

Factors Affecting Adoption Of E-Wallet Among Gen Y In Pahang

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Abstract

As technology advances and the number of smartphone users and mobile internet applications increases, more E-wallets are being established. The factors influencing E-wallet adoption among Gen Y in Pahang will be discussed in this study. This study addressed four influencing factors that include ease to use, security, social influence and speed of transaction. A survey was sent to 384 Gen Y in Pahang, and data was analysed using the Statistical Package for Social Sciences (SPSS). The findings of this study show that all of the determinants (ease to use, security, social influence and speed of transaction) have a significant impact on E-wallet adoption. Finally, the implications of the findings were examined, as well as suggestions for further research.

Keywords: Ease to use, Security, Social Influence, Speed of Transaction, Adoption of E-wallet

1. Introduction

Mobile payment is gaining popularity due to the rapid growth of smartphone users and mobile applications around the world. The development of E-wallet, also known as E-payment, has been fueled by the enormous increase in internet and smartphone usage. E-wallet is becoming more popular as an electronic payment option for everyday transactions all around the world. An E-payment system is a method of transacting or paying for goods and services using an electronic medium rather than cheques or cash. E-payment systems are quickly becoming a bold way of payment in today's commercial environment.

Aside from that, the rise of online shopping and banking has aided in the widespread acceptance of electronic payments (Wróbel-Konior, 2016). Consumers will find the new payment method more convenient than traditional paper money and coins. E-payment systems, on the other hand, have become increasingly vital in today's industry. Various sorts of E-payment systems, such as credit cards, debit cards, internet banking, E-wallet, and various types of E-money, are being employed in this modern era.

E-wallet services are widespread in India and China (Jayaseelan, 2017), although they are still uncommon in Malaysia. While cash payments are currently the primary mode of trade in Malaysia, the trend may change as the acceptance of cashless payments grows (Lim & Appaduray, 2017). As a result, the government has provided an incentive for Malaysians to use E-wallets in order to live a cashless lifestyle. According to Tariq (2020), the government announced the RM450 million e-Tunai Rakyat project, which provided Malaysians

with an RM30 E-wallet incentive. Touch 'n Go eWallet, Boost, and GrabPay are the three E-wallet service providers chosen by the government to participate in the initiative.

In Malaysia, Gen Y has recently emerged as the group with the greatest rate of mobile phone users. According to a survey conducted by the Malaysian Communication and Multimedia Commission (2018), smartphone owners aged 20 to 34 were the most prevalent in the study. According to the report, young adults with relatively high income and education levels account for 74% of smartphone users in Malaysia. Despite Malaysia's low mobile payment adoption rate, Gen Y appears to be a prospective consumer because they are likely to improve their propensity to utilize E-payment systems in the future. However, no steps have been taken to explore Generation Y's intentions about the implementation of E-payment in this region. Most of the research is conducted in overseas although many studies on consumer intention towards E-payment are not rare.

2. Literature Review

The examination of the past research literature provides an understanding of the factors affecting adoption of E-wallet among gen Y, a better understanding of how the effects of ease to use, security, social influence and speed of transaction influence Gen Y adoption of E-wallet. In addition, how the moderating variable of demographic factors (gender) impact on E-wallet adoption. Hence, the factors affecting adoption of E-wallet among Generation Y has been discussed.

2.1 Adoption of E-wallet

Straub (2009) mentioned that the theory of adoption attempts to investigate how people choose and respond when new technology comes into contact and decide on whether or not to accept it. As stated in the study of Sahin (2006) about Rogers' theoretical review, adoption is the outcome of deciding of using a new invention as the best way. At the other hand, he noted that rejection is the opposite of adoption that does not adopt innovation.

According to Davis et al. (2017), the variables that influence the use of E-wallet and the understanding of E-wallet users in Chennai City were analysed in the study by using questionnaires to collect responses from respondents. E-wallet can save more time and is considered a convenient feature for mobile phones on digital platforms at all times.

