Factors Influencing Intention to Use Mobile Payment QR Code Among Teachers in Batu Pahat

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Abstract: Mobile payment is receiving growing attention globally, from consumers to merchants, as an alternative to using cash, check, or credit cards. The potential of this technology is enormous. In this study, the focus was on mobile payment using the QR code. This study aims to determine factors that influence the intention to use mobile payment QR code. To achieve the objective, the Technology Acceptance Model (TAM), namely perceived usefulness and perceived ease of use, was employed to understand factors that influence the intention to use mobile payment. A survey method has opted through the distribution of questionnaires to 172 secondary school teachers in Batu Pahat. Data analysis was conducted using Statistical Package for the Social Sciences (SPSS) software. This study's findings showed that the teachers are ready to use the QR code for mobile payment. Besides, perceived usefulness and perceived ease of use were positively correlated to QR code mobile payment.

Keywords: TAM Model, QR Code, Intention to use mobile payment, Perceived usefulness, Perceived ease of use

1. Introduction

1.1 Research Background

In Malaysia, consumers are not yet adopting mobile payments like other countries. Nielsen (2016) did a study and found that 78% of Malaysians use their mobile devices for social media, while only 34% used it to purchase a product or service. So the take-up rate of digital payment is still relatively

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low in Malaysia. Based on the Asian Correspondent (2019), 67% of consumers in the country have used some form of cashless payment, with debit cards and online banking being the most preferred non-cash channels. However, a tiny percentage prefer to use cashless payments to pay for meals, groceries, and other everyday expenses. To be precise, while 63% of Malaysians have a debit card, 93% prefer cash when they dine out, 90% use cash when they buy groceries, 89% use cash for public transport, 81% for petrol 81% for taxis. Despite the challenges to digital payments, the study revealed that Malaysians prefer to make recurring expenses such as phone and internet bills (53%), utility bills (47%), car loan installments (38%), and rent (37%) via online banking because of the sheer convenience it offers.

There are several types of mobile payment platform in Malaysia which are Vcash, Samsung pay, Alipay, Visa Checkout, Master Pass, Paypal, Cimb Pay, Wechat Pay, Cimb Pay, MOLPay, Grab Pay, and TaPay. Every type that has a state uses a different platform to access. For example, Vcash using a QR code to pay, and Samsung pay using a fingerprint on a mobile phone to pay. According to Fintech Malaysia, for transaction volumes per capita than in 2018, electronic money (e-money) is often used at 58.4 (56.2%) times per person on average. The next most frequently used payment method is via internet banking, at 18.7 (18%) times per person on average. This finding shows that mobile payment by internet banking is still small compared to consumers who use electronic money in Malaysia.

Mobile payment using QR code can be used from electronic money and via internet banking also. The usage of the mobile payment using QR code are still reachable. Furthermore, this research aims to study the intention to use mobile payment that focuses on mobile payment using the QR code. Therefore, this study will analyze the factors that influence the intention to use QR code mobile payment.

1.2 Problem Statement

Several issues related to the researcher to study the intention to use mobile payment in Malaysia. Firstly, there are some Malaysian still doubt about using mobile payment. According to Mun *et al.* (2017), the survey that has been done among individuals aged of 18 to 39 in Malaysia who are mobile device users, which represent 23.8% of the total responses, identified the main reason of the respondents did not use mobile payment service is because the concern of their personal information will not confidential anymore while using mobile payment. Furthermore, 20.6% of mobile payment service responses will lead to transaction fraud, and 16.7% of responses indicated that mobile payment services are not available when the respondent conducts payment transactions. This indicates that Malaysia's consumers are still unsure of using mobile payment because of mobile payment security.

Besides, the study about the intention to use mobile payment using QR code still low. Most studies are focus on QR code as marketing tools. For example, a study from Asare & Asare's (2015) study focuses on the QR code's effectiveness as marketing tools. Next, the study from Hui (2016) states that the research's main reason is to study the consumers' acceptance of QR codes as a new form of organization's marketing tool. Also, the study from Chong (2017) states that the research's main reason is to study the consumers' acceptance of QR codes as a new form of organization's marketing tool.

On the other hand, many factors influence mobile payment intention using the QR code. Numerous studies use different theories to explain the intention to use mobile payment. Those are the Technology acceptance model (TAM), Innovation Diffusion Theory (IDT), Unified Theory of Acceptance and Use of Technology (UTAUT), Theory of Planned Behavior (TPB), and many more. However, most studies used TAM as a theoretical in examining the factors of intention to use mobile payment (Tam & Oliveira, 2017). This is because of Mun *et al.* (2017) found that TAM has been considered an essential model for using mobile payment services. The Technology Acceptance Model was developed in order to measure consumer satisfaction towards media. It determines the impact of external variables on perceived usefulness and ease of use, two crucial factors when demonstrating why consumers do or do not use a

particular form of technology (Bode, 2017). Furthermore, a study from Kim *et al.* (2016) using TAM because the model suitable psychometric tool to assess consumers' acceptance of technology, determined by the individual's perception of the new technology's usefulness.

Since this study's focus is more related to technology-based, mobile payment, and measure customer acceptance towards the mobile payment, TAM will be used in this study. To identify the factors of intention to use mobile payment using QR code, TAM will be used as a base model of this study. Davis (1989) developed the Technology Acceptance Model (TAM) based on these theories. TAM suggests that the perceived usefulness and ease of use by an individual are the factors that determine the attitude towards the adoption of a specific technology and consequently determine intention to use, resulting in the adoption of the technology (Davis *et al.*, 1989).

This model has been applied in many fields such as usability tests, mobile services, mobile wireless, mobile ticketing, mobile banking, e-government (Lin, 2016), and mobile payments (Liébana-Cabanillas *et al.*, 2017), among others. Therefore, this study, based on the TAM model, investigates the dominant factors in influencing the adoption of QR code mobile payment in Batu Pahat area specifically. This study also determines the intention to use the QR code of mobile payment among Batu Pahat teachers.

1.3 Research Question

   (i)   What are the level of intention to use of mobile payment QR code among teachers in Batu Pahat?
  (ii)   What are relationship between the perceived usefulness towards intention to use of QR code mobile payment?
 (iii)   What are relationship between the perceived ease of use towards intention to use of QR code mobile payment?

1.4 Research Objective

   (i)   To determine the level of intention to use QR code of mobile payment among teachers in Batu Pahat.
  (ii)   To analyze the relationship between the perceived usefulness towards intention to use QR code of mobile payment.
 (iii)   To identify the relationship between the perceived ease of use towards intention to use QR code of mobile payment.

1.5 Significant of Study

On the practical aspect, this study is important to expand the understanding of the researchers toward the mobile payment as a medium to lead to the customer's purchasing intention in using mobile payment QR code. In fact, this study emphasized the antecedents that can influence the consumers' intention which is perceived usefulness and perceived ease of use. In terms of theoretical aspect, this study contributes knowledge to the existing Theory of Acceptance Model.

1.6 Research Scope

This study only focuses on the factors influencing intention to use mobile payment using code based on TAM model which are perceived usefulness and perceived ease of use. The respondent will be teachers of secondary school in Batu Pahat, Johor. This study is quantitative study by using questionnaire as a main instrument to collect data. The data will be analysed by using SPSS software. The data collection is conducted during July until September.

2.0 Literature Review

2.1 Intention to use

According to Fu *et al.* (2018), intention to use involves desirable behaviors that consumers expect to demonstrate in the future. Thus, intention to use represents customers' expectations about a particular behavioural in a souvenir purchasing setting and may be considered a "likelihood to act". In particular, a favourable intention to use indicates the customer.'

2.2 Technology Acceptance Model TAM

Technology Acceptance Model has been developed by Davis (1989) is one of the most popular research models to predict the use and acceptance of information systems and technology by individual users. TAM has been widely studied and verified by different studies that examine the individual technology acceptance behavior behavioral information systems constructs. According to Koo and Kim (2015), the Technology Acceptance Model developed to measure consumer satisfaction towards media. It determines the impact of external variables on perceived usefulness and ease of use, two crucial factors when demonstrating why consumers do or do not use a specific technology form. Since the TAM is usually applied to determine the adoption of technology inside an organization, when looking to use it for mobile marketing or specifically QR Codes, there are various adapted versions to be found, such as the one proposed by Gao *et al.* (2013) which contains three new variables to explore technology acceptance further. A significant number of studies have indicated that the Technology Acceptance Model (TAM) is a suitable psychometric tool to assess consumers' acceptance of technology, determined by the individual's perception of the new technology's usefulness (Venkatesh & Davis, 1996). According to Kim & Woo (2016), TAM shows that a user's attitude toward a particular technology is determined by the individual's perceived usefulness (PU) and perceived ease of use (PEOU) of the technology. The TAM is supported by the relationships among belief, attitude, and behavio**r.**

(a) Perceived Usefulness

Perceived usefulness is the subjective probability that technology can improve the way a consumer completes his goal. In online environments, usefulness is perceived as the degree to which a consumer believes an online purchase will provide access to useful information and allow a faster purchase (de Luna *et al.*, 2018). According to TAM, the perceived usefulness is the degree to which a person believes that adopting a particular system will increase his effectiveness and job performance. Perceived usefulness of the service is a crucial factor explaining the intention to adopt the service (Davis, 1989). This factor includes fundamental factors such as price and quality (in use), performance (Davis, 1989), mobility factors such as independence of time and location in use (Mallat *et al.*, 2004).

The importance of perceived usefulness has been widely recognized in numerous studies. Perceived usefulness is the subjective probability that technology can improve how a consumer completes his goal (Liébana- Cabanillas, Ramos de Luna, & Montoro- Ríos, 2017). In the context of our study, perceived usefulness will improve the consumer's intention to use mobile payment systems. Different studies have demonstrated that perceived usefulness has a direct relationship with the intention to use (Liebana-Cabanillas, Sanchez-Fernandez, & Munoz-Leiva, 2014; Pai & Huang, 2011). The perceived usefulness of the payment system will also directly influence the intention to use based on TAM principles.

Hypothesis 1: There is a significant relationship between perceived usefulness (PU) and intention to use QR code of mobile payment

(b) Perceived Ease of Use

According to Kim & Woo (2016), PEOU refers to the degree to which a person believes that using a particular technology will be effortless. Several studies have found that PEOU is significantly correlated with current usage and future usage and a user's attitude toward accepting a system. In terms of mobile banking, the study by Kim *et al.* (2015) claimed that technology readiness and specialized knowledge affected the perceived ease of use, which impacted the intention to use.

The ease of use refers to the individual's perception that using a particular system will be effortless or, simply, easy to handle (Davis, 1989). It is therefore considered one of the most influential aspects regarding the decision to adopt new technology. Venkatesh (2000) found that perceived ease of use is an essential factor influencing attitude towards the use of information technologies and perceived usefulness. The relationship between the ease of use, attitude, and intention to use has also often been examined (Hernández, 2010). Under such circumstances, the following hypothesis will be:

Hypothesis 2: There is a significant relationship between perceived ease of use (PEOU) and intention to use mobile payment QR code.

3.0 Methodology

3.1 Research Design

For this survey, quantitative research method has been used. This study also use survey as tools for data collection. The research population for this study comprised the teachers at secondary school in Batu Pahat area only. There are 2413 total teachers. The sample size is determined based on Krejie&Morgan (1970). The sampling that will be used in this research is random sampling and the development of questionnaire consists of 3 sections.

3.2 Data Collection

A survey via google form was used to reach 172 school teachers in Batu Pahat Johor as respondents for this study. The questionnaire has two parts: The first section will be the demographic part that consists of gender, age, race, marital status, and education level. The second section is measuring the factors that influence the adoption of mobile payment using the QR code. There are six items of Perceived usefulness PU, four items of Perceived Ease of Use PEOU, and five items measuring mobile payment using QR code. All questions in section 2 used five points Likert scale ranging from "strongly disagree" to "strongly agree."

3.3 Data Analysis

The respondents' data was then keyed in the SPPS and analyzed using the descriptive and inferential analysis to answer the research objectives.

4. Data Analysis and Result

A total of 200 sets of questionnaire were distributed during the period of data collection. The targeted respondents were all the teachers from secondary schools in Batu Pahat. A total of 172 sets questionnaire were collected from the survey. Thus, the response rate for this study is 51.96%. The characteristics of all the 172 respondents are as the following Table 1.

Table 1: Summary of demographic analysis

No	Characteristics	Category	Frequency	Percentage %
1	Gender	Male	63	36.6
		Female	109	63.4
2	Age	Between 21-30	47	27.3
		Between 31-40	54	31.4
		Between 41-50	54	31.4
		Between 51-60	17	9.9
3	Race	Malay	152	88.4
		Chinese	16	9.3
		Indian	4	2.3
4	Status	Single	65	37.8
		Married	97	56.4
		Divorce	10	5.8
5	Method of Payment	Cash	98	57
		Credit/Debit Card	24	14
		Mobile Payment	50	29.1
6	Types of Mobile Payment	SamsungPay	3	1.7
		AliPay	1	0.6
		QR code Mobile Payment	73	42.4
		FavePay	4	2.3
		Paypal	5	2.9
		MolPay	9	5.2
		None	77	44.8

There were 63 males and 109 females from the data interpretation, with 36.6% and 63.4% respondents answering this questionnaire. For the age category, there were 47 respondents (27.3%) between 21-30 years old, 54 respondents (31.4%) between 31-40 years old, 54 respondents (31.4%) which between 41-50 years old, and 17 respondents (9.9%), which is between 51-60 years old. After that, the race category, there were 152 respondents (88.4%) are Malay, 16 respondents (9.3%) are Chinese, and four respondents (2.3%) are Indian. Next, in marital status, 65 respondents (37.8%) were single, 97 respondents (97%) were married, and there are ten respondents (5.8%) were in divorce status. For the method of payments category, there were 98 respondents (57%) who use cash, 24 respondents (14%) who use credit or debit cards, and there were 50 respondents (29.1) who use mobile payment. Lastly, for types of mobile payments, there were three respondents (1.7%) who use Samsung pay, there was only one respondent (0.6%) use AliPay, 73 respondents (42.4%) use QR code payment, four respondents (2.3%) use Favepay, five respondents (2.9%) used Paypal, nine respondents (5.2%) use MolPay and while 77 respondents (44.8%) are not using mobile payments.

This study was conducted to assess the level of intention to use QR code mobile payment among teachers. To fulfill the objective, a measure of central tendency was performed to assess all the respective variables using mean and standard deviation. The central tendency score is provided in Table 2, which was adopted from Kosnin and Lee (2008).

Table 2: The Score for central of the tendency

Range of mean score	Level
1.00 – 2.33	Low
2.34 – 3.67	Average
3.68 – 5.00	High

In this section, the intention to use QR code mobile payment among teachers is indicated by the overall mean of intention to use QR code mobile payment. There are five items in intention to use. The first one is 'I will use a QR mobile payment system' (BI 1). Secondly, 'I am likely to use a QR code mobile payment system in the near future' (BI 2). Thirdly, 'I am open to using a QR code mobile payment system in the future' (BI 3). Fourthly, 'I intend to use a QR code mobile payment system when the opportunity arises (BI 4). Lastly, 'I intend to recommend others use QR code mobile payment systems (BI 5). Table 3 shows the overall mean of intention to use is 3.924. From the table, it can be concluded that the level of mean in intention to use is high. The highest mean value is 3.98 for intention to use 5 (BI5), while the lowest mean value is 3.87 for intention to use 2 (BI2).

The central tendency has been used for this study to know the level of intention to use in mobile payment using QR code based on the mean and standard deviation. Based on the findings, the intention to use among teachers in Batu Pahat is 3.924, which is at a high central tendency. The findings show that the level intention to use mobile payment using QR code in Batu Pahat is high, and many teachers intend to use QR code mobile payment. This is supported by the study de Luna (2018) that the QR code mobile payment system has the most significant effect on the intention to use comes from perceived usefulness and perceived ease of use.

Table 3: Mean of intention to use

Variables	Mean	Std. Deviation	Level
Intention to use (BI 1)	3.92	0.737	High
Intention to use (BI 2)	3.87	0.762	High
Intention to use (BI 3)	3.95	0.759	High
Intention to use (BI 4)	3.90	0.762	High
Intention to use (BI 5)	3.98	0.757	High
Overall	3.924	0.755	High

This study applied Spearman correlation to analyze the relationship between perceived usefulness and perceived ease of use towards intention to use QR code mobile payment. Based on the analysis, it was found that the independent variable, which is perceived usefulness and perceived ease of use, positively correlated to the dependent variable, which is the intention to use. The strength of the correlation using the following guide for the absolute value of rs: 0.00-0.19 "very weak", 0.20-0.39 "weak", 0.40- 0.59 "moderate", 0.60-0.79 "strong", and 0.80-1.00 "very strong" (Phanny, 2014). According to the result of the analysis, all the perceived usefulness and ease of use positively correlate with the intention to use. This is in line with all hypotheses proposed in chapter two: there is a significant relationship between perceived usefulness with the intention to use and a significant relationship between perceived ease of use and intention to use.

The result also shows that there is a strong positive relationship between perceived usefulness (r=0.696, p<0.01) and perceived ease of use (r=0.700, p<0.01) with the intention to use. The summary of the result is shown in Table 4:

Table 4: The relationship between perceived usefulness and perceived ease of use towards intention to use QR code mobile payment

		Intention to Use
Perceived Usefulness of	Correlation Coefficient	.696**
	Sig. (2-tailed)	.000
	N	172
Perceived Ease Use	Correlation Coefficient	.700**
	Sig. (2-tailed)	.000
	N	172

Based on the correlation analysis results, the two factors, perceived usefulness, and ease of use, had a significant relationship with intention to use QR code mobile payment since the two factors show the significance (p<0.01). These findings are supported by Mun *et al.* (2017), explaining that TAM constructs are useful in explaining the newly emerging mobile payment services context, but additional features should be added to reflect this system better. The particular intention that the respondents gave to the effect of Perceived Usefulness implied that it is essential that the mobile payment service providers build for a critical mass. Consumers seem to be willing to use QR code mobile payment services if they find out that using this alternative payment method has more advantage that is using the current payment method.

5.0 Conclusion

This study has confirmed the Technology Acceptance Model (TAM)'s significant effects, which consist of perceived usefulness and perceived ease of use towards intention to use. The limitations and recommendations are stated to support future researchers. Future research should explore new variables of the Technology Acceptance Model (TAM). The researchers should also survey other types of employees that work in the public sector. Next, future researchers may conduct qualitative research to understand this phenomenon better.

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