significant influence on the behavioural intention of using e-wallets (BI).

The representation of the research model is as follows:

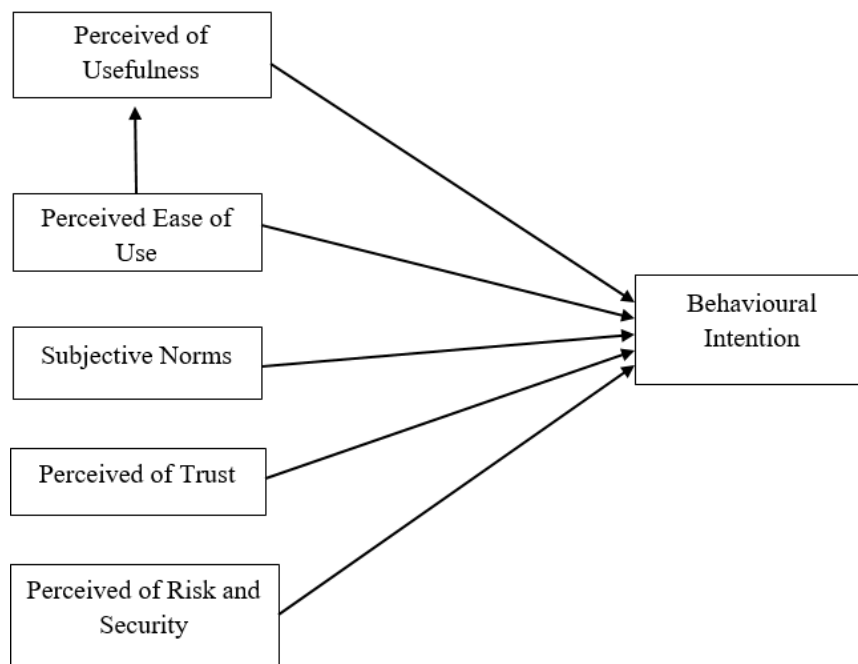


Figure 1. Conceptual Model

This research will answer the following questions:

- 1) To what degree that perceived ease of use (PEOU) have a significant influence on behavioral intention (BI) of using Touch n Go e-wallet?
- 2) To what degree that perceived usefulness (PU) have a significant influence on behavioral intention (BI) of using Touch n Go e-wallet?
- 3) To what degree that subjective norms (SN) have a significant influence on behavioral intention (BI) of using Touch n Go e-wallet?

- 4) To what degree that perceived trust (PT) have a significant influence on behavioral intention (BI) of using Touch n Go e-wallet?
- 5) To what degree that perceived risk and security (PRS) have significant influence on behavioral intention (BI) of using Touch n Go e-wallet?
- 6) To what degree that perceived ease of use (PEOU) have a significant influence on perceived usefulness (PU)?

3. Method

3.1 Measure

The measures were rewritten to be applicable to all variables in this study regarding e-wallet services. The measures of BI and PT were adapted from Leong et al. (2013) research on e-wallet transactions. PU was adapted from Liébana-Cabanillas et al. (2015) research, while PEOU was measured based on the findings of Upadhyay and Jahanyan (2016). SN was adapted from previous research on technology acceptance of e-wallets by Ramos-de-Luna et al. (2015). Finally, the PRS scale was adapted from previous e-wallet acceptance studies (see Yang et al., 2012; Liébana-Cabanillas et al., 2015). All these measures of 5 constructs were scored on a five-point Likert scale, with 1 being “strongly disagree” and 5 being “strongly agree”. The survey instruments were reviewed by experts to determine their validity and clarity of e-wallet acceptance in Malaysia. The first half of the survey examined the demographics of the respondents, while the second half examined their responses to the variables provided on technology acceptance of the Touch n Go e-wallet.

3.2 Participants

This study collects a sample of residents in Malaysia to gain insights into the technology acceptance of the Touch n Go e-wallet within the country. A quantitative research approach was adopted to allow for systematic data collection and statistical analysis, which is essential for understanding trends and patterns across a larger population. A survey approach was used to collect the required information. The questionnaire was chosen as an appropriate quantitative data collection tool as it is an effective and inexpensive tool for collecting data from large sample sizes (Marshall, 2005). A total of 250 respondents were sampled by the researchers consisting of people in Malaysia during 2023. In this study, a total of 72 respondents (28.8%) were male while 178 respondents (71.2%) were female. A total of 75 respondents (30%) had less than one year of e-wallet experience, while 74 respondents (29.6%) had 1-2 years of experience. A total of 20.4% of respondents have been using e-wallets for 3 years or more, which corresponds to 51 respondents. The lowest number of respondents using e-wallets for 2-3 years was 50 respondents (20%).

