

# **Are We Ready for Mobile Payment?**

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## **Abstract**

This study aims to identify the factors influencing the readiness and acceptance of mobile payment applications. The study is performed using the survey method. Quantitative data analysis are used to measure the relationship between the perceived usefulness, perceived ease of use, and perceived security on the readiness of Malaysian in using mobile payment applications. The results shown that perceived usefulness, perceived ease of use, and perceived security have a positive and significance relationship with the usage of mobile payment applications. Moreover, perceived ease of use is reported as the strongest factor towards usage of mobile payment applications, following by perceived security and perceived usefulness. This study is able to provide information on the current stage of use on mobile payment in Malaysia and it is also beneficial to the mobile payment facilities provider into find out strategies that could improve the acceptance and use of mobile payment application.

**Keywords:** Mobile Payment; Perceived Usefulness; Perceived Ease of Use; Perceived Security.

## **Introduction**

The rapid development of mobile communication technology resulted in a new approach to commerce, in the form of e-commerce (Zhao and Kurnia, 2014). Mobile commerce can be defined as the usage of mobile devices for trading purposes (Yap and Hii, 2009). According to Donner (2008), m-commerce is defined as a cluster made up of mobile banking, payment, and finance. Mobile payment is classified as a sub-set of mobile commerce (Chen and Adams, 2005; Zhao and Kurnia, 2014) that can facilitate mobile commerce transaction via micropayment (Zhao and Kurnia, 2014). Mobile payment grew alongside mobile technology at a similarly rapid pace (Otieno and Kahonge, 2014), making it one of the vital payment method globally (Chen and Adam, 2005).

According to State of Industry Report on Mobile Payment (2017), the industry continued to experience high growth in transactions from 26 billion USD in December 2016 to over 31.5 billion USD in December 2017. Moreover, Perelmuter (2015) also indicated that 66% of mobile users conduct transactions via mobile devices. Mobile payment service is experiencing exponential growth where consumers can make payment via mobile phones wherever they go (Liébana-Cabanillas et al., 2015; Kim et al., 2010). Ting et al. (2016) believes that the mobile payment system is becoming a more popular payment method in facilitating payment

transactions.

Malaysia is moving forward to become a cashless society by 2050. Increasing adoption of mobile devices and e-commerce has led to the exposure of m-commerce. Services such as Apple Pay, Google Wallet, Alipay, WeChat pay, Boost and PayPal are becoming increasingly popular across the globe and are slowly replacing traditional methods of payment. This rapid expansion will revolutionize how society transfers and receives funds, which may lead to a cashless world. Thus, this study is carried out to understand the perception of Malaysians towards making payment using mobile payment applications.

### Technology Acceptance Model (TAM)

This paper adopted the Technology Acceptance Model (TAM) in order to investigate the factors that affecting mobile payment applications in Malaysia. TAM explains how users come to accept and use a technology (Davis, 1989). The model suggested that when users are presented with a new technology, there are several factors that will influence their decision. The two key components are perceived usefulness which is defined as the degree to which a person believes that using a particular system would enhance his or her performance, and perceived ease of use is defined as the degree to which a person believes that using a particular system would be free from effort (Davis, 1989). Lu et al. (2003) suggested that other variables such as security concerns might contributed to influence the consumer’s belief on the usage of new technology. Perceived security is the degree of individual believes a mobile device will be free of risk. Therefore, perceived security is used in this study for further understanding on the factors of affecting the usage of mobile payment applications.

### Research Methodology

In order to develop the questionnaire, a number of journals related to the implementation of an information system by using the TAM framework being used as a reference to design the questionnaire. After the questionnaire has been developed, 2 experts reviewed the questionnaire via content validation. The questionnaires were distributed to the respondents face-to-face also via online by using simple random sampling technique. A total number of 229 data are collected and data screening is used as a preliminary test in order to ensure the data is reliable and useable. After undergo data screening, there were 68 incomplete or missing data was identified and thus a total of 161 data is used for further analysis.

### Results and Discussion

Based on the results of questionnaires that were distributed, a descriptive statistics, and a complete summary of the data is shown as follows:

Table 1: Descriptive Statistics

	Mean	Std. Dev S	Skewness		Kurtosis	
			Statistic	Std. Error	Statistic	Std. Error
PU	24.42	4.70	-0.86	0.19	0.87	.38
PE	25.07	4.34	-0.82	0.19	0.56	.38
PS	20.29	5.21	-0.14	0.19	-0.46	.38
Usag	22.60	4.83	-0.41	0.19	-0.20	.38

PU = Perceived Usefulness, PE = Perceived Ease of Use, PS= Perceived Security, and Usag= Usage

There are 6 items for each variables and a five point Likert scale is used in this study. Out of the three independent variables, perceived ease of use has the highest mean with 25.07 (Average mean = 4.18) and lowest standard deviation, 4.34 (Average standard deviation = 0.74). This is followed by perceived usefulness and perceived security. Parametric statistics are more useful for data analysis, but require assumptions about the data that are more stringent, such as the sample data should be normal or approximately normal. The threshold for skewness is within  $\pm 0-1.5$ , while the threshold for kurtosis falls within  $\pm 0-3$ . Based on the results in Table 1, all variables are concluded that is approximately normal distributed.

All variables are tested using reliability test. The common used indicator of internal consistency is Cronbach's alpha coefficient. Based on the output of reliability analysis, all variables have a Cronbach's alpha value of 0.895, which is greater than the threshold value of 0.70 (Devellis, 2012). Therefore, all these variables are considered reliable.

Table 2: Correlation analysis

	Usage	Perceived Usefulness	Perceived Ease of Use	Perceived Security
Usage	1.00	0.72***	0.72***	0.67***
PU	0.72***	1.00	0.81***	0.63***
PE	0.72***	0.81***	1.00	0.58***
PS	0.67***	0.63***	0.58***	1.00

\*\*\* p-value is significant at 0.01 levels.

The results of Pearson Correlation of Coefficient in Table 2 shows that there is a positive and significance correlation ranging from 0.67 to 0.72 between all independent variables, perceived usefulness, perceived ease of use, and perceived security with the dependent variable usage of mobile payment applications. Since all independent variables have a correlation value of above 0.5, which suggested a large correlation (Cohen, 1988). Besides that, all three independent variables exhibit a positive correlation with respect to the dependent variable, usage of mobile payment applications.

Table 3: Coefficient of multiple determinations

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.80	0.64	.63	2.93

The coefficient of multiple determinations (R Square) measures the proportion of the variance in the dependent variable explained by the independent variables. R square in Table 3 shows that 64% of variation in dependent variable is explained by the three independent variables (perceived usefulness, perceived ease of use, and perceived security) in the model. The result also shows the R value of 0.80, signifying 80.0% of relationship exists between multiple independent variables and dependent variable.

Table 4: ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2390.71	3	796.90	92.83	0.00 <sup>b</sup>
	Residual	1347.85	157	8.59		
	Total	3738.56	160			

a. Dependent Variable: Usage

b. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use, and Perceived Security

The significance value in Table 4 is below 0.05 and hence, the model is concluded that is statistically significant and thereafter rejected the null hypotheses,  $H_0$ . This indicates that there is a relationship between the independent variables and dependent variable in the model.

Table 6: Coefficient Table

	Unstandardized Coeff		Standardized Coeff	t	Sig.	Collinearity	
	B	Std. Error	Beta			Tol	VIF
(Con.)	0.91	1.38		0.66	0.51		
PU	0.25	0.09	0.25	2.85	0.00	0.31	3.23
PE	0.38	0.09	0.34	4.12	0.00	0.34	2.95
PS	0.30	0.06	0.32	5.18	0.00	0.59	1.69

The findings in Table 6 shown that the all the Variance Inflation Factor (VIF) values is below the cut-off point of 10. Hence, the multicollinearity assumption was not violated. In addition, all three independent variables have p-value below 0.05 and hence, are statistically significant to the prediction of the dependent variable, usage of mobile payment applications. Therefore, perceived usefulness, perceived ease of use by consumers and perceived security are supported and have a relationship towards the usage of mobile payment applications. Moreover, perceived ease of use is reported has the strongest contribution to explain the usage of mobile payment applications and then follows by perceived security and perceived usefulness. All factors are reported that have a positive and significance relationship with usage of mobile payment applications.

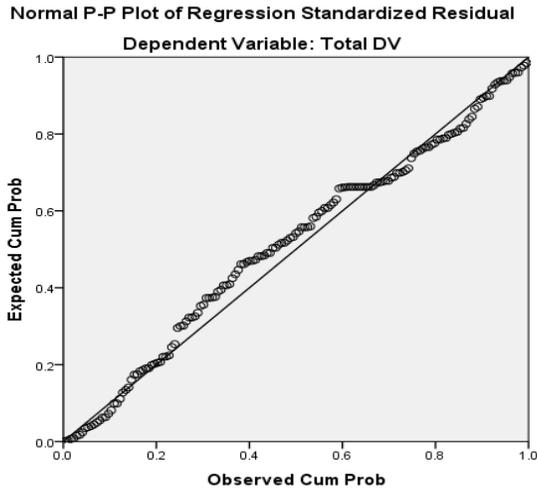


Fig. 1 P-P plot

The P-P plot in Fig. 1, it is shown that the points lie in a reasonably straight diagonal line from bottom left to top right of the chart, suggested that the data was no deviation from normality.

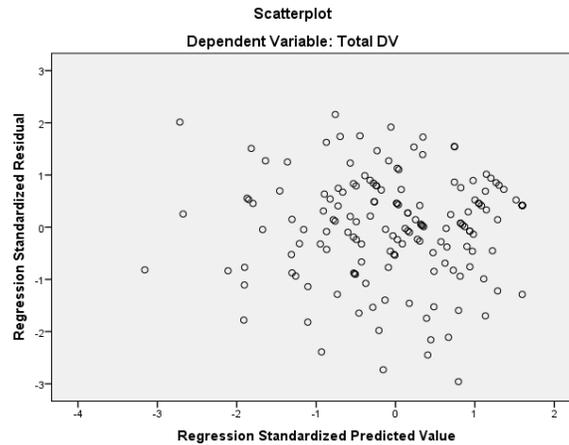


Fig. 2 P-P plot and Scatterplot

The scatterplot in Fig. 2 reported that the residuals roughly rectangularly distributed with most scores concentrated in the center. Hence, there is no outliers as data is within -3.3 to +3.3 (Tabacnick and Fidell, 2013).

## Conclusions

Mobile payment technologies allow for a swift, simple and relatively low-cost transfer of funds. Nowadays, people can purchase goods, book flights, pay bills, and pay for endless services using their mobile phones or tablets. Various companies and organizations are rapidly tapping into the mobile payments market for the unparalleled advantages it offers consumers and businesses alike. The findings of this study provide an insight on identifying the factors that affects Malaysians to use mobile payment applications. The target respondents of this study is Malaysia residents and 52% of the respondents are male, 48% female. Besides, there are 89% of the respondents reported have experienced on using mobile payment applications.

The findings of this study reported that perceived usefulness, perceived ease of use, and perceived security have a positive relationship towards usage of mobile payment applications. Moreover, perceived ease of use has the strongest effect towards usage of mobile payment applications, following by perceived security and perceived usefulness. This is supported by Peng et al. (2012) that perceived ease of use is a crucial antecedent of adoption intention. Besides, perceived usefulness is the degree of consumer's beliefs that adopting particular technology will enhance their performance (Davis, 1989). Before user adapt to any technology, they will assess whether they get additional benefit from it. Thus, the result of this paper is supported by Apanasevic and Markendahl (2016) that perceived usefulness is a determinant of concern of new technology adoption intention. Besides, the findings of this study also indicated that perceived security is one of the important factors that influence a user to use mobile payment. Security can be defined as a state of being protected or safe from harm. Therefore, the respective industry and players could focus on these factors to attract and encourage more Malaysians to use mobile payment applications.

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