Consumers' Intention to Use Mobile Payment: A Case of Quick Response (QR) Code Applications

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Article Info

ABSTRACT

Many transactions, nowadays such as banking, transportations, online shopping and bills payments, are implemented using mobile payment. To date, many mobile payment services are available in Malaysia, with companies offering their services competitively. However, adoption rates in Malaysia are considered slow due to many reasons. This study investigates the factors that affect consumer intention to use mobile payment based on QR code technology. A proposed model based on the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model was adapted to identify the factors that affect the use of mobile payments. A survey instrument was developed based on the proposed model. Data were collected from 50 consumers who used QR code mobile payments in Klang Valley. The quantitative analysis method was adopted and the SPSS statistical tool was used to analyze the data using both descriptive and inferential statistics. Results have shown that several factors significantly affect consumer intention to use QR code-based payment namely performance expectancy, effort expectancy, hedonic motivation, habit, and trust. This study provides meaningful insight on the reasons why consumers used QR code-based payment.

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1. Introduction

Mobile phones are widely used as a tool to perform various tasks, including web browsing, playing music, capturing photos, calling contacts, and sending texts, but these functions of the devices now have evolved especially in business transactions for purchases of goods and services. Aligned with the advancement of smart phones technology, many services have been developed to make use and utilize the functions of smartphones into daily activities. Various types of mobile payment services are available such as contactless and remittance with different technologies, for example, NFC (near field communication), QR (quick response) codes, and SMS (short message service) [1]. Mobile payment is defined as "the transaction of money that is conducted through a mobile network through various mobile devices, such as smartphones or PDAs, and mobile terminals are known as mobile payments" [2]. Although the mobile payment services offer numerous benefits to consumers, the cash usage has continued to grow over the past five years with the ratio of cash-in circulation as a share of GDP increasing from about 6% in 2012 to 7% in 2016 [3]. The value of ATM cash withdrawals had also grown at an average of around 7% per annum during the same period, while about 85% of payments currently in Malaysia are cash-based transactions." [3]. At the moment, the portion of cashless payments in the country is relatively small. As stated by Bank Negara Malaysia, mobile payments are still at an early stage of development in Malaysia but it has attracted the attention of new non-bank players [4].

The main purpose of this paper is to present the findings of a research that identify the factors of influence consumers' intention to use mobile payment based on QR code technology. To increase the use of mobile payment by consumers in Malaysia has been challenging tasks. The QR code mobile payment is still new for most companies and individuals in Malaysia hence the low usage among consumers. To obtain a better understanding of the situation, the researcher has identified the factors that influence the consumers' intention to use mobile-based payments technology, proposed a model, and evaluated the proposed model using data collected from a quantitative survey.

2. Literature Review

The following discussion about several works of literature and theories related to acceptance studies and mobile payment technology.

2.1 Mobile Payment

Paying for goods and services using devices through the transmission of data are called as mobile payments or m-payments [5]. In other words, mobile payment is "the process where two parties are exchanging financial value using mobile devices in return for goods or services"[6]. Besides that, mobile payments also refer to peer-to-peer (P2P) and consumer-to-business (C2B) transactions for physical goods and services that are made using a mobile phone [7]. The concept of mobile payment is further confused by different terms such as mobile money, mobile wallet, mobile transfer or remittance, and others.

There are different types of mobile payment services, which are contactless and remittance [1]. Contactless Mobile Payment (CMP) is the in-store payment that consumers make by using apps installed on their devices such as mobile phones, iPad, and others. From a technical standpoint, the apps installed on consumer devices have to be in touch with a retailer's point-of-sale (POS) system to make a payment [8]. A remittance is a money sent across countries; thus, remittance services refer to the mobile payments which are sent locally or globally to facilitate a variety of different needs [9].

A QR code is a two-dimensional scan-able code which has a similar function to the traditional bar code that can be found on many products. QR code is more efficient as it can store a higher number of information and more flexible in terms of storage [10]. The QR code consists of black modules that organized in a square pattern on a white background and are designed to allow the contents to be decoded at high speed. The exchange of financial value has evolved from cash towards digital payment at full speed recently, especially by using mobile phones for payment purposes. Mobile payments that use QR code technology is among the most popular in the mobile payment market [11]. Malaysia has embarked on QR code-based mobile payment in recent years with among the most popular services are Maybank QR Pay, Boost, Touch & Go Mobile Wallet, and so on. Despite the slow acceptance among users in the early phases, it has gained lots of popularity nowadays, especially among younger generations.

2.2 Theories and Model Related to Acceptance of Technology

IT is widespread and widely used, and it is therefore vital for information technology practitioners to understand the consumer intention to use the technology and identifying its determinants. Many established technology acceptance models have been used in research studies to identify the factors that influence the use of technology. Different theories have been applied previously with several past studies in different areas, as discussed in the following sections.