4. Data Analysis and Result

4.1 Assessment of the Measurement Model

The evaluation of a measurement model in PLS-SEM aims to confirm construct reliability (i.e., indicator reliability and internal consistency) as well as validity (i.e., convergent validity and discriminant validity). The Heterotrait-Monotrait (HTMT) ratio was used to test discriminant validity (Henseler, Ringle, & Sarstedt, 2016). The HTMT ratio criterion establishes discriminant validity indicators within the same latent variable using a multitrait-multimethod matrix. The HTMT ratio criterion is based on a comparison of average correlations of indicators across latent variables measuring different phenomena, and average correlations of indicators within the same latent variable.

The overall analysis shows that all measures of the reflective construct are validated in this study (see Table 1). All composite reliability (CR) values are greater than 0.70 and all average variance extracted (AVE) values are greater than 0.50, indicating that all constructs are internally consistent and have convergent validity. Discriminant validity is good when the value is < 0.90 and best when the value is < 0.85 . All HTMT values are below the maximum criterion of 0.85, while two values are above 0.85 (see Table 2).

Table 1. Measurement of constructs

Construct	Indicator	Notation	Outer Loadings
Behavioral Intention CR = 0.871 AVE = 0.628	Given the opportunity, I will continue using a Touch n Go E-Wallet.	BI 1	0.85
	I am likely to continue using a Touch n Go E-Wallet in the near future.	BI 2	0.76
	I am open to continuing using Touch n Go E-Wallet in the near future.	BI 3	0.79
	I intend to continue using Touch n Go E-Wallet when the opportunity arises.	BI 4	0.78
Perceived Usefulness CR = 0.858 AVE = 0.603	The services provide by Touch n Go E-Wallet is useful mode of payment	PU 1	0.80
	Using Touch n Go E-Wallet makes the handling of payments easier	PU 2	0.79
	Touch n Go E-Wallet allows quick use of mobile applications (for example, buying tickets, top up prepaid for mobile telecommunication, etc.)	PU 3	0.79
	I believe that the Touch n Go E-Wallet improves my consumer decisions (providing flexibility, speed, etc.)	PU 4	0.72
Perceived Ease of Use CR = 0.888 AVE = 0.665	It is easy to become skillful at using Touch n Go E-Wallet.	PEOU 1	0.81
	Interactions with Touch n Go E-Wallet are clear and understandable	PEOU 2	0.81
	It is easy to follow all the steps in order to use Touch n Go E-Wallet.	PEOU 3	0.82
	It is easy to interact with Touch n Go E-Wallet.	PEOU 4	0.82
Subjective Norms CR = 0.882 AVE = 0.713	People who are important to me would recommend using Touch n Go E-Wallet.	SN 1	0.85
	People who are important to me think it is a good idea to use Touch n Go E-Wallet.	SN 2	0.85
	People who are important to me view Touch n Go	SN 3	0.84

	E-Wallet as beneficial.					
Perceived of Trust	I would trust my Touch n Go E-Wallet to offer secure mobile services for making payment	PT 1				0.80
	I would trust my mobile phone manufacturer to provide a mobile phone which is appropriate for conducting Touch n Go E-Wallet services	PT 2				0.82
CR = 0.855 AVE = 0.597	I believe that if an outsider gains access to my Touch n Go E-Wallet account, the Touch n Go will take complete responsibility for my money	PT 3				0.69
	Touch n Go E-Wallet is trustworthy.	PT 4				0.77
	I would not feel totally safe providing personal privacy information over the Touch n Go E-Wallet.	PRS 1				0.210
	I am worried about using Touch n Go E-Wallet because other people may be able to access my account.	PRS 2				0.71
	I would not feel secure sending sensitive information across the Touch n Go E-Wallet.	PRS 3				0.74
	The risk of an unauthorized party intervening in the Touch n Go E-Wallet payment process is low	PRS 4				0.72
Perceived Risk and Security	The risk of abuse of usage information (e.g., names of business partners, payment amount) is low when using Touch n Go E-Wallet.	PRS 5				0.79
	PRS 6: The risk of abuse of billing information (e.g., credit card number, bank account data) is low when using Touch n Go E-Wallet.	PRS 6				0.76