Amin (2009) research focused on the acceptance of mobile wallets in Sabah, Malaysia. The survey was used to obtain data from the bank's customers in Sabah which targeted as main respondents. Likewise, the aim of the study is to extend the research of factors affecting bank customers' adoption of E-wallet by applying Technology Acceptance Model (TAM) theory and make the adoption of E-wallet in Malaysia more reflective. Wang and Gu (2017) integrated the expanded Technology Acceptance Model (TAM) and the social theory to analyse how people accept WeChat payment as a mobile wallet, and how social theory influences acceptance through collection of WeChat users' data.

2.2 Factors Affecting Adoption E-wallet among Gen Y

2.2.1 Ease to Use

The ease to use is defined as the level at which users think that using a new service is simple, easy, and

effortless (Davis, 1989). Research on the acceptance of electronic payment system which conducted by Roy and Sinha (2014) was intended to evaluate the factors affecting consumer adoption by TAM. In this study, they found that perceived ease of use considered to be the most significant factor.

In the digital payment era, India had been developed gradually. Batra and Kalra (2016) mentioned that as the penetration of smartphone and ever-increasing internet, the country will witness the widespread acceptance of digital payments in the coming year. The purpose of the study is to analyse the customer adoption patterns of digital wallet. The study found that respondents prefer to use wallets as it was ease of use and save time.

H1: There is a significant relationship between ease to use and adoption of E-wallet.

2.2.2 Security

Junadi and Sfenrianto (2015) stated that security defined as a set of programs and procedures for evaluating the sources of information and ensuring privacy and integrity to prevent network and data problems. It is about how E-payment systems secure consumers information as they make payment. One of the factors in this study was security and resulted it was a positive significant factor that affecting consumer intention toward adoption of EPS. This means that when the security of the E-wallet is further improved, the intention to use EPS will be enhanced.

Besides, some of the factors also being studied by Rathore (2016) is the factors that influence consumer adoption of E-wallet as well as security. The research showed that security is not the main factor in affecting consumers use E-wallet, but it is the most challenging factor for users. The E-wallet adoption will increase and then the risk will reduce if the security issues have been effectively addressed.

According to the research by Batra and Kalra (2016), the aim of their research was to examine the use patterns of E-wallet by the respondents. They pointed out that the safety of money transaction was the respondents' main concern. In other words, more users will be driven to adopt E-wallet when the E-wallet system becomes more safe and secure.

Most previous studies have shown that security is an important factor which affects the acceptance of E-wallet (Batra & Kalra, 2016; Junadi & Sfenrianto, 2015). However, Teoh et al. (2013) did not agree on the significant positive result. The finding revealed that ease of use, benefits and self-efficacy were positively correlation with consumer perception toward E-payment. Nevertheless, security has no significant relationship with consumer perception of E-payment.

H2: There is a significant relationship between security and adoption of E-wallet.

2.2.3 Social Influence

Yang et al. (2012) mentioned that social influence had a significant indirect influence during the initial of adoption on mobile payment in China. Therefore, this research concluded that social influence has a direct impact on potential and current users.

Junadi and Sfenrianto (2015) was to evaluate the consumer intention in using mobile payment in Indonesia. The study indicated that social influence has a positive influence on the consumer intention in using E-payment service. Besides that, Cao et al. (2016) study aimed to analyse the factors influencing consumer intention to use mobile wallet. Perceived ease of use, usefulness, trust, social influence enjoyment,

and behavioural control are the factors which used in the research. The outcomes of this research indicated that there is a significant relationship between social influences on intention use mobile payment.

Most of the previous research mentioned that social influence has a positive impact on consumer intention in the use of mobile payment, but some analysis has demonstrated that there is no direct effect. Aydin and Burnaz (2016), stated that social influence is no significant on mobile payment adoption. due to lower penetration and understanding among people about mobile payment system.

H3: There is a significant relationship between social influence and adoption of E-\
wallet.

2.2.4 Speed of Transaction

Speed of transaction was used as one of the variables that could affect the decision making of consumers toward acceptance of E-wallet. Dewan and Chen's (2005) research aimed to identify the consumer intention on adoption of mobile payment among American consumers. Under the perceived usefulness issue, transaction speed and convenience were tested for the usefulness of mobile payment. The research found that consumers were satisfied with the ease of use, usefulness, convenience, and transaction speed of mobile payment. Many respondents think the use of mobile payment will improve the transactions speed.

