International Journal of Management, Finance and Accounting

Consumers' Intention to Continue Using Cryptocurrency Mobile Wallets in Malaysia

Nabila Putri Ghaisani[1]
Rathimala Kannan[1*]
Firdaus Basbeth[2]

*Corresponding author: rathimala.kannan@mmu.edu.my
[1]Faculty of Management, Multimedia University, Cyberjaya, Malaysia
[2]Graduate Program, IPMI International Business School, Jakarta Selatan, Indonesia

Abstract

In Malaysia, over RM 800 million transactions were processed in one cryptocurrency platform. The central bank of Malaysia has made e-payment one of its top targets to execute a cashless payment system. However, an in-depth analysis of the literature shows a dearth of research focusing on the influencers of cryptocurrency mobile wallet acceptance, especially the intention to use them continuously. Therefore, this study uses the Post-Acceptance Model of IS Continuance to determine the elements influencing the continuance intention of cryptocurrency mobile wallets in Malaysia. This research also investigates the impact of perceived security, effort expectations, and social influence on the intention to continue the usage of cryptocurrency mobile wallets. The empirical evidence from 106 current cryptocurrency respondents shows that: (1) perceived security and satisfaction are significant factors of continuance intention, and (2) performance expectancy, effort expectancy, and social influence are insignificant factors of continuance intention. It reveals perceived security as one of the critical elements in continuance intention in the cryptocurrency field.

Keywords: Cryptocurrency, Mobile wallet, Continuance intention, Post-acceptance Model of IS Continuance (PAM), Perceived security

Submitted on 14 March 2022; Accepted on 24 August 2022; Published on 31 August 2022.

1. Introduction

Many new cryptocurrencies have emerged since the creation of Bitcoin, the first cryptocurrency (Nakamoto, 2008), most of which use blockchain technology. This might occur because of a lower entrance barrier following the 2008 financial crisis, according to Bertsch et al. (2017). After a crisis, trust in banks does tend to decline (Jansen et al., 2015). Cryptocurrencies allow users to transact directly with vendors, evading financial intermediaries. It uses a peer-to-peer structure (Dattani & Sheth, 2019) and cogent verification to authenticate each business deal, making it a decentralised system. The blockchain network represents a public ledger that connects one transaction to another, making it possible to track each transaction (Chen et al., 2018). Bank Negara Malaysia (BNM)'s financial blueprint stated its priority to migrate from paper-based to e-payment. However, BNM's priority does not include cryptocurrency as a legal tender (Bank Negara Malaysia & Securities Commission Malaysia, 2020). BNM and the Securities Commission Malaysia (SC) will monitor the digital asset exchange (DAX). There are three recognised DAX platforms in Malaysia, with 2 providing their m-wallet app for Malaysian customers, perfect for the Malaysian user base as most Malaysians mainly access the Internet through smartphones (Malaysian Communications and Multimedia Commission, 2020).

Cryptocurrency makes cross-border transactions more accessible, but the former lacks specific guidelines to regulate, making people apprehensive about it (Mohania & Singh, 2020). It is noteworthy to investigate why these DAX customers use m-wallets to transact with their cryptocurrency when alternatives are available, e.g. desktop wallets and hardware wallets (Suratkar et al., 2020). Cryptocurrency is commonly employed in many fields of study. Cryptocurrency adoption in retail and SMEs was not accepted due to users' demand (Jonker, 2019) and desire to be in the first mover group (Mutiso & Maguru, 2020). However, there have been minimal studies on the cryptocurrency m-wallets and the continuous usage intention, as opposed to studies on regular currency m-wallets (Saadon & Long, 2020). Lim et al. (2018) highlighted the importance of a continuance intention study which covers a variety of users of Fintech services, including cryptocurrency and its m-wallet, past the young adult age. Several studies have applied the Post-Acceptance Model (PAM) of IS Continuation to predict the continuance intention of different information systems, including mobile payment (Gao et al., 2018).

These studies have added new variables to gauge the usage or continuance intention, such as adapting selected variables from the Unified Theory of Acceptance and Use of Technology (UTAUT). Some new variables to be studied are perceived security (Barkhordari et al., 2017), effort expectancy and social influence (Zaidi et al., 2017). However, there is limited research associated with these three new variables with the variables from the PAM to study cryptocurrency m-wallets.

Other existing studies have focused more on adopting cryptocurrency (Zamzami, 2020) or blockchain technology in domains such as retail (Miraz et al., 2020). Still, none had focused on cryptocurrency m-wallets, more specifically the continuance intention of it. Roos (2015) pointed out the lack of studies on cryptocurrency adoption from the user's perspective. There is also limited empirical evidence on its intention and adoption from developing countries (Yeong et al., 2019), such as Malaysia (Gillies et al., 2020).

This study seeks to establish the elements influencing the continuance intention of cryptocurrency m-wallets in Malaysia. This research also investigates the impact of perceived security, effort expectations, and social influence on the choice to keep using cryptocurrency m-wallets by employing the PAM.

The next section of this study reviewed current literature related to cryptocurrency m-wallet research, discussed the research methodology and findings of the analysis. The paper ends with some concluding remarks.