Tables 2. HTMT Criterion

	BI	PU	PEOU	SN	PT	PRS
BI	-					
PU	0.876					
PEOU	0.834	0.884				
SN	0.703	0.758	0.748			
PT	0.714	0.773	0.773	0.747		
PRS	0.321	0.315	0.315	0.370	0.363	-

4.2 Assessment of Structural Model

Path coefficients and P values used by the researchers to obtain the structural model result of 250 cases represent the sample size (see Table 3). In PLS-SEM, the structural model presents information about path analysis, explained variance (R^2), predictive relevance (Q^2), standardized root means square residual (SRMR) as well as standardized mean absolute residual (SMAR). This study shows that BI is predicted by PU, PEOU, SN, PT and PRS, which result in a R^2 value of 0.549. The R^2 values for PU is 0.558. The predictive relevance of all endogenous constructs is verified because all Q^2 values are greater than zero. The SRMR value is 0.091 while SMAR is 0.074 which is less than the 0.1 threshold level. It can be concluded that the study fits the model criterion. Thereby the previous study by Henseler, Hubona, & Ray (2016) suggested an acceptable model fit.

Table 3. Hypothesis Testing Results

Relation	Path Coefficients	Result
PEOU => BI	0.266 ^{***}	Supported
PU => BI	0.348 ^{***}	Supported
SN => BI	0.116 ^{**}	Supported
PT => BI	0.118 ^{**}	Supported
PRS => BI	0.066 ^{n.s.}	Not Supported
PEOU => PU	0.743 ^{***}	Supported

Note. ^{n.s.} non-significant; ^{***} $p < 0.01$; ^{**} $p < 0.05$.

5. Discussion

Previous studies have shown that PU, PEOU, SN, PT and PRS have a significant influence on BI (Alwadain et al., 2024; Lai et al., 2024; Shukla et al., 2024). The significance of attitude in generating behavioral intention to use an e-wallet is insignificant according to the TAM model. These findings support the research of Venkatesh and Davis (1996). The findings support the research of Malik, Kumra, and Srivastava (2013), who found that PEOU and PU have a significant impact on BI. Subjective norm has been identified as one of the most important factors influencing the decision to use an e-wallet. There is a positive relationship between trust and behavioral intention when it comes to consumer adoption of new mobile technologies. However, the result shows that PRS does not have a significant impact on BI among Malaysians. This finding is different from previous studies (Tan and Teo, 2000; Polatoglu and Ekin, 2001; Black & William, 2009; Howcroft et al., 2002) which highlighted the need for security and privacy in e-wallet. This demonstrates that Malaysians have sufficiently understood and adapted to the digital environment to eliminate these variables when conducting transactions. As a result, the findings supported the majority of the hypothesized relationships.

5.1 Theoretical Contribution of Study

The empirical contributions in this study focus on the effect of a moderator or mediator on the nature of the relationship between two constructs. Behavioral intention becomes the mediator that helps to explain the significant influence of perceived usefulness, perceived ease of use and subjective norms, perceived trust and perceived risk and security in using e-wallet services. Perceived usefulness also mediates the impact of perceived ease of use on e-wallet adoption. In this study, perceived usefulness and behavioral intention are categorized as endogenous variables.

5.2 Implication of Application

An e-wallet allows the user to pay quickly and easily when shopping in-store or online. Many stores in this country already offer e-wallet services to consumers. The use of e-wallet is growing in popularity due to the convenience services and greater flexibility in payment options. Malaysians are more than ready to embrace e-wallet technology. Consumers who use these services can save time and increase productivity by using e-wallets. Based on the survey conducted in this study, it was revealed that 74% of 18–24-year-olds use e-wallet to make payments. This suggests that the next generation of mobile wallet providers will have a built-in customer base. Young people are already seeing the benefits of mobile wallets and using them as their preferred payment method. Malaysia will become a cashless society in five years as rural areas become more urbanized and more young people want to make transactions through electronic payments, with 70% of Malaysians living in cities preferring to pay through digital platforms rather than cash (Kaur, 2018). Thus, electronic payments will replace traditional payments in the future.