The aim of Roozbahani et al. (2015) research was to investigate the relationship between E-payment tools and E-banking and customer satisfaction. The findings had been shown that speed and efficiency have a significant correlation with E-payment tools and customer satisfaction. The other factors that applied in this research are also indicated that there is significant correlation with customer satisfaction toward E-payment tools.

Pagani (2004) considered speed to be least significant for youth. However, the results of the determinant analysis vary by age group and showed that people between the age of 18 to 24 are more worried with the speed of use. Moreover, Chen and Nath (2008) discussed that the factor affecting the mobile payment acceptance from the perspective of US consumers. The finding of the study is the transaction speed had a significant correlation with the mobile payment 's intention to adopt.

H4: There is a significant relationship between speed of transaction and adoption of E-\
wallet.

2.3 Moderator : Gender

Gender differences should be considered and act as an important moderator, which will have an impact on the research outcomes (Ha et al. 2007; Sun & Zhang, 2006; Shin, 2009). According to the theoretical framework used in Shin (2009) research, apart from attitudes and behavioural intention that will influence the E-wallet adoption, gender also indicate significant correlations. Furthermore, Ha et al. (2007) observed that gender, age, and personal income can strengthen the relationship that has been tested in different models. Besides, Chen and Nath (2008) indicated that gender has a significant impact on mobile payment adoption.

A research was carried out in Tanzania and data from mobile payment user was obtained in the study of Lwoga and Lwoga (2017). This research showed that there is significant on gender difference when evaluating the mobile payment behavioural intention. When considering gender difference in measuring

behavioural intention with compatibility variables, individual innovativeness, societal influence, ease of use, overall, males have a more important effect than females. To clarify the social influence and norms to be more specifically, females are more likely to be more influenced by the norms of the surrounding environment than males. This outcome is consistent with the research of other researchers (Hamza & Shah, 2014; Venkatesh et al., 2003). Nonetheless, research rejects the argument that gender may indicate difference in understanding level and effect on accepting mobile wallet services (Manikandan & Chandramohan, 2016).

H5: There is a significant moderating effect of gender between ease to use, security, social influence, speed of transaction and adoption of E-wallet.

3. Methodology and Analysis

This research uses quantitative research design. There are 384 sets of questionnaires that are distributed to the Gen Y respondents who live in in the East Coast region of Malaysia (Pahang). This location was selected for the study because Pahang is the third highest among seven states grew at a faster pace than the national growth of 7.8% in 2017. This indicates that economy of Pahang is growing strongly, and researcher believe this will lead to higher adoption rate based on the source from Department of Survey and Mapping Malaysia, 2018. This survey was distributed among respondents through social Google survey. The research closely examined the demographic variables of Generation Y in order to examine the potential users of E-wallet as they have a better understanding of the internet and technology, and they will not be easily dissatisfied if they encounter any challenges when using E-wallet.

4. DATA ANALYSIS

4.1 Descriptive analysis

Data were collected from 384 questionnaires distributed in Pahang, Malaysia for Generation Y. Gender, age, monthly income, do you own a smartphone, have you heard about E-wallet before and do you consider using E-wallet in the future are all personal information considered in this study. There are 222 males (57.8%) and 162 females (42.2%) among the respondents. The age range of the responders is between 20 and 40 years old. The range of income levels is from less than RM1000 to more than RM5000. All of the respondents (100%) own a smartphone, and 382 (99.5%) have heard of E-wallet previously. However, just 379 respondents (98.7%) would consider to use an e-wallet in the future.

4.2 Correlation analysis

The Pearson Correlation test examined the relationship between independent variables (ease to use, security, social influence and speed of transaction) and dependent variable (adoption of E-wallet). The outcome of the correlations is summarised in Table 1.

Table 1: Correlations

	Ease to use	Security	Social influence	Speed of transaction	Adoption of E-wallet

Ease to use	Pearson Correlation	1	.461**	.438**	.509**	.612**
	Sig. (2-tailed)		.000	.000	.000	.000
Security	Pearson Correlation	.461**	1	.616**	.389**	.580**
	Sig. (2-tailed)	.000		.000	.000	.000
Social influence	Pearson Correlation	.438**	.616**	1	.512**	.639
	Sig. (2-tailed)	.000	.000		.000	.000
Speed of transaction	Pearson Correlation	.509**	.389**	.512**	1	.678**
	Sig. (2-tailed)	.000	.000	.000		.000
Adoption of E-wallet	Pearson Correlation	.612**	.580**	.639**	.678**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

As shown in Table 1, all variables are significantly linked to the adoption of E-wallet. As a result, it indicated that speed of transaction has the highest correlation value with 0.678 which is significant at 0.01 level (2 tailed). Security, on the other hand, has the lowest correlation value of 0.580, which is significant at the 0.01 level.

4.3 Multiple Regression analysis

Multiple regression analysis was employed in this study to investigate at the impacts of independent variables (ease to use, security, social influence and speed of transaction) on dependent variable (adoption of E-wallet)

Table 2: Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	.806 ^a	.650	.646	.37858

The results of multiple regression analysis for adoption of E-wallet are summarised in Table 2. The R-square value was .650, indicating that the four independent variables can explain 65 percent of the variance in adoption of E-wallet. Other variables not examined in the study influenced the remaining 35.0 percent.

4.4 Empirical Results

Table 3 has shown that all proposed determinants are significantly associated with the adoption of the E-wallet with coefficient estimation of ease to use (Beta=0.290; p=0.000), security (Beta=0.159; p=0.000),

social influence (Beta=0.236; p=0.000) and speed of transaction (Beta=0.356; p=0.000). The sign of the regression standardized estimate (Beta) represents the positive or negative impact of the predictors on the dependent variable. Therefore, it can be stated that all determinants (ease to use, security, social influence and speed of transaction) have positive effect on adoption of E-wallet. With reference to Table 3, the regression equation is as follows:

$$\text{Adoption of E-wallet} = -0.046 + 0.290 (\text{ease to use}) + 0.159 (\text{security}) + 0.236 (\text{social influence}) + 0.356 (\text{speed of transaction})$$

Table 3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Constant	-.046	.170		-.274	.785
	Ease to Use	.290	.045	.240	6.392	.000
	Security	.159	.035	.184	4.590	.000
	Social Influence	.236	.042	.234	5.600	.000
	Speed of Transaction	.356	.037	.364	9.561	.000

Additionally, this study includes gender as a moderator variable in Table 4 to examine the association between all of the independent variables (ease to use, security, social influence and speed of transaction) and dependent variable (adoption of E-wallet). The relationship between ease to use and adoption of E-wallet, the moderating effect of gender result indicate that Beta = 0.245 and t-value = 2.515 at significant level of 0.012, so ease to use and gender have a significant and positive relationship with adoption of E-wallet. The relationship between security and adoption of E-wallet, the moderating effect result indicate that the Beta value = 0.019 and t-value = 0.264 at significance level of 0.792 which is greater than 0.05 so security and gender have no significant and positive relationship with adoption of E-wallet. While, the relationship between social influence and adoption of E-wallet, the moderating effect result indicate that the Beta value = 0.165 and t-value = 1.983 at significance level of 0.048 which is lower than 0.05 so social influence and gender have a significant and positive relationship with adoption of E-wallet. The relationship between speed of transaction and adoption of E-wallet, the moderating effect result indicate that the Beta = -0.046 and t-value = -0.616 at significance level of 0.538 which is greater than 0.05 so speed of transaction and gender have no significant and negative relationship with adoption of E-wallet.

Table 4: Coefficients (Moderating effect of gender)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		

Ease to Use*Gender	.245	.098	.830	2.515	.012
Security*Gender	.019	.072	.056	0.264	.792
Social Influence*Gender	.164	.083	.496	1.983	.048
Speed of Transaction* Gender	-.046	.074	-.151	-.616	.538

5. Discussion and Research Implications

This study aims to determine the influence of ease to use, security, social influence and speed of transaction on adoption of E-wallet. The result of this reveals that ease to use, security, social influence and speed of transaction influence adoption of E-wallet.

The ease to use is defined as the level at which customers believe that utilising a new service is straightforward, easy, and seamless (Davis, 1989). Ease to use is interpreted as the consistency between the basic needs of users, technological development, and user experience. With the new technology of E-payment system becomes more user-friendly, users have built up confidence and the habit to use it.

If E-wallets are easy to use, the rate of adopting E-wallets will increase, and vice versa. Anyanwu et al. (2012) found that the E-payment system should be easy to use and that it will have an impact on the expansion of E-payment in Nigeria since it is a significant factor. According to Roy and Sinha (2014), Junadi and Sfenrianto (2015) as well as Batra and Kalra (2016), they also indicated that ease to use is a main factor influencing the adoption of the E-Payment system.

Security is described as a set of programmes and methods for analysing the sources of information and protecting privacy and integrity in order to prevent from network and data problems. It is about how E-payment systems secure consumers information while they are making a payment (Junadi and Sfenrianto, 2015). This means that the security of E-wallet will affect the decision making of users to adopt E-wallet. The result agreed by Junadi and Sfenrianto (2015) which indicates that as further changes are made to the security of the E-wallet, the ability to use E-payment system will be improved. According to Rathore (2016), Manikandan and Jayakodi (2017) as well as Batra and Kalra (2016), they also found that security is one of the factors that influence the adoption of E-payment. Merchants should convince users that the website is a safe and secure area where a long-term partnership can be established and sustained, leaving users with the impression of a trustworthy company. This can be achieved by educating users on the availability of safety features of their online transactions, which can be safely.

The social influence of individual expectations and image forms has a strong impact on the continued adoption of E-payments. A main factor influencing the adoption of E-payment was the influence of families, relatives, and others. Junadi and Sfenrianto (2015) and Cao et al., (2016) also indicated that consumers decision to use the E-payment system is strongly influenced by social influence. As the social influence is a significant factor, the marketing team should promote the e-payment services through the influencers whose opinion is respected.

Speed of transaction was used as one of the variables that could affect the decision making of consumers toward acceptance of E-wallet. The adoption rate of E-wallet will increase if the speed of transaction has improved. Since the respondents in this study mostly are young people, they believe that speed is a key factor affecting their adoption of E-wallet. This agreed by Pagani (2004) which young people are more likely to prioritize speed of use than other factors. According to Tella and Olasina (2014), Vinitha and Vasantha (2017), they also found that speed has an important relationship with the sustainability of using E-payments. E-wallet merchants can show that advantages can be found to increase the usage rate. Dewan and

Chen (2005), Chen and Nath (2008) has indicated that the speed of transaction in E-wallet should be increased and beyond traditional forms of payment, as users do not like to waste their time on unnecessary and boring things. Roozbahani et al., (2015) also mentioned that speed means that emerging technology can be incorporated rapidly with current systems and methods to adapt rapidly to users demands and expectations. Thus, speed of transaction has been proved to be the most affecting factors toward adoption of E-wallet among Gen Y in Pahang. It had been proved as the important factors which affecting adoption of E-wallet as because the time taken for certain transaction will impact the decision making of users to use E-wallet. If users believe they can complete payments faster than other traditional methods, they are more likely to use E-wallets. Users do not need to wait for the cashier to calculate the change or wait for the credit card terminal to process the payment, but only need to wait for the scan of their mobile device to pay.

According to Venkatesh et al., (2003), one of the significant moderating variables in technology field is gender. From the results, there is a significant moderating effect of gender between ease to use and adoption of E-wallet. This result is consistent with Ha et al. (2007) where ease of use has a higher impact on the usefulness of the payment system among men than women. Besides, there is a significant moderating effect of gender between social influence and adoption of E-wallet. This result is consistent with Lwoga and Lwoga (2017). When studying the behavioural intention of E-payment, women show less influence than men. However, gender does not moderate security and adoption of E-wallet. This means that there is a no significant moderating effect of gender between security and adoption of E-wallet. This finding is in line with Shin (2009). Security is evidently related to males and females. This is an area to be tackled, especially when using E-wallets. It is important to recognize the security perceived by users before undertaking on the issue of expanding E-wallet facilities. Moreover, for speed of transaction indicates that gender does not moderate speed of transaction and adoption of E-wallet. This means that there is a no significant moderating effect of gender between speed of transaction and adoption of E-wallet. The finding is inconsistent with Chen and Nath (2008) where the men is more emphasis speed than women. The development of individuals in modern society reflects the increasingly digital trend, especially when activity is without economic risk. This is because other researchers have discovered gender differences give impacts when using E-wallets. Similarly, the key influence of behaviours among E-wallet users has been expecting these findings in some way across the study. In short, past views on gender may be obsolete in terms of technology adoption and usage.

This study may be able to make certain contributions to various social groups. Knowledge provided in this study will provide better understanding of guideline and reference to some developers on concerns that should be addressed when offering the service. Future researchers may be interested in the degree of acceptance and the various factors affecting the adoption of E-wallet, and some benefits can be gained from this study. Future researchers can eliminate irrelevant variables and they can also consider different variables in different period when conducting future research for various target respondents.

This study has some limitations which focused on generation Y only. If this study extends the population by including other generation such as Generation Z, Generation X and Baby Boomers, it may affect the outcome of E-wallet adoption. People with different generations have different needs and wants, so it could be different to embrace E-wallet service.

For future research is to broaden the research model in this study in order to obtain a deeper understanding of the factors affecting E-wallet adoption. This study only addresses four factors affecting E-wallet adoption. Hence, further research might include other factors that can play a role in assessing user acceptance, such as usefulness, benefit, and trust. In addition, future research is encouraged to add in research on continued use intentions. Hence, the entire research objective had been successful achieve and prove.

References

- Amin, H. (2009). Mobile wallet acceptance in Sabah: An empirical analysis. *Labuan Bulletin of International Business & Finance*, 7, 33-52.
- Anyanwu, A. C., Ezugwu, A. E., & Abdullahi, S. E. (2012). Electronic payment system (EPS): Facilitating the development and adoption in Nigeria. *IJCIS International Journal of Computer Science Issues*, 9(2), 462-467.
- Aydin, G., & Burnaz, S. (2016). Adoption of mobile payment systems: A study on mobile wallets. *Journal of Business, Economics and Finance*, 5(1), 73-92.
- Batra, R., & Kalra, N. (2016). Are digital wallets the new currency?. *Apeejay Journal of Management and Technology*, 11(1), 29-30.
- Cao, T. K., Dang, P. L., & Nguyen, H. A. (2016). Predicting consumer intention to use mobile payment services: Empirical evidence from Vietnam. *International Journal of Marketing Studies*, 8(1), 117-124.
- Chen, L. D., & Nath, R. (2008). Determinants of mobile payments: An empirical analysis. *Journal of International Technology and Information Management*, 17(1), 9-20.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 318-330.
- Davis, K. J., Balaji, P., & Gurusamy, S. (2017). Whether E-wallets are really a catalyst towards expedition of cashless economy? : An empirical investigation in the aftermath of demonetization. *IOSR Journal of Business and Management*, 1, 50-55.
- Dewan, S. G., & Chen, L. D. (2005). Mobile payment adoption in the US: A cross-industry, crossplatform solution. *Journal of Information Privacy and Security*, 1(2), 4-28.
- Ha, I., Yoon, Y., & Choi, M. (2007). Determinants of adoption of mobile games under mobile broadband wireless access environment. *Information & Management*, 44(3), 276-286.
- Hamza, A., & Shah, A. (2014). Gender and mobile payment system adoption among students of tertiary institutions in Nigeria. *International Journal of Computer and Information Technology*, 3(1), 13-20.
- Jayaseelan, R. (2017, July 29). The e-wallet race heats up. *The Star Online*. Retrieved October 24, 2019, from <https://www.thestar.com.my/business/business-news/2017/07/29/the-ewallet-race-hots-up/>
- Junadi, & Sfenrianto. (2015). A model of factors influencing consumer's intention to use E-payment system in Indonesia. *Procedia Computer Science*, 59, 214-220.
- Lim, B. S., & Appaduray, A. (2017). *Tech: As cashless payments become more popular, merchant acquirers will thrive*. Retrieved October 24, 2019, from <http://www.theedgemarkets.com/article/tech-cashless-payments-become-more-popular-merchant-acquirers-will-thrive>
- Lwoga, E. T., & Lwoga, N. B. (2017). User acceptance of mobile payment: The effects of user-centric security, system characteristics and gender. *The Electric Journal of Information Systems in Developing Countries*, 81(3), 1-24.
- Malaysian Communication and Multimedia Commission. (2018). *Statistical Brief Number Twenty-Two: Hand Phone Users Survey 2017*. Retrieved October 23, 2019, from <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/HPUS2017.pdf>
- Manikandan, S., & Chandramohan, S. (2016). A study on awareness level of mobile wallets services among management students. *International Journal of Advanced Research in Management and Social Science*, 5(7), 10-19.
- Manikandan, S., & Jayakodi, J. M. (2017). An empirical study on consumer adoption of mobile wallet with special reference to Chennai City. *International Journal of Research-Granthaalayah*, 5(5), 107-115.
- Pagani, M. (2004). Determinants of adoption of third generation mobile multimedia services. *Journal of Interactive Marketing*, 18(3), 46-59.
- Rathore, H. S. (2016). Adoption of digital wallet by consumers. *BVIMSR's Journal of Management Research*, 8(1), 69-75.
- Roobahani, F. S., Hojjati, S. N., & Azad, R. (2015). The role of E-payment tools and E-banking in customer satisfaction case study:

- Pasargad bank E-payment company. *International Journal Advanced Networking and Applications*, 7(2), 2640-2649.
- Roy, S., & Sinha, I. (2014). Determinants of customers' acceptance of electronic payment system in Indian banking sector-A study. *International Journal of Scientific & Engineering Research*, 5(1), 177-187.
- Sahin, I. (2006). Detailed review of Rogers' diffusion of innovations theory and educational technology-related studies based on Rogers' theory. *The Turkish Online Journal of Educational Technology*, 5(2), 14-23.
- Shin, D. H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior*, 25(6), 1343-1354.
- Straub, E. T. (2009). Understanding technology adoption: Theory and future directions for informal learning. *Review of Educational Research*, 79(2), 625-649.
- Sun, H., & Zhang, P. (2006). The role of moderating factors in user technology acceptance. *International Journal Human-Computer Studies*, 64(2), 53-78.
- Tariq, Q. (2020). *E-wallets offer freebies on top of RM30 e-Tunai initiative*. The Star Online. Retrieved February 11, 2020, from <https://www.thestar.com.my/tech/tech-news/2020/01/15/e-wallets-offer-freebies-on-top-of-e-tunai-rm30-handout>
- Tella, A., & Olasina, G. (2014). Predicting users' continuance intention toward E-payment system: An extension of the technology acceptance model. *International Journal of Information Systems and Social Change*, 5(1), 47-67.
- Teoh, W. M. Y., Chong, S. C., Lin, B., & Chua, J. W. (2013). Factors affecting consumers' perception of electronic payment: An empirical analysis. *Internet Research*, 23(4), 465-485.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Vinitha, K., & Vasantha, S. (2017). Influence of demographic variables on usage of E-payment system. *International Journal of Mechanical Engineering and Technology*, 8(11), 265-276.
- Wang, J., & Gu, L. (2017). Why is WeChat Pay so popular?. *Issues in Information Systems*, 18(4), 1-8.
- Wróbel-Konior, S. (2016). *What is an E-payment system?*. Retrieved October 24, 2019, from <https://securionpay.com/blog/e-payment-system/>
- Yang, S. Q., Lu, Y. B., Gupta, S., Cao, Y. Z., & 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.