Theory of Reasoned Action (TRA) was first introduced by Martin Fishbein in 1967 to understand the relationship between humans' attitudes and behavior, as mentioned in [12]. TRA assumes that consumers are rational in analyzing information. They will think about the consequences of their behaviors before engaging in an activity relating to new technology or adopting new technology [19]. TRA was originally from the social psychology field, whereby the social psychologists seek to clarify how and why attitude affects behavior[13]. The Theory of Planned Behavior (TPB) was initiated by Ajzen [14] and it is an expansion of the well-known Theory of Reasoned Action (TRA) model. TPB adds the concept of Perceived Behavioral Control (PBC) to the constructs' attitudes and subjective norms [15]. This theory was developed as a response to the limitation of TRA concerning the behavior over which people have incomplete volitional control [14]. The added construct of TPB, 'perceived behavioral control' is summarized as how difficult or easy a person assumes performing a behavior may be; this perception is often based on previous experience, forecasted barriers, and information from others [14].

Technology Acceptance Model was introduced by Davis in 1989[16]. TAM is the highly referred model which is widely cited in user acceptance and use of technology studies[17]. Theory of Reasoned Action (TRA) models provided the foundation for Davis [23] to develop the Technology Acceptance Model [18]. Technology Acceptance Model has been designed to show how users come to accept and use a technology [19]. TAM has become a common predictive tool for testing new technologies acceptance due to its simplicity and parsimonious nature [20].

UTAUT is based on studies of eight research models in information systems adoption study [21]. Resulting from the comprehensive evaluation and comparison of the above models, Venkatesh produced a model that is called the Unified Theory of Acceptance and Use of Technology (UTAUT) as discussed in [22],[23]. The two most essential constructs from TAM has been renamed in the UTAUT model. Perceived Usefulness in TAM has becomes Performance Expectancy in UTAUT while Perceived Ease of Use become Effort Expectancy in UTAUT, and Social Norms have become Social Influence [24]. The user acceptance results as model validation have been outstanding which is 70% variance in usage intention and 50% in actual use. The latest version of the technology acceptance model after UTAUT is UTAUT2, which was introduced by Venkatesh[25]. It was designed to focus on individual consumer use rather than an organization specifically. The UTAUT2 has an increased ability to explain the behavioral intention to use technology as it consists of most external factors that directly affect the behavioral intention to use technology compared to previous technology acceptance models. UTAUT2 includes three additional constructs, which are Hedonic Motivation, Price Value, and Habit. These three independent variables have been added and combined into UTAUT to tailor the context of consumers' technology use [26],[27] in e-commerce purchasing behavior. It succeeded in providing a satisfactory improvement in the variance explained from 56% to 74% for behavioral intention and 40% to 52% for technology use. UTAUT2 is capable of explaining and analyzing technology acceptance behaviors of people for new information technology products [28].

3. Research Methodology

3.1 Proposed Model

The model of this study has been proposed based on the modification of the Unified Theory of Acceptance and Use of Technology version 2 (UTAUT2). UTAUT2 model validity and reliability have been proved in many studies previously around the world and widely adopted by researchers to examine information technology adoption [29]. Venkatesh suggested to carry out more study and testing on the theory using different commerce technologies in different countries [25]. QR code payment is one of the new technologies to the consumer in Malaysia. Therefore, the UTAUT2 model is chosen to understand user behavior towards the usage of QR code mobile payments among the consumers Klang Valley, Malaysia.

Figure 1 shows the proposed model of this study and the inclusion of a new construct to the model name, Trust. Since the study is related to payment and money, it is important to include this new construct as it may be related to the user's intention to use QR Code mobile payment. The previous studies from Daştan and Gürler [30] and Al-Amri [31] have shown that trust has a positive influence on the use of QR code mobile payment. In addition, the price value construct was omitted in this study because the QR Code mobile payment apps are usually free to be downloaded by consumers with no charges imposed on the apps. The proposed model consists of 7 hypotheses as presented and discussed in the following paragraphs.
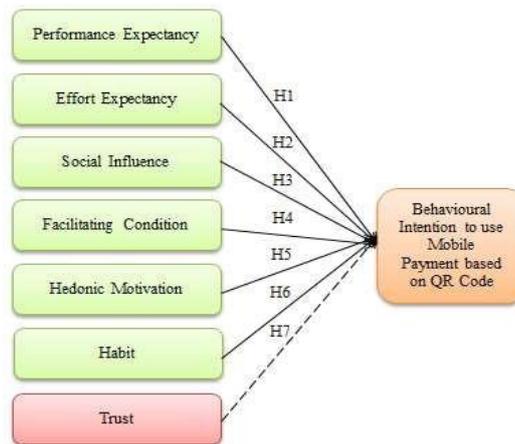

Figure 1. Proposed Model

Performance expectancy (or perceived usefulness in TAM) refers to "the degree to which using technology will provide benefits to consumers in performing certain activities." [25]. While mobile payment usage represents the alternative option to traditional cash, performance expectancy may be the reason for people to use it. The previous studies from Heyman [32] and Dmitrii [33] have shown that performance expectancy has a positive effect on behavioral intention to use mobile payment. Therefore, the following hypothesis is proposed:

H1: Performance Expectancy significantly affects the behavioral intention to use mobile payment based on the QR code.

Effort expectancy (or perceived ease of usefulness in TAM) refers to "the degree of ease associated with the use of technology by consumers"[25]. It is the "degree of simplicity associated with the use of a particular system."[22],[34]. Mobile payment usage may require some effort to use due to the nature of mobile payment technology. The easier mobile payment use will subsequently drive more people to use it. The previous studies from Aslam[35], Yan and Pan[36], Ismail et al. [37], Yeh and Tseng [38], and Dmitrii [33] have shown that effort expectancy has a positive effect on behavioral intention to use mobile payment. Therefore, the following hypothesis is proposed:

H2: Effort expectancy significantly affects the behavioral intention to use mobile payment based on the QR code.

Social influence (or subjective norm in TAM) refers to "the extent to which consumers perceive that importance others (e.g., family and friends) believe they should use a particular technology."[25]. It is "the degree of importance being recognized by others to use novel technology." [28]. The encouragement by the community or network for mobile payment uses may influence on behavioral intention to use mobile payment. The previous studies from Ting et al. [39], Aslam, [35], Heyman [32], and Ismail et al. [37] have shown that social influence has a positive effect on behavioral intention to use mobile payment. Therefore, the following hypothesis is proposed:

H3: Social influence significantly affects the behavioral intention to use mobile payment based on the QR code.

Facilitating Condition (FC) refers to consumers' perceptions of the resources and support available to perform behaviour [25]. The nature of mobile payments requires that specific tools and structures are provided to facilitate the use. Therefore, FC could influence its actual usage. The previous study from Yeh and Tseng [38] has shown that facilitating conditions has a positive effect on behavioral intention to use mobile payment in Taiwan. Therefore, the following hypothesis is proposed:

H4: Facilitating condition significantly affects the behavioral intention to use mobile payment based on the QR code.

Hedonic Motivation (HM) refers to "the fun or pleasure derived from using technology, and it has been shown to play an important role in determining technology acceptance and use. "[25],[40]. It is "the pleasure and fun, which is felt by a person while using a particular technology." [32]. The pleasure and fun of using mobile payments may affect consumer intention to use it. The previous studies from Mahomed [41] have shown that hedonic motivation has a positive effect on the use of Cryptocurrency. Therefore, the following hypothesis is proposed:

H5: Hedonic motivation significantly affects the behavioral intention to use mobile payment based on QR code.

Habit (HT) refers to "The degree to which consumers tend to perform the usage of technologies or the usage of technology products behaviors as a habit or routinely because of learning."[25],[42]. The habit could play a role in determining mobile payment adoption. The previous study from Jia, et al.[43] has shown that habit has a positive effect on behavioral intention to use mobile payment. Thus the following hypothesis is proposed:

H6: Habit significantly affects the behavioral intentions to use a mobile based payment app using QR code.

Trust (T) refers to "the belief that a person or organization's integrity, ability and benevolence can be trusted."[43],[44]. The definition of trust in technology refers to the "level of confidence a consumer has that the consumed product or service will reach pre-defined expectations." [45], [46],[47]. Trust could be a significant factor when it comes to money such as mobile payments. The previous study of [30] and [31] shown that Trust has a positive effect on behavioral intention to use mobile payment. Therefore, the following hypothesis is proposed:

H7: Trust significantly affects the behavioural intention to use mobile payment based on the QR code.

3.2 Population and Sampling

The study was focused on people in the urban areas of Klang Valley where the tendency to adopt new technology is more compared to the people in rural areas. Currently, people in the Klang Valley are more likely to have mobile phones which allow them to download mobile payment apps and performing the QR code mobile payments. Convenience sampling and snowball sampling which are nonprobability sampling designs were used for this study. The nonprobability technique was selected for this study due to the difficulties in getting samples because of low usage among consumers and only limited business premises with the facilities for the payment method. In this study, the questionnaire was distributed to the respondents by waiting in several shops and premises that provide the QR code payment services. Only customers who used the QR code mobile payment were given the survey for voluntary response.

4. Results and Discussions

4.1 Reliability and Demographic Analysis

The survey was designed using the five points Likert scale and pre-tested by 25 respondents to obtain the pilot test results. A reliability test was conducted in this study to ensure each of the constructed items in the survey is reliable. The data collected from the pilot study were analyzed with

Cronbach Alpha using SPSS 20. Table 1 shows the Cronbach's Alpha value for each factor with all factors has a good value of reliability with Cronbach's Alpha value > 0.70.