5.3 Limitation and Future Research

There are a few limitations in this research. First, this study investigated the significant effect on behavioral intention to use e-wallet services. Future research could try to include the affective (or emotional) components of motivational factors to have a better understanding of usage intentions. Another limitation arises from the convenient sampling method. As a result, our findings may not apply to the whole population. Future research may also focus on respondents who use e-wallets, as they are more familiar with e-wallets to conduct the survey. As a result, there is still room for more research in this field.

5.4 Conclusions

The e-wallet is one of the most significant digital transaction platform in today's era, dominating technology adoption across various markets. To understand the factors influencing the Malaysian public's willingness to adopt this technology, it is essential to analyze external elements that impact PU, PEOU, SN, PT, PRS and BI. For effective technology acceptance among Malaysians, policymakers, financial institutions, and e-wallet service providers must address these determinants strategically. Policymakers, for instance, should create regulatory frameworks that enhance security and trust, addressing concerns related to perceived risk (PRS) and perceived trust (PT). Financial institutions can collaborate with e-wallet providers to increase accessibility and ease of use (PEOU), while service providers should focus on promoting the benefits (PU) and encouraging social endorsement (SN) through targeted campaigns. By addressing these factors comprehensively, stakeholders can better support the adoption and integration of e-wallet technologies, fostering a more inclusive digital economy.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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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. (2006). Behavioral interventions based on the theory of planned behavior.
- Aldridge, I. (2013). *High-frequency trading: a practical guide to algorithmic strategies and trading systems* (Vol. 604). John Wiley & Sons. <https://doi.org/10.1002/9781119203803>
- Al-Marroof, R. A. S., & Al-Emran, M. (2018). Students acceptance of google classroom: An exploratory study using PLS-SEM approach. *International Journal of Emerging Technologies in Learning (Online)*, 13(6), 112. <https://doi.org/10.3991/ijet.v13i06.8275>
- Alomary, A., & Woollard, J. (2015). How is technology accepted by users? A review of technology acceptance models and theories.
- Alwadain, A., Fati, S. M., Ali, K., & Ali, R. F. (2024). From theory to practice: An integrated TTF-UTAUT study on electric vehicle adoption behavior. *Plos one*, 19(3), e0297890. <https://doi.org/10.1371/journal.pone.0297890>
- An, S., Eck, T., & Yim, H. (2023). Understanding consumers' acceptance intention to use mobile food delivery applications through an extended technology acceptance model. *Sustainability*, 15(1), 832. <https://doi.org/10.3390/su15010832>
- 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.
- Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability (formerly: Journal of personnel evaluation in education)*, 21, 5-31. <https://doi.org/10.1007/s11092-008-9068-5>
- Cliquet, G., Gonzalez, C., Huré, E., & Picot-Coupey, K. (2015). From Mobile Phone to Smartphone: What's New About M-Shopping?. In *Ideas in Marketing: Finding the New and Polishing the Old: Proceedings of the 2013 Academy of Marketing Science (AMS) Annual Conference* (pp. 199-202). Springer International Publishing. https://doi.org/10.1007/978-3-319-10951-0_72
- Coopers, P. W. (2016). Blurred lines: How FinTech is shaping financial services. *Global FinTech report*, 1-36.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340. <https://doi.org/10.2307/249008>
- Devadevan, V. (2013). Mobile Banking in India—Issues & Challenges. *International Journal of Emerging Technology and Advanced Engineering*, 3(6), 516-520.

- Eze, U., Ten, M. A. T. M. Y., & Poong, Y. (2011). Mobile commerce usage in Malaysia. In *International conference on social science and humanity* (pp. 265-269).
- Fishbein, M., & Ajzen, I. (1977). Belief, attitude, intention, and behavior: An introduction to theory and research.
- Gitau , L., & Nzuki, D. (2014). Analysis of determinants of m-commerce adoption by online consumers. *International Journal of Business, Humanities and Technology*, 4(3), 88-94.
- Harb, A., Khelifat, A., Alzghoul, Y. A., Fowler, D., Sarhan, N., & Eyoum, K. (2024). Cultural exploration as an antecedent of students' intention to attend university events: an extension of the theory of reasoned action. *Journal of Marketing for Higher Education*, 34(1), 72-94. <https://doi.org/10.1080/08841241.2021.1958125>
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: updated guidelines. *Industrial management & data systems*, 116(1), 2-20. <https://doi.org/10.1108/IMDS-09-2015-0382>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2016). Testing measurement invariance of composites using partial least squares. *International marketing review*, 33(3), 405-431. <https://doi.org/10.1108/IMR-09-2014-0304>
- Holden, R. J., & Karsh, B. T. (2010). The technology acceptance model: its past and its future in health care. *Journal of biomedical informatics*, 43(1), 159-172. <https://doi.org/10.1016/j.jbi.2009.07.002>
- Howcroft, B., Hamilton, R., & Hewer, P. (2002). Consumer attitude and the usage and adoption of home-based banking in the United Kingdom. *International journal of bank marketing*, 20(3), 111-121. <https://doi.org/10.1108/02652320210424205>
- Ismail, I. (2021). E-wallet use in Malaysia growing. *News Straits Times*.
- Jackson, C. M., Chow, S., & Leitch, R. A. (1997). Toward an understanding of the behavioral intention to use an information system. *Decision sciences*, 28(2), 357-389. <https://doi.org/10.1111/j.1540-5915.1997.tb01315.x>
- Kanimozhi, G., & Kamatchi, K. S. (2017). Security aspects of mobile based E wallet. *International Journal on Recent and Innovation Trends in Computing and Communication*, 5(6), 1223-1228.
- Kaur, R., Li, Y., Iqbal, J., Gonzalez, H., & Stakhanova, N. (2018, July). A security assessment of HCE-NFC enabled E-wallet banking android apps. In *2018 IEEE 42nd Annual Computer Software and Applications Conference (COMPSAC)* (Vol. 2, pp. 492-497). IEEE. <https://doi.org/10.1109/COMPSAC.2018.10282>
- Khan, M. A., Khan, H. U., & AlShare, K. A. (2015). Factors influence consumers' adoption of mobile payment devices in Qatar. *International journal of mobile communications*, 13(6),

670-689. <https://doi.org/10.1504/IJMC.2015.072100>

Lai, C. Y., Cheung, K. Y., Chan, C. S., & Law, K. K. (2024). Integrating the adapted UTAUT model with moral obligation, trust and perceived risk to predict ChatGPT adoption for assessment support: A survey with students. *Computers and Education: Artificial Intelligence*, 6, 100246. <https://doi.org/10.1016/j.caeai.2024.100246>

Legrís, 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. [https://doi.org/10.1016/S0378-7206\(01\)00143-4](https://doi.org/10.1016/S0378-7206(01)00143-4)

Leong, L. Y., Hew, T. S., Tan, G. W. H., & Ooi, K. B. (2013). Predicting the determinants of the NFC-enabled mobile credit card acceptance: A neural networks approach. *Expert Systems with Applications*, 40(14), 5604-5620. <https://doi.org/10.1016/j.eswa.2013.04.018>

Liébana-Cabanillas, F., Ramos de Luna, I., & Montoro-Ríos, F. J. (2015). User behaviour in QR mobile payment system: the QR Payment Acceptance Model. *Technology Analysis & Strategic Management*, 27(9), 1031-1049. <https://doi.org/10.1080/09537325.2015.1047757>

Malik, A., Kumra, R., & Srivastava, V. (2013). Determinants of consumer acceptance of m-commerce. *South Asian Journal of Management*, 20(2), 102-126.

Marimuthu, M., & Roseline, A. (2020). A study on consumer perception towards e-wallet. *Our Heritage*, 68(17), 283-288.

Milberg, S. J., Smith, H. J., & Burke, S. J. (2000). Information privacy: Corporate management and national regulation. *Organization science*, 11(1), 35-57. <https://doi.org/10.1287/orsc.11.1.35.12567>

Mun, Y. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International journal of human-computer studies*, 59(4), 431-449. [https://doi.org/10.1016/S1071-5819\(03\)00114-9](https://doi.org/10.1016/S1071-5819(03)00114-9)

Pham, T. T. T., & Ho, J. C. (2015). The effects of product-related, personal-related factors and attractiveness of alternatives on consumer adoption of NFC-based mobile payments. *Technology in society*, 43, 159-172. <https://doi.org/10.1016/j.techsoc.2015.05.004>

Phuah, K. T., TingJL, J. L., & Wong, K. K. S. (2018). Understanding customer intention to use mobile payment services in Nanjing, China. *International Journal of Community Development and Management Studies*, 2, 049-060. <https://doi.org/10.31355/22>

Polatoglu, V., & Ekin, S. (2001). An empirical investigation of the Turkish consumers' acceptance of Internet banking services. *International journal of bank marketing*, 19(4), 156-165. <https://doi.org/10.1108/02652320110392527>

Ramos-de-Luna, I., Montoro-Ríos, F., & Liébana-Cabanillas, F. (2016). Determinants of the

intention to use NFC technology as a payment system: an acceptance model approach. *Information Systems and e-business Management*, 14, 293-314. <https://doi.org/10.1007/s10257-015-0284-5>

Shin, D. H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior*, 25(6), 1343-1354. <https://doi.org/10.1016/j.chb.2009.06.001>

Shukla, V., Kumar, J., Rana, S., & Prashar, S. (2024). Navigating the adoption landscape of blockchain in food delivery: a UTAUT perspective. *British Food Journal*, 126(8), 3113-3133. <https://doi.org/10.1108/BFJ-08-2023-0681>

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. <https://doi.org/10.4018/JECO.2020010105>

Svendsen, G. B., Johnsen, J. A. K., Almås-Sørensen, L., & Vittersø, J. (2013). Personality and technology acceptance: the influence of personality factors on the core constructs of the Technology Acceptance Model. *Behaviour & Information Technology*, 32(4), 323-334. <https://doi.org/10.1080/0144929X.2011.553740>

Tan, M., & Teo, T. S. (2000). Factors influencing the adoption of Internet banking. *Journal of the Association for information Systems*, 1(1), 5. <https://doi.org/10.17705/1jais.00005>

Truc, L.T. (2024). Empowering tomorrow: Unleashing the power of e-wallets with adoption readiness, personal innovativeness, and perceived risk to client's intention. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(3), 100322. <https://doi.org/10.1016/j.joitmc.2024.100322>

Turner, M., Kitchenham, B., Brereton, P., Charters, S., & Budgen, D. (2010). Does the technology acceptance model predict actual use? A systematic literature review. *Information and software technology*, 52(5), 463-479. <https://doi.org/10.1016/j.infsof.2009.11.005>

Upadhyay, P., & Jahanyan, S. (2016). Analyzing user perspective on the factors affecting use intention of mobile based transfer payment. *Internet Research*, 26(1), 38-56. <https://doi.org/10.1108/IntR-05-2014-0143>

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*, 11(4), 342-365. <https://doi.org/10.1287/isre.11.4.342.11872>

Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision sciences*, 27(3), 451-481. <https://doi.org/10.1111/j.1540-5915.1996.tb01822.x>

Venkatesh, V., Morris, M. G., & Ackerman, P. L. (2000). A longitudinal field investigation of gender differences in individual technology adoption decision-making processes. *Organizational behavior and human decision processes*, 83(1), 33-60. <https://doi.org/10.1006/obhd.2000.2896>

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. <https://doi.org/10.2307/30036540>

Wang, C., Ahmad, S. F., Ayassrah, A. Y. B. A., Awwad, E. M., Irshad, M., Ali, Y. A., ... & Han, H. (2023). An empirical evaluation of technology acceptance model for Artificial Intelligence in E-commerce. *Heliyon*, 9(8). <https://doi.org/10.1016/j.heliyon.2023.e18349>

Yang, S., Lu, Y., Gupta, S., Cao, Y., & Zhang, R. (2012). Mobile payment services adoption across time: An empirical study of the effects of behavioral beliefs, social influences, and personal traits. *Computers in human behavior*, 28(1), 129-142. <https://doi.org/10.1016/j.chb.2011.08.019>

Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in human behavior*, 26(4), 760-767. <https://doi.org/10.1016/j.chb.2010.01.013>