2. Literature review

This study examines the elements influencing the continuance intention of cryptocurrency mobile wallets in Malaysia. Unlike regular e-wallets, cryptocurrency m-wallets do not store funds taken from physical cards. Instead, they are powered by blockchain to store and manage cryptocurrency (Rehman et al., 2019) and are run by third-party service providers (Perkins, 2020). It is mainly used for cross-border transactions due to its inexpensive fee and faster transfer time (Eliasi & Javdan, 2019). There are three categories of cryptocurrency m-wallet: software, hardware, and paper; and these are broken down into two types: hot and cold wallets (Khan et al., 2019). A hot wallet is connected to the Internet, while a cold wallet works offline by generating private

key addresses that the account holder can store on something physical (Das et al., 2019). A Mobile cryptocurrency wallet falls under the hot wallet category (Jokić et al., 2019).

The ***Post-Acceptance Model (PAM) of IS Continuation*** is an appropriate estimation model to examine the elements influencing the continuance intention of mobile wallet cryptocurrency in Malaysia. Bhattacherjee (2001) refined Oliver (1980)'s Expectation-Confirmation Theory (ECT) and postulates that a user decides to continue using IS the same way a consumer chooses to on a repurchase decision, which goes through the acceptance stage, before moving onto the initial user experience which then affects whether the user decides to continue using or not. This gave birth to the model of post-acceptance in IS continuation, also known as the Expectation-Confirmation Model (ECM) or the Post-Acceptance Model of IS Continuance (PAM). PAM is arguably the better model to explain IS continuance, since the ECT was modelled to investigate consumer repurchase intention and is less effective in determining technology continuance. The persistence in the PAM is determined by three factors: confirmation, perceived usefulness, and satisfaction.

Recent studies have also gauged the level of continuance intention and usage of m-wallet by adapting the ***Unified Theory of Acceptance and Use of Technology (UTAUT)*** model (Barkhordari et al., 2017; Zaidi et al., 2017). The UTAUT model presents four critical factors in determining behavioural intention and technology usage: performance expectancy, effort expectancy, social influence, and facilitating conditions. It is one of the theories most used in explaining IS adoption intention in recent years (Mandal & McQueen, 2012). In UTAUT, performance expectancy is the key predictor of behavioural intention, followed by effort expectancy and social influence; whereas facilitating conditions is a variable that foresees actual technology use. The theory, however, stops at the initial usage, and does not predict continuance behaviour. This is why Venkatesh et al. (2011) needed to adopt the two-stage ECT (Bhattacherjee & Premkumar, 2004) to extend UTAUT to explain continuance intention in e-government technology. Unsurprisingly, it found effort expectancy bearing a stronger significance in influencing continuance intention in the technology that the citizens are already familiar with, compared to the technology they need more time to get acquainted with.

The study of post-acceptance behaviours has become a vital subject in recent IS research (Nabavi et al., 2016). Several studies have drawn constructs from and combined IS research models with other IS models to explore the determinants of continuance intention. Baabdullah (2019) combined TAM and the Task-Technology Fit (TTF) to explore the continuance intention with m-banking. Lee, Tsai and Ruangkanjanases (2020) combined UTAUT and the Information System Quality model to investigate the determinants of continuance intention with the e-appointment system within the public medical services field while Zhao and Bacao (2020) revisited UTAUT and ECM and combined them with Hofstede's cultural values to establish the variables that influence continuance intention with mobile payment.

This study will draw several constructs from PAM and UTAUT to examine the aspects that influence the desire to continue using cryptocurrency m-wallet. The elements affecting the continuance intention of cryptocurrency mobile wallets are determined based on the following literature.

2.1 Satisfaction

Satisfaction is the evaluation and judgment that a customer forms after the initial use of a specific IS, where the review is categorised as positive, indifferent, and negative (Bhattacherjee, 2001). Satisfied users are a significant factor in determining their continuance intention (Ashraf et al., 2020). The strength of satisfaction as a primary variable that influences continuance intention has been proven throughout the years through various studies that refer to mobile apps (Tam et al., 2018); remote banking services (Yuan et al., 2019); and mobile payment systems (Singh, 2020). Kim et al., (2019) believe that app providers can predict users' future behaviours based on their app experience.

H1: There is a significant relationship between satisfaction and cryptocurrency m-wallets continuance intention.

2.2 Performance Expectancy

The degree to which users believe they get leverage in accomplishing tasks by using certain technology in terms of convenience, time and speed (Junadi & Sfenrianto, 2015). Perceived usefulness from the Technology Acceptance Model (TAM) has the same

concept as performance expectancy (Venkatesh et al., 2003). Venkatesh et al. (2011) recognised that it is synonymous with the perceived usefulness used in PAM. It was observed as being significant in influencing the continuance intention of online taxi booking apps (Weng et al., 2017), Massive Open Online Courses (Jo, 2018), and especially of smartphones among people with physical disabilities since it is regarded as a life-saving device during emergencies (Cho & Lee, 2020).

H2: There is a significant relationship between performance expectancy and cryptocurrency m-wallets continuance intention.

2.3 Effort Expectancy

Effort expectancy is the extent of understanding by the users when using a particular technology without the user having to acquire any skill to utilise (Venkatesh et al., 2003; Junadi & Sfenrianto, 2015). Other than proven to affect continuance intention positively with m-learning (Al-Emran et al., 2020) and mobile payment systems (Singh, 2020), it was also reported to be considered more in the context of e-learning (Daneji et al., 2017) and e-commerce (Shang & Wu, 2017). Gao et al. (2018) pointed out the positive association between effort expectancy and continuance intention among a majority of young respondents (holding at least a bachelor's degree), assuming that young people feel that the QR code payment services were relatively easy to use, thus requiring minimum effort to utilise.

H3: There is a significant relationship between effort expectancy and cryptocurrency m-wallets continuance intention.

2.4 Social Influence

How influential a user's important people are in encouraging the continuous usage of cryptocurrency m-wallets (Venkatesh et al., 2003; Junadi & Sfenrianto, 2015). It was found to affect the continuance intention of e-books (Maduku, 2017), food delivery apps (Lee et al., 2019), and mobile payment among Gen Z in Bandung (Linari & Anggono, 2019). This variable is more significant in a collective society such as Malaysia, as observed by Zaidi, Bakar and Abdullah (2017), who found that the continuance intention of e-government was impacted by social influence because Malaysian users were found to be swayed by social perception.

H4: There is a significant relationship between social influence and cryptocurrency m-wallets continuance intention.

2.5 Perceived Security

This is the degree to which a user trusts that a technology service provider will ensure a risk-free user experience (Mombeuil & Uhde, 2021). According to BNM's report in 2009, security concerns were stated as one of the factors hindering people from using m-wallets (BNM, 2010). Ooi et al. (2020) found a positive association between perceived security and perceived trust among Bitcoin users, suggesting that increased security positively influences users' confidence in transactions with Bitcoin. Zhang et al. (2019) discovered a significantly strong, direct impact that perceived security has on continuance intention, suggesting that users take into account the security aspects when considering continuing using a mobile payment service, however, while also noting the current lack of security that these services employ in favour of convenience.

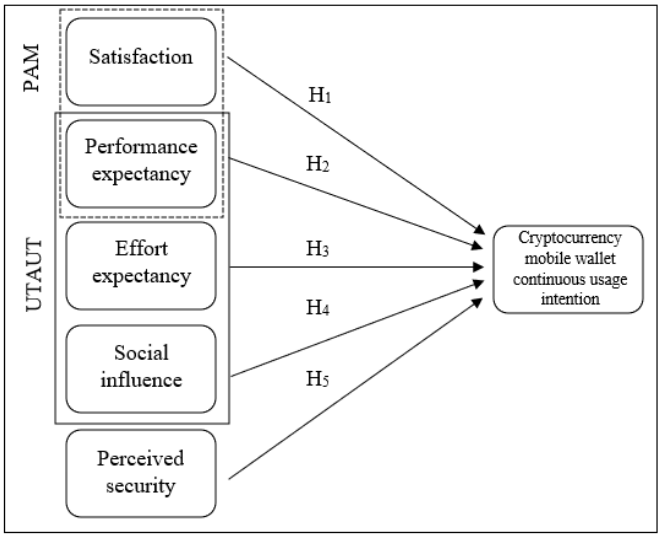
H5: There is a significant relationship between perceived security and cryptocurrency m-wallets continuance intention.

3. Methodology

The research framework is presented in Figure 1. Two variables were taken from PAM and 3 (1 overlaps with PAM) from UTAUT. The confirmation variable in PAM is not included in the framework because it has no direct relationship with continuance intention.

A set of tested measurement items from prior research were adapted for the questionnaire of this study. The questionnaire consisted of two parts: (1) Demographic profile; and (2) Factors of continuance intention of using cryptocurrency m-wallets. There were three items for each variable, a total of 18 items, presented on a 5-point Likert scale varying from 1 (Strongly Disagree) to 5 (Strongly Agree).

Figure 1: Research Framework



Using the purposive sampling method, the research targeted 100 current cryptocurrency m-wallet users within Klang Valley to obtain primary data. The data was gathered after distributing the questionnaire through Google Forms between February and April 2021.

The partial least modelling was used to analyse the data with the model in this exploratory study. Thus, SmartPLS 3.0 software was used. A two-step evaluation was taken in PLS-SEM: (1) of the measurement model; and (2) of the structural model. The outcomes were interpreted by Hair et al. (2017) and Hair et al. (2019).

4. Results

A total of 106 valid data was successfully gathered during the data collection period. The male demographic is the majority with 78.3% as opposed to females (21.7%). The young adults (20-29) dominate slightly with 37.7%, however, when the 30-39 and 40-49 age groups are combined following Luno's 2020 report (Luno, 2020), the 30-49 age group becomes the dominant group with 57.7%. Most of the respondent's education level is bachelor's degrees and a majority are current employees.

A greater part of the respondents currently use one cryptocurrency m-wallet (96.2%), and when asked if they use a multi-currency cryptocurrency m-wallet, most of them said Yes (51.9%). For those who answered Yes, most had one currency currently in their multi-currency cryptocurrency m-wallet (44.3%).

The validity and reliability of the model were checked by looking at the internal consistency reliability, convergent validity, discriminant validity, and indicator loadings (Baumgartner & Weijters, 2017). The internal consistency reliability and convergent validity were determined by viewing Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). A rule of thumb for alpha is that it has to exceed 0.70, however, a score ≥ 0.50-0.70 is considered moderate reliability (Hinton et al., 2014). For composite reliability in an exploratory study, a score of ≥ 0.60 is adequate (Höck & Ringle, 2010) and > 0.90 indicates a redundancy issue with the item (Garson, 2016), however, the recommended maximum value to avoid redundancy is 0.95 (Hair et al., 2019). The AVE should be ≥ 0.50, however, this is a more conservative error measurement than CR. Thus, the conclusion of an adequate construct can be made just by looking at the CR (Fornell & Larcker, 1981).

Table 1: Construct Reliability and Validity

Variable	Cronbach's α	CR	AVE	No. of items
Continuance Intention	0.747	0.856	0.665	3
Performance Expectancy	0.604	0.793	0.565	3
Effort Expectancy	0.901	0.937	0.833	3
Perceived Security	0.602	0.791	0.560	3
Satisfaction	0.906	0.941	0.842	3
Social Influence	0.576	0.667	0.429	3

The Cronbach's alpha is above the threshold recommended by Hinton at ≥ 0.50 to show moderate reliability of items, and three variables have alphas of more than 0.70, thus their items are highly reliable. The CRs are shown to all be > 0.60. Two variables record scores that exceed 0.90, however these are still below the 0.95 cut-off point. The AVE is all above 0.50 except for Social Influence, but since its CR is adequate and the item adequacy conclusion can be formed by looking at the CR alone, the reliability of the items is acceptable.

The discriminant validity was tested by looking at the Heterotrait-Monotrait ratio (HTMT), a more sensitive way to detect any discriminant validity issue (Henseler et al., 2015), even more sensitive compared to the Fornell-Larcker criterion. The HTMT.85 is the most specific criterion with a threshold of 0.85, meaning that any comparison below

that is considered as discriminant validity being present. Table 2 shows that all the comparisons are well below 0.85, demonstrating discriminant validity.

Table 2: Discriminant Validity

Variable	CI	EE	PS	PE	SF	SI
CI	1					
EE	0.190	1				
PS	0.830	0.191	1			
PE	0.388	0.213	0.267	1		
SF	0.681	0.230	0.553	0.316	1	
SI	0.462	0.226	0.439	0.265	0.468	1

Note: CI = Continuance Intention; EE = Effort Expectancy; PS = Perceived Security; PE = Performance Expectancy; SF = Satisfaction; SI = Social Influence

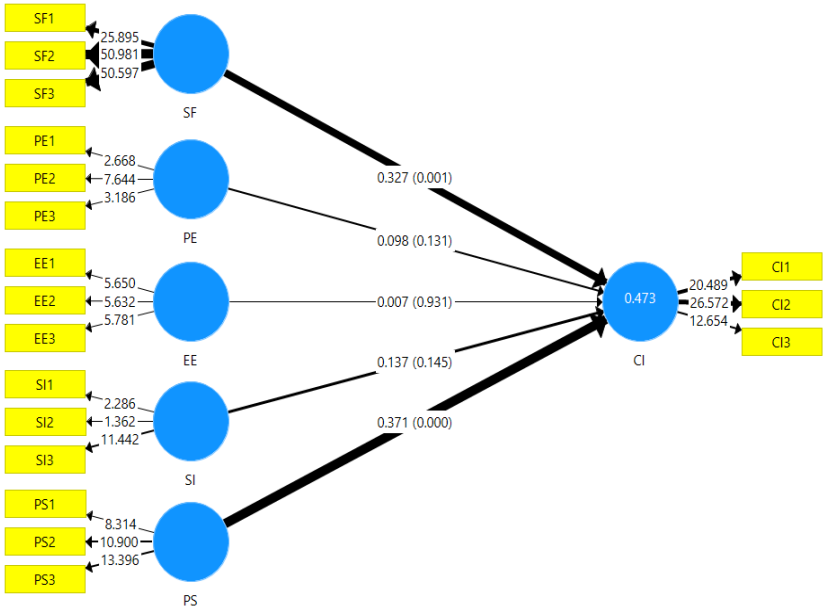
The indicator validity is measured by looking at the outer loadings of each item and it should be greater than 0.70 (Henseler et al., 2009) and anything below 0.40 should be removed. However, Straub and Gefen (2004) suggested another minimum value of 0.40. Table 3 shows that there are 4 items which are below the 0.70 thresholds: PE3 (0.640), PS1 (0.672), SI1 (0.557), and SI2 (0.366). The first three items are above Straub's recommended 0.40, thus they were kept. The SI2 item should have been removed but adhering to Hair et al. (2019)'s recommendation of a minimum of 3 items per variable to provide enough information to identify a solution for the construct, it was decided that SI2 would be retained.

The path coefficient, p-value, and t-value will determine whether any independent variable influences the dependent variable. Multicollinearity issues were not present, as the VIF values were all above 0.20 and below 5 (Hair et al., 2017). The bootstrapping procedure applied to this model uses 1,000 subsamples because many bootstrap subsamples are required when running the analysis for the final results (Garson, 2016). The research model with the bootstrapped outcome is illustrated in Figure 2.

Table 3: Indicator Loadings

Variable	Item	CI	EE	PS	PE	SF	SI
Continuance Intention	CI1	0.831					
	CI2	0.856					
	CI3	0.755					
Effort Expectancy	EE1		0.914				
	EE2		0.911				
	EE3		0.913				
Performance Expectancy	PE1				0.719		
	PE2				0.876		
	PE3				0.640		
Perceived Security	PS1			0.672			
	PS2			0.761			
	PS3			0.805			
Satisfaction	SF1					0.878	
	SF2					0.934	
	SF3					0.940	
Social Influence	SI1						0.557
	SI2						0.366
	SI3						0.918

Figure 2: Visualisation of Bootstrapping Outcome



The percentage of variance (R2) is shown on the dependent variable. The score of 0.473 indicates that the model explains 47.3% of the variation in continuance intention. Chin (1998) postulated that R2 results above 0.33 show a moderate level of strength, hence the model used in this study has a moderate effect at the structural level.

5. Discussion and Recommendation

The perceived security (β = 0.371, t = 4.661, p < 0.05) was the strongest predictor, confirming H5, and suggesting that when users believe that the cryptocurrency m-wallet service provider is doing good at making sure of the security and giving customers a risk-free experience, there is a high chance that they intend to continue using the wallet. This finding supports Baabdullah et al. (2019)'s where perceived security was significant in influencing continued intention to use m-banking. However, it contradicts those of Jin et al. (2019) and Lim et al. (2018), who found no influence of perceived security on continuance intention unless mediated by confirmation, performance expectancy, and satisfaction.

Meanwhile, satisfaction (β = 0.327, t = 3.328, p < 0.05) came as the second strongest in this study, confirming H1. The PAM posits satisfaction as the major predictor of continuance intention, but satisfaction becomes the second strongest in this study. This finding suggests that users who have a positive experience at the initial use stage are more likely to continue using the wallet, supporting past findings by many researchers, including Joo et al., (2018); Li & Fang (2019); and Wang et al. (2019), also suggesting that, on the contrary, dissatisfaction is a deterrent in continued use.

Performance expectancy (β = 0.098, t = 1.511, p > 0.05), which has often been the strongest predictor of IS adoption studies based on the Technology Acceptance Model (TAM) and UTAUT (Chau & Hu, 2001), was found not to have any significance in influencing continuance intention in this study, rejecting H2. This finding contradicts Onaolapo and Oyewole (2018) and Wu and Wu (2019). However, it supports the conclusion of Gupta et al. (2020). They discovered no significant relationship between perceived usefulness (performance expectancy) and continuance intention to use smart fitness wearables. This implies that performance expectancy influences satisfaction but will not influence continuance intention. This is arguably due to cryptocurrency wallet users valuing security more than convenience. They are fine with using wallets that require more time to utilise (Khan et al., 2019) if it means higher security. This explained performance expectancy's insignificant role and perceived security being the strongest predictor in this study.

Effort expectancy (β = 0.007, t = 0.086, p > 0.05) is also one of the most dominant factors of intention to adopt IS in UTAUT (Chong, 2013). However, it seems that it has

less impact when it comes to continuous usage intention. It has the weakest path to continuance intention, thus rejecting H3. This has also been seen in some previous research (Odoom & Kosiba, 2020; Hutabarat et al., 2021). Lee et al. (2019) attribute effort expectancy as not associated with the continuance intention of the delivery app to the advancement of technology that makes it easier for people to use. Indeed, this can also be backed by the fact that Malaysians use smartphones as the preferred Internet device.

Social influence (β = 0.137, t = 1.459, p > 0.05) has no significant role in continuance intention in this study, thus H4 was not supported. Tam et al. (2018) found little importance of social influence in predicting continuance intention of mobile apps, suggesting that factors that are significant for adoption intention may not be important for continuance intention. Looking at the responses received from the respondents of this study, existing users of cryptocurrency m-wallets may recommend certain m-wallets and users may put it into consideration. However, the decision to continue using it still falls in the hands of the users themselves. This study's findings suggest that users decided that security is more important than conforming to subjective norms. A summary of the findings is presented in Table 4.

Table 4: Bootstrapping Results Summary

Hypothesised path	Path coefficient	t-values	p-values	Results
SF → CI	0.327	3.328	0.001	Supported
PE → CI	0.098	1.511	0.131	Not Supported
EE → CI	0.007	0.086	0.931	Not Supported
SI → CI	0.137	1.459	0.145	Not Supported
PS → CI	0.371	4.661	0.000	Supported

6. Conclusion

In conclusion, perceived security, followed by satisfaction, positively influences the continued usage of m-wallet service. Performance expectancy and social influence do not significantly affect the intention to use m-wallet. Effort expectancy has less impact on continuous usage intention. This study implies the importance of security features to boost cryptocurrency m-wallet usage in Malaysia.

This study is inclined towards the perception of more than 78% of its male respondents. As such, future research is recommended to perform a gender balance data collection.

References

Al-Emran, M., Arpaci, I., & Salloum, S. A. (2020). An empirical examination of continuous intention to use m-learning: An integrated model. *Education and Information Technologies*, *25*(4), 2899–2918. https://doi.org/10.1007/s10639-019-10094-2

Ashraf, M., Ahmad, J., Hamyon, A. A., Sheikh, M. R., & Sharif, W. (2020). Effects of post-adoption beliefs on customers' online product recommendation continuous usage: An extended expectation-confirmation model. *Cogent Business and Management*, *7*(1). https://doi.org/10.1080/23311975.2020.1735693

Baabdullah, A. M., Alalwan, A. A., Rana, N. P., Patil, P., & Dwivedi, Y. K. (2019). An integrated model for m-banking adoption in Saudi Arabia. *International Journal of Bank Marketing*. https://doi.org/10.1108/IJBM-07-2018-0183

Bank Negara Malaysia (BNM). (2010). Financial Stability and Payment Systems Report 2009. In *The Financial Stability and Payment Systems Report*. https://doi.org/10.1111/j.1151-2916.1928.tb16483.x

Bank Negara Malaysia, & Securities Commission Malaysia. (2020). *BNM and SC's Joint Response on "Policy confusion over cryptocurrencies."* https://www.bnm.gov.my/-/bnm-and-sc-s-joint-response-on-policy-confusion-over-cryptocurrencies-

Barkhordari, M., Nourollah, Z., Mashayekhi, H., Mashayekhi, Y., & Ahangar, M. S. (2017). Factors Influencing Adoption of E-Payment Systems : An Empirical Study on Iranian Customers. *Information Systems and E-Business Management*, *15*(1). https://doi.org/10.1007/s10257-016-0311-1

Baumgartner, H., & Weijters, B. (2017). *Handbook of Marketing Decision Models*. Springer. https://doi.org/10.1007/978-3-319-56941-3

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly: Management Information Systems*, *25*(3), 351–370. https://doi.org/10.2307/3250921

Bhattacherjee, A., & Premkumar, G. (2004). Understanding Changes in Belief and Attitude toward Information Technology Usage: A Theoretical Model and Longitudinal Test. *MIS Quarterly*, *28*(2), 229–254.

Boomsma, A. (1982). The robustness of LISREL against small sample sizes in factor analysis models. In K. G. Jöreskog & H. Wold (Eds.), *Systems under indirect observation: Causality, structure, prediction (Part 1)*. North-Holland.

Chau, P. Y. K., & Hu, P. J. H. (2001). Information technology acceptance by individual professionals: A model comparison approach. *Decision Sciences*, *32*(4), 699–719. https://doi.org/10.1111/j.1540-5915.2001.tb00978.x

Chen, G., Xu, B., Lu, M., & Chen, N.-S. (2018). Exploring blockchain technology and its potential applications for education. *Smart Learning Environments*, *5*(1), 1–10. https://doi.org/10.1186/s40561-017-0050-x

Cheong, A. (2020). *Luno: Over RM827 Million Worth Of Transactions Processed In Malaysia Since 2019 Relaunch*. RinggitPlus. https://ringgitplus.com/en/blog/personal-finance-news/luno-over-rm827-million-worth-of-transactions-processed-in-malaysia-since-2019-relaunch.html

Chin, W. W. (1998). The partial least squares approach for structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (Issue April, pp. 295–336). Lawrence Erlbaum Associates.

Cho, J., & Lee, H. E. (2020). Post-adoption beliefs and continuance intention of smart device use among people with physical disabilities. *Disability and Health Journal*, *13*(2), 100878. https://doi.org/10.1016/j.dhjo.2019.100878

Chong, A. Y. (2013). Predicting m-commerce adoption determinants: A neural network approach. *Expert Systems With Applications*, *40*, 523–530. https://doi.org/10.1016/j.eswa.2012.07.068

Daneji, A. A., Khambari, M. N. M., Mohd Ayub, A. F., & Wan Jaafar, W. M. (2017). Influence of students' perceived ease of use, perceived usefulness and time spent towards students' continuance intention using mooc among public university students. *3rd International Conference on Education in Muslim Society (ICEMS 2017)*, *115*. https://doi.org/10.2991/icems-17.2018.50

Darmawan, D., Mardikaningsih, R., & Hadi, S. (2017). The Effect of Service Quality, Customer Satisfaction and Corporate Image on Customer Loyalty in the banking sector in Indonesia. *Journal of Business Management*, *19*(11), 46–51. https://doi.org/10.31219/osf.io/uxsfr

Das, P., Faust, S., & Loss, J. (2019). A Formal Treatment of Deterministic Wallets. *2019 ACM SIGSAC Conference on Computer and Communications Security*.

Dattani, J., & Sheth, H. (2019). Overview of Blockchain Technology. *Asian Journal of Convergence in Technology*, *05*(01), 1–4. https://doi.org/10.33130/ajct.2019v05i01.013

Eliasi, B., & Javdan, A. (2019). *Comparison of blockchain e- wallet implementations*.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Analytics*, *18*(1).

Gao, S., Yang, X., Guo, H., & Jing, J. (2018). An Empirical Study on Users' Continuous Usage Intention of QR Code Mobile Payment Services in China. *International Journal of E-Adoption*, *10*(1), 18–33. https://doi.org/10.4018/ijea.2018010102

Garson, G. D. (2016). Partial Least Squares: Regression & Structural Equation Models. In *Multi-Label Dimensionality Reduction*. https://doi.org/10.1201/b16017-6

Gillies, F. I., Lye, C.-T., & Tay, L.-Y. (2020). Determinants of Behavioral Intention To Use Bitcoin in Malaysia. *Journal of Information System and Technology Management*, *5*(19), 25–38. https://doi.org/10.35631/jistm.519003

Gupta, A., Dhiman, N., Yousaf, A., & Arora, N. (2020). Social comparison and continuance intention of smart fitness wearables: an extended expectation confirmation theory perspective. *Behaviour & Information Technology*. https://doi.org/10.1080/0144929X.2020.1748715

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., Black, W. C., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). Cengage. https://doi.org/10.1002/9781119409137.ch4

Hair, J. F., Hult, G. T. M., & Ringle, C. M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). SAGE.

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. https://doi.org/10.1108/EBR-11-2018-0203

Henseler, J., Ringle, C. M., & 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), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, *20*, 277–319. https://doi.org/10.1108/S1474-7979(2009)0000020014

Hinton, P. R., McMurray, I., & Brownlow, C. (2014). SPSS Explained. In *e-conversion - Proposal for a Cluster of Excellence* (2nd ed.). Routledge.

Höck, M., & Ringle, C. M. (2010). Local strategic networks in the software industry: An empirical analysis of the value continuum. *International Journal of Knowledge Management Studies*, *4*(2), 132–151. https://doi.org/10.1504/IJKMS.2010.030789

Huarng, K. H., & Yu, M. F. (2019). Customer satisfaction and repurchase intention theory for the online sharing economy. *Review of Managerial Science*, *13*(3), 635–647. https://doi.org/10.1007/s11846-018-0321-0

Hutabarat, Z., Suryawan, I. N., Andrew, R., & Akwila, F. P. (2021). Effect Of Performance Expectancy And Social Influence On Continuance Intention In OVO. *Jurnal Manajemen*, *25*(1), 125. https://doi.org/10.24912/jm.v25i1.707

Jansen, D.-J., Mosch, R. H. J., & van der Cruijsen, C. A. B. (2015). When Does the General Public Lose Trust in Banks? *Journal of Financial Services Research*, *48*, 127–141. https://doi.org/10.1007/s10693-014-0201-y

Jin, C. C., Seong, L. C., & Khin, A. A. (2019). Investigating of factors affecting the consumers' adoption of m-wallet in Malaysia. *UPM 2019 National Seminar on Digitalizaton, Sustainability & Globalization*.

Jo, D. (2018). Exploring the determinants of MOOCs continuance intention. *KSII Transactions on Internet and Information Systems*, *12*(8), 3992–4005. https://doi.org/10.3837/tiis.2018.08.024

Jokić, S., Cvetković, A., Adamović, S., Ristić, N., & Spalević, P. (2019). Comparative analysis of cryptocurrency wallets vs traditional wallets. *Ekonomika*, *65*(3), 65–75. https://doi.org/10.5937/ekonomika1903065j

Jonker, N. (2019). What drives the adoption of crypto-payments by online retailers? *Electronic Commerce Research and Applications*, *35*(April), 100848. https://doi.org/10.1016/j.elerap.2019.100848

Joo, Y. J., Park, S., & Shin, E. K. (2017). Students' expectation, satisfaction, and continuance intention to use digital textbooks. *Computers in Human Behavior*, *69*, 83–90. https://doi.org/10.1016/j.chb.2016.12.025

Junadi, & Sfenrianto. (2015). A Model of Factors Influencing Consumer's Intention to Use E-payment System in Indonesia. *Procedia Computer Science*, *59*(Iccsci), 214–220. https://doi.org/10.1016/j.procs.2015.07.557

Khan, A. G., Zahid, A. H., Hussain, M., & Riaz, U. (2019). Security Of Cryptocurrency Using Hardware Wallet And QR Code. *2019 International Conference on Innovative Computing (ICIC)*.

Kim, S. H., Bae, J. H., & Jeon, H. M. (2019). Continuous intention on accommodation apps: Integrated value-based adoption and expectation-confirmation model analysis. *Sustainability (Switzerland)*, *11*(6), 1–17. https://doi.org/10.3390/su11061578

Lee, S. W., Sung, H. J., & Jeon, H. M. (2019). Determinants of continuous intention on food delivery apps: Extending UTAUT2 with information quality. *Sustainability (Switzerland)*, *11*(11). https://doi.org/10.3390/su11113141

Lee, Y. P., Tsai, H. Y., & Ruangkanjanases, A. (2020). The determinants for food safety push notifications on continuance intention in an e-appointment system for public health medical services: The perspectives of utaut and information system quality. *International Journal of Environmental Research and Public Health*, *17*(21), 1–15. https://doi.org/10.3390/ijerph17218287

Li, C. Y., & Fang, Y. H. (2019). Predicting continuance intention toward mobile branded apps through satisfaction and attachment. *Telematics and Informatics*.

https://doi.org/10.1016/j.tele.2019.101248

Lim, S. H., Kim, D. J., Hur, Y., & Park, K. (2018). An Empirical Study of the Impacts of Perceived Security and Knowledge on Continuous Intention to Use Mobile Fintech Payment Services. *International Journal of Human-Computer Interaction*, *35*(10), 886–898. https://doi.org/10.1080/10447318.2018.1507132

Linardi, K., & Anggono, A. H. (2019). An Empirical Study On User's Continuous Usage Intention Of Mobile Payment Services Among Generation Z In Bandung City. *The 4th ICMEM 2019 and The 11th IICIES 2019*.

Maduku, D. K. (2017). Understanding E-Book Continuance Intention: Empirical Evidence from E-Book Users in a Developing Country. *Cyberpsychology, Behavior, and Social Networking*, *20*(1), 30–36. https://doi.org/10.1089/cyber.2016.0287

Malaysian Communications And Multimedia Commission. (2020). *Internet Users Survey 2020*. https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/IUS-2020-Infographic.pdf

Mandal, D., & McQueen, R. J. (2012). Extending UTAUT to Explain Social Media Adoption by Microbusinesses. *International Journal of Managing Information Technology*. https://doi.org/10.5121/ijmit.2012.4401

Miraz, M. H., Hassan, M. G., & Mohd Sharif, K. I. (2020). Factors affecting implementation of blockchain in retail market in Malaysia. *International Journal of Supply Chain Management*, *9*(1), 385–391.

Mohania, S., & Singh, S. (2020). An analysis of cryptocurrency and its challenges. *EPRA International Journal of Multidisciplinary Research (IJMR)*, *6*(4), 104.

Mombeuil, C., & Uhde, H. (2021). Relative convenience, relative advantage, perceived security, perceived privacy, and continuous use intention of China's WeChat Pay: A mixed-method two-phase design study. *Journal of Retailing and Consumer Services*, *59*(November 2020), 102384. https://doi.org/10.1016/j.jretconser.2020.102384

Mutiso, D. A., & Maguru, B. (2020). An Assessment of the Adoption of Cryptocurrency As a Mode of Payment By Smes in Kiambu County, Kenya. *International Journal of Social Science and Economic Research*, *5*(7), 2000–2013. https://doi.org/10.46609/ijsser.2020.v05i07.023

Nabavi, A., Taghavi-Fard, M. T., Hanafizadeh, P., & Taghva, M. R. (2016). Information Technology Continuance Intention: A Systematic Literature Review. *International Journal of E-Business Research*, *12*(1), 58–95. https://doi.org/10.4018/IJEBR.2016010104

Nakamoto, S. (2008). *Bitcoin: A Peer-to-Peer Electronic Cash System*. https://bitcoin.org/bitcoin.pdf

Odoom, R., & Kosiba, J. P. (2020). Mobile money usage and continuance intention among micro enterprises in an emerging market – the mediating role of agent credibility. *Journal of Systems and Information Technology*, *April*. https://doi.org/10.1108/JSIT-03-2019-0062

Oliver, R. L. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. *Journal of Marketing Research*, *17*(4), 460–469. https://doi.org/10.1177/002224378001700405

Onaolapo, S., & Oyewole, O. (2018). Performance expectancy, effort expectancy, and facilitating conditions as factors influencing smart phones use for mobile learning by postgraduate students of the University of Ibadan, Nigeria. *Interdisciplinary Journal of E-Skills and Lifelong Learning*, *14*, 095–115.

Ooi, S. K., Ooi, C. A., Yeap, J. A. L., & Goh, T. H. (2020). Embracing Bitcoin: users' perceived security and trust. *Quality and Quantity*, *October*. https://doi.org/10.1007/s11135-020-01055-w

Perkins, D. W. (2020). *Cryptocurrency: The Economics of Money and Selected Policy Issues*. https://crsreports.congress.gov

Rehman, M. H. ur, Salah, K., Damiani, E., & Svetinovic, D. (2019). Trust in Blockchain Cryptocurrency Ecosystem. *IEEE Transactions on Engineering Management*, *67*(4), 1196–1212. https://doi.org/10.1109/tem.2019.2948861

Roos, C. (2015). The motivation and factors driving crypto-currency adoption in SMEs. *Master Thesis, Gordon Institute of Business Science, University of Pretoria*, *November*, 1–114.

Saadon, M. S. I., & Long, C. S. (2020). E-Wallet Acceptance among Undergraduates in Malaysia. *TEST Engineering & Management*. https://www.researchgate.net/publication/341895171

Shang, D., & Wu, W. (2017). Understanding mobile shopping consumers' continuance intention. *Industrial Management and Data Systems*, *117*(1), 213–227. https://doi.org/10.1108/IMDS-02-2016-0052

Singh, S. (2020). An integrated model combining ECM and UTAUT to explain users' post-adoption behaviour towards mobile payment systems. *Australasian Journal of Information Systems*, *24*(October), 0–27. https://doi.org/10.3127/ajis.v24i0.2695

Straub, D., & Gefen, D. (2004). Validation Guidelines for IS Positivist Research. *Communications of the Association for Information Systems*, *13*(March). https://doi.org/10.17705/1cais.01324