Table 1. Reliability Test Result

Factors	Cronbach Alpha	Mean	No of Items
Performance Expectancy	0.949	4.350	4
Effort Expectancy	0.939	4.433	4
Social Influences	0.888	3.850	4
Facilitating Condition	0.799	4.183	4
Hedonic Motivation	0.929	4.150	4
Habit	0.955	3.867	4
Trust	0.962	3.917	4
Behavior Intention	0.983	4.083	4

The demographic items are consist of gender, age, education level, occupation as well as experience of using QR Code mobile payments. The survey was given to 60 respondents, with a total of 50 responses were returned. Table 2 shows a summary of the demographic analysis of respondents that took part in this study.

Table 2. Demographic Profile of Respondents

Profiles	Category	f	%	Profiles	Category	f	%
Age	17 & below	-	-	QR Code	GrabPay	14	27
	18-29	32	64	Services	Alipay	2	4
	30-39	13	26		Boost	12	23
	40 & above	5	10		FavePay	6	11
	Male	27	54		T&Go	14	28
Sex	Female	23	46		others	4	7
Education	Primary School	2	4	Frequency	Daily	5	10
tion	High school	2	4	of Use	Weekly	17	34
	University	46	92		Monthly	5	10
					Rarely	23	46
Job	Government	19	38	Type of	Bills	7	14
	Private	11	22	Payment	Retails	8	15
	Self Employed	2	4		F&B	20	40
	Student	18	36		Entertainment	12	24
					Others	3	6

4.2 Result of Descriptive Analysis

Figure 2 presents a descriptive analysis of performance expectancy (PE). Based on the results, 84% of the respondents agreed that mobile payment based on QR code is useful in their daily life, 86% agreed that it helps them accomplish transactions more quickly, 88% agreed that using QR code mobile payments save their time and 86% agreed that it has made payments easy for them. The total mean score of all four items on the questionnaire is 4.27 which is high. This indicates that the respondents agreed that QR code mobile payments are useful for them to perform payments.

	Frequencies Statistics					Descriptive Statis		
Performance Expectancy (PE)	Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]	Median	Mode	Mean
1. I find mobile payment based on QR code useful in my daily life.	2% (1)	0% (0)	14% (7)	40% (20)	44% (22)	4.000	5.00	4.240
2. Using mobile payment based on QR code helps me accomplish transaction more quickly.	2% (1)	0% (0)	12% (6)	46% (23)	40% (20)	4.000	4.00	4.220
3. Using mobile payment based on QR code save my time.	2% (1)	0% (0)	10% (5)	40% (20)	48% (24)	4.000	5.00	4.320
4. Using mobile payment based on QR code has made payments easy for me.	2% (1)	0% (0)	12% (6)	38% (19)	48% (24)	4.000	5.00	4.300

Figure 2. The Results for Performance Expectancy

Figure 3 shows the descriptive analysis of effort expectancy. Based on the results, 86% of the respondents agreed that mobile payment based on QR code is easy to learn, 88% agreed that it is easy to use, 90% agreed it is easy to become skillful at using the apps, and 84% agreed that the instruction to use is clear and understandable. The total mean score of all four items on the questionnaire is 4.29 which is high. This indicates that the respondents agreed that QR code mobile payment is easy to use.

	Frequencies Statistics					Descriptive Stat		
Effort Expectancy (EE)	Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]	Median	Mode	Mean
5. Learning how to use mobile payment based on QR code is easy for me.	2% (1)	2% (1)	10% (5)	36% (18)	50% (25)	4.500	5.00	4.300
6. I find mobile payment based on QR code easy to use.	2% (1)	0% (0)	10% (5)	42% (21)	46% (23)	4.000	5.00	4.300
7. It is easy for me to become skilful at using mobile payment based on QR code.	2% (1)	0% (0)	8% (4)	48% (24)	42% (21)	4.000	4.00	4.328
8. The instruction for mobile payment based on QR code is clear and understandable.	2% (1)	4% (2)	10% (5)	36% (18)	48% (24)	4.000	5.00	4.240

Figure 3. The Results for Effort Expectancy

Figure 4 displays the descriptive analysis of social influence. Based on the results, 48% of the respondents agreed that their family and friends think they should use mobile payment based on QR code, 40% agreed that family and friends influence them to use it, 62% agreed that they use it because they value people's opinion who recommended them to use it, and 48% agreed that most people surrounding them use it. The total mean score of all four items on the questionnaire is 3.46

which considered medium. This indicates that the use of QR code mobile payment based on QR code is moderately influenced by others.

| Social Influence (SI) | Frequencies Statistics | | | | | Descriptive Stati | | |
	Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]	Median	Mode	Mean
9. Family and friends think that I should use mobile payment based on QR code.	4% (2)	12% (6)	36% (18)	30% (15)	18% (9)	3.000	3.00	3.460
10. Family and friends influence me to use mobile payment based on QR code.	10% (5)	16% (8)	34% (17)	18% (9)	22% (11)	3.000	3.00	3.260
11. I use mobile payment based on QR code because I value people's opinion who recommended me to use it.	2% (1)	10% (5)	26% (13)	38% (19)	24% (12)	4.000	4.00	3.720
12. Most people surrounding me use mobile payment based on QR code.	8% (4)	18% (9)	26% (13)	22% (11)	26% (13)	3.000	3.00	3.400

Figure 4. The Results for Social Influence

Figure 5 and Figure 6 show the descriptive analysis of facilitating condition and hedonic motivation respectively. On facilitating condition, 78% of the respondents agreed that they have enough resources necessary to use mobile payment based on QR code, 76% agreed that they have the knowledge to use it, 82% agreed that it is compatible with other technologies they use and 70% agreed that they can get help from others when they have difficulties in using it. The total mean score of all four items on the questionnaire is 4.08 which is high. This indicates that the respondents agreed that they use QR code mobile payment when there are available resources and supports. On hedonic motivation, 78% of the respondents agreed that using mobile payment based on QR code is fun, 76% agreed that it is enjoyable to use, 62% agreed it entertaining, and 70% agreed that using mobile payment based on QR code makes them feel pleased. The total mean score of all four items on the questionnaire is 4.07 which is high. This indicates that the respondents agreed that QR code mobile payment is fun and a pleasure to use.

| Facilitating Condition (FC) | Frequencies Statistics | | | | | Descriptive Stati | | |
	Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]	Median	Mode	Mean
13. I have the resources necessary to use mobile payment based on QR code.	2% (1)	2% (1)	18% (9)	46% (23)	32% (16)	4.000	4.00	4.040
14. I have the knowledge necessary to use mobile payment based on QR code.	0% (0)	0% (0)	18% (9)	50% (25)	32% (16)	4.000	4.00	4.140
15. Mobile payment based on QR code is compatible with other technologies I use.	0% (0)	2% (1)	16% (8)	40% (20)	42% (21)	5.000	4.00	4.220
16. I can get help from others when I have difficulties using mobile payment based on QR code.	2% (1)	2% (1)	26% (13)	40% (20)	30% (15)	4.000	4.00	3.940

Figure 5. The Results for Facilitating Conditions

Hedonic Motivation (HM)	Frequencies Statistics					Descriptive Stati		
	Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]	Median	Mode	Mean
17. Using mobile payment based on QR code is fun.	0% (0)	0% (0)	22% (11)	36% (18)	42% (21)	4.000	5.00	4.200
18. Using mobile payment based on QR code is enjoyable.	0% (0)	0% (0)	24% (12)	40% (20)	36% (18)	4.000	4.00	4.120
19. Using mobile payment based on QR code is entertaining.	0% (0)	6% (3)	32% (16)	24% (12)	38% (19)	4.000	5.00	3.940
20. Using mobile payment based on QR code makes me feel pleased.	0% (0)	2% (1)	28% (14)	34% (17)	36% (18)	4.000	5.00	4.040

Figure 6. The Results for Hedonic Motivation

Figure 7 shows the descriptive analysis of habit. Based on the results, 46% of the respondents agreed that the use of mobile payment based on QR code had become a habit for them, while 36% of them are unsure about it. Also, 54% of the respondents think that it can become a habit for them to use the apps, while 16% are not sure about it. Other than that, 44% of the respondents agreed that the use of mobile payment based on QR code is a must for them, while 20% of them are unsure. Lastly, 74% of the respondents agreed that mobile payment based on QR code is an obvious choice for them to use when they faced with a particular need, and 18% are unsure. The total mean score of all four items on the questionnaire is 3.55 which considered high. This indicates that the respondents agreed that the use of QR code mobile payment could become a habit for them.

Habit (HT)	Frequencies Statistics					Descriptive Stat		
	Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]	Median	Mode	Mean
21. The use of mobile payment based on QR code has become a habit for me.	6% (3)	12% (6)	36% (18)	22% (11)	24% (12)	3.000	3.00	3.460
22. I think it can become a habit for me in using mobile payment based on QR code.	0% (0)	14% (7)	32% (16)	28% (14)	26% (13)	4.000	3.00	3.660
23. I think the use mobile payment based on QR code is a must for me.	4% (2)	12% (6)	40% (20)	24% (12)	20% (10)	3.000	3.00	3.440
24. When faced with a particular need, mobile payment based on QR Code is an obvious choice to me.	2% (1)	6% (3)	18% (9)	38% (19)	36% (18)	4.000	4.00	3.640

Figure 7. The Results for Habit

28

Figure 8 displays the descriptive analysis of trust. Based on the results, 74% of the respondents agreed that mobile payment based on QR code is reliable, 58% agreed that it is secure, 66% agreed that it is trustworthy, and 68% agreed that the instruction to use is clear and understandable. The total mean score of all four items on the questionnaire is 3.87 which is high. This indicates that the respondents agreed that QR code mobile payment could be trusted.

Trust (T)	Frequencies Statistics					Descriptive Stat		
	Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]	Median	Mode	Mean
25. I think mobile payment based on QR code is reliable.	0% (0)	0% (0)	26% (13)	42% (21)	32% (16)	4.000	4.00	4.060
26. I think mobile payment based on QR code is secure.	0% (0)	8% (4)	34% (17)	30% (15)	28% (14)	4.000	3.00	3.780
27. I believe mobile payment based on QR code is trustworthy.	0% (0)	8% (4)	26% (13)	40% (20)	26% (13)	4.000	4.00	3.840
28. I do not doubt the honesty of mobile payments service provider.	0% (0)	8% (4)	24% (12)	48% (24)	20% (10)	4.000	4.00	3.800

Figure 8. The Results for Trust

Figure 9 displays the descriptive analysis of the behavior intention of the survey. Based on the results, 74% of the respondents agreed that they intend to continue to use QR mobile payment, 60% agreed that they will try to use it in their daily life, 60% agreed that they plan to continue to use it frequently, and 66% agreed that they would use it whenever possible instead of cash transaction. The total mean score of all four items on the questionnaire is 3.83 which is high. This indicates that the respondents agreed that they intend to continue to use mobile payment based on QR code in the future and daily life.

	Frequencies Statistics					Descriptive Stati		
Behaviour Intention (BI)	Strongly Disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly Agree [5]	Median	Mode	Mean
29. I intend to continue using mobile payment based on QR code in the future.	0% (0)	6% (3)	20% (10)	42% (21)	32% (16)	4.000	4.00	4.000
30. I will always try to use mobile payment based on QR code in my daily life.	2% (1)	8% (4)	30% (15)	30% (15)	30% (15)	4.000	3.00	3.780
31. I plan to continue to use mobile payment based on QR code frequently.	2% (1)	4% (2)	34% (17)	36% (18)	24% (12)	4.000	4.00	3.760
32. I would use, whenever possible mobile payment based on QR code instead of cash transaction	2% (1)	8% (4)	24% (12)	40% (20)	26% (13)	4.000	4.00	3.800

Figure 9. The Results for Behavioral Intention

Figure 10 demonstrates the results of the correlation between independent and dependent variables. The result shows that there are significant relationships between the tested variables. Based on the result, the highest correlation value is between trust and behavioral intention with a value of 0.864.

	PE	EE	SI	FC	HM	HT	T	BI
PE	1							
EE	.753**	1						
SI	.578**	.596**	1					
FC	.411**	.449**	.412**	1				
HM	.634**	.640**	.443**	.591**	1			
HT	.581**	.507**	.482**	.639**	.701**	1		
T	.647**	.458**	.487**	.585**	.680**	.785**	1	
BI	.654**	.396**	.471**	.577**	.730**	.853**	.864**	1

Figure 10. The Results for Correlation Analysis

Multiple linear regression analysis was used in testing the relationship between the dependent variable and independent variables, as shown in Table 4. All the hypotheses have been tested and based on the results, performance expectancy, effort expectancy, hedonic motivation, habit and trust have a significant relationship with behavioral intention to use mobile payment based on QR code. Meanwhile, social influences and facilitating conditions were insignificant towards the intention to use.

Table 4. Result of Hypotheses Testing

Hypotheses	Beta Value	*P value*	Remarks
H1: PE is significantly affects the behavioral intention to use mobile payment based on QR code	0.301	0.003	Supported
H2: EE significantly affects the behavioral intention to use mobile payment based on QR code.	- 0.380	0.000	Supported
H3: SI significantly affects the behavioral intention to use mobile payment based on QR code.	0.055	0.428	Not supported
H4: FC significantly affects the behavioral intention to use mobile payment based on QR code	0.000	0.997	Not supported
H5: HM significantly affects the behavioral intention to use mobile payment based on QR code	0.245	0.008	Supported
H6: HT significantly affects the behavioral intention to use mobile payment based on QR code	0.422	0.000	Supported
H7: T significantly affects the behavioral intention to use mobile payment based on QR code	0.319	0.002	Supported

The study found that performance expectancy influences behavioral intention positively. Users feel that using QR code mobile payment has been useful and helpful for them in doing their transactions. They realized that when they are using this method of payments, it could help them save time. It is because of using QR Code mobile payment allows them to accomplish transactions faster. Since this method of payment has made it easy for them, it has become a valuable tool that leads to the positive perception of QR code mobile payment. Effort Expectancy (EE) has a negative significant effect on behavioral intention to use mobile payment based on QR code The findings show that the users view using the QR code mobile payment as a payment tool is easy to learn and use. They also realized that it is easy for them to become skilful at using mobile payment based on QR code to complete their payment transactions since it does not require much effort. Besides that, clear and understandable instruction of using QR code mobile payment has made them willing to use it as a payment tool. However, although the application is considered easy to use, ease of use it is not one of the important factors that make user wants to use QR code mobile payment.

On the other side, social influence was found significant towards the user's intention to use QR code. This indicates that most users may not be influenced by others around them who think they should use QR code mobile payment as their method of payment. It is because the users believe that they use QR code mobile payment on their own free will without the influence of others around them (such as family, friends or acquaintances). Facilitating condition has an insignificant influence on users' behavioral intentions because the users believe that they have enough resources, knowledge, and capabilities to use QR Code mobile payment to make the transactions without getting help from others. The users think that the QR code mobile payments apps that they have downloaded were compatible with the technology that they have such as mobile phones or tablets. Furthermore, as users find that QR code mobile payment is easy to use, this may be the reason they do not need support from anyone if they find it difficult to use because they know how to do it and are able to do it on their own.

It was found that hedonic motivation has positively influenced users' behavior intention towards the use of the QR code mobile payment. Most users think that using mobile payment based on QR code is fun, enjoyable, and entertaining for them. Furthermore, the use of QR code mobile payment has made the users experienced the pleasure feeling. This shows that users tend to use QR code mobile payments because of the fun and pleasure that they feel while they are using it. The findings of this research showed that habit had a beneficial impact on the behavioral intent of users. The potential use of QR code for mobile payments is related to the users' previous experience. The frequent use of mobile payments by QR code increases the strength of users to continue to use them. It has become habitual for them as they are already accustomed and used to it that made them feel natural to perform each payment.

Finally, the findings in this study verified that trust has positively influenced users' behavior intention to use mobile payment based on QR code. The users consider those performing

transactions using QR code mobile payment perceived to be reliable, secure, and trustworthy. Furthermore, they do not doubt the honesty of mobile payments service providers. This shows that users' behavior intention is driven by the feeling of confidence that they have in which they feel the QR code mobile payment is safe to use.

Due to the nonprobability sampling and lack of numbers of respondents, this study is not meant to generalize the findings towards a larger population. More studies are needed on a bigger number of samples and cover various user backgrounds in both rural and urban areas.

5. Conclusion

The primary purpose of this study was to evaluate the consumers' intention to used QR code mobile payment. The key antecedents have been successfully examined using theUTAUT2 model. Based on the findings, the result indicates that performance expectancy, effort expectancy, hedonic motivation and habit and trust have a significant relationship on behavioral intention to use mobile payment based on QR code while social influence and facilitating conditions are found to be insignificant. In conclusion, UTAUT2 was proven to be an appropriate model to predict the consumers' intention to use mobile payment based on the QR code. Overall, the result of the study would give insights and recommendations to business and marketing practitioners, as well as mobile apps developers and researchers, to effectively increase and influence consumers to use QR code mobile payments in the future.

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References

[1] D. Dennehy and D. Sammon, "Trends in mobile payments research: A literature review. Journal of Innovation Management", JIM, pp.49-57,2015.

[2] V. K. Raina, "Overview of mobile payment: Technologies and Security in Electronic Payment Systems for Competitive Advantage in e-commerce", pp. 186-222. IGI Global, 2014.

[3] Maybank. (2017). "Maybank Introduces Cashless Payments Using QR Code - Maybank QRPay to revolutionise payments in the country",https://www.maybank.com, Jun 2020.

[4] Z.W. Lee and D.P.T. Khaw, "Transforming Mobile Phones into E-Wallets in Malaysia", BNM Quarterly Bulletin,pp. 36-43,2018.

[5] F. Liébana-Cabanillas, I. Ramos de Luna and F. Montoro-Ríos, "Intention to use new mobile payment systems: A comparative analysis of SMS and NFC Payments". Economic research, 30(1), pp.892-910,2017.

[6] E. Ramezani, "Mobile Payment. Lecture E-Business Technologies", BCM1,2018.

[7] V. Mauree and G. Kohli, "The Mobile Money Revolution - Part 1: NFC Mobile Payments", Technology Watch Report, International Telecommunication Union (ITU),2013.

[8] Payment System Regulator, "Contactless Mobile Payments: A PSR Report", London: The Payment Systems Regulator Limited 2018.

[9] The World Bank, "From Remittances to M-Payments Understanding "Alternative" Means of Payment within the Common Framework of Retail Payments System Regulation" Washington DC: The International Bank for Reconstruction and Development / The World Bank,2012.

[10] H. Crompton, J. LaFrance and M. van 't Hooft, "QRCodes101. Learning & Leading with Technology", 39(8),pp. 22-25,2012.

[11] J. Lu, Z. Yang, L. Li, W. Yuan, L. Li adn C. C. Chang, " Multiple Schemes for Mobile Payment Authentication Using QR Code and Visual Cryptography", Mobile Information Systems. (2017) 1-12,2017.

[12] I. Ajzen and M. (Fishbein, "Understanding Attitudes and Predicting Social Behaviour", Prentice Hall, New York,1980.

[13] O. C. Otieno, S. Liyala, B. C. Odongo, S. Abeka and S. Ogara, "Validation of Extended Theory of Reasoned Action to Predict Mobile Phone Money Usage", World Journal of Computer Application and Technology, 6(1), pp. 1-13, 2018.

[14] I. Ajzen, "The Theory of Planned Behaviour. Organizational Behaviour and Human Decision Processes", 50(2), pp. 179-211,1991.

[15] R. Sharma and R. Mishra, "A Review of Evolution of Theories and Models of Technology Adoption". Indore Management. J, 6(2), pp. 17-29,2014.

[16] F. D. Davis,"Perceived usefulness, perceived ease of use, and user acceptance of information technology", MIS Quarterly, pp. 319-340,1989.

[17] F. Abu, A. R. Yunus, I. A. Majid, J. Jabar, A. Aris, H. Sakidin and A. Ahmad, "Technology Acceptance Model (TAM): Empowering Smart Customer to Participate in Electricity Supply System", The Journal of Technology Management and Technopreneurship (JTMT), 2(1),2014.

[18] L. Powell and H. Wimmer, " Parental Perceptions and Recommendations of Computing Majors: A Technology Acceptance Model Approach", Proceedings of the EDSIG Conference ISSN, 2473, pp. 3857,2016.

[19] D. Mugo, K. Njagi, B. Chemwei and J. Motanya, "The Technology Acceptance Model (TAM) and its Application to the Utilization of Mobile Learning Technologies", Bri. J. Math. Comput. Sci, 20(4), pp. 1-8,2017.

[20] U. A. Yucel and Y. Gulbahar, "Technology Acceptance Model: A Review of the Prior Predictors", Egitim Bilimleri Fakultesi Dergisi, 46(1), pp. 89,2013.

[21] M. Lescevica, E. Ginters and R. Mazza,"Unified Theory of Acceptance And Use of Technology (UTAUT) For Market Analysis Of FP7 Choreos Products" Procedia Computer Science, 26, pp. 51-68,2013.

[22] B. Davis, and F. D. Davis,"User Acceptance of Information Technology: Towards a Unified View", MIS Quarterly, pp. 425-478,2003.

[23] J. Liebenberg, T. Benade and S. Ellis, "Acceptance of ICT: Applicability of the Unified Theory of Acceptance and Use of Technology (UTAUT) to South African Students",The African Journal of Information Systems, 10(3), pp. 1,2018.

[24] A. J. Algharibi and T. N. Arvanitis, "Adapting the Unified Theory of Acceptance and Use of Technology (UTAUT) as a Tool for Validating User Needs on the Implementation of e-Trial Software Systems", Proceedings of the 25th BCS Conference on Human-Computer Interaction, pp. 526-530,2011.

[25] V. Venkatesh, J. Y. Thong, and X. Xu, "Consumer Acceptance and Use of Information Technology: Extending The Unified Theory Of Acceptance And Use of Technology", MIS Quarterly,pp. 157-178, 2012.

[26] J. Miladinovic and X. Hong, "A Study on Factors Affecting the Behavioural Intention to use Mobile Shopping Fashion Apps in Sweden" Jonkoping University,2016.

[27] A. Alomary and J. Woollard, "How is Technology Accepted by Users? A Review of Technology Acceptance Models And Theories", The IRES 17th International Conference, London UK, 2015.

[28] C. Y.Huang and Y. S. Kao, "UTAUT2 Based Predictions of Factors Influencing the Technology Acceptance of Phablets by DNP", Mathematical Problems in Engineering, 2015.

[29] V. Vinnik, "User Adoption of Mobile Applications: Extension of UTAUT2 Model", Master's thesis, 2017.

[30] İ. Daştan and C. Gürler, "Factors Affecting the Adoption of Mobile Payment Systems: An Empirical Analysis", EMAJ: Emerging Markets Journal, 6(1), pp. 17-24,2016.

[31] R. Al-Amri, N. Maarop, R. Jamaludin, G. N. Samy, P. Magalingam, N. H. Hassa and S. M. Daud, "Correlation Analysis Between Factors Influencing the Usage Intention Of NFC Mobile Wallet Payment",Journal of Fundamental and Applied Sciences, 10(2S), pp. 215-228,2018.

[32] A. Heyman, "Promoting Payment Digitisation in Ghana via Mobile Money", https://www.projektor.aau.dk, retrieved on Jun Apr 2017.

[33] V. Dmitrii, "Determining Factors of Adoption of Digital Device Wallets by Russian Consumers", St.Petersburg University,2018.

[34] E. A. Kolog, E. Sutinen, M. Vanhalakka-Ruoho, J. Suhonen and E. Anohah,"Using Unified Theory of Acceptance And Use of Technology Model to Predict Students' Behavioural Intention To Adopt and Use e-counseling in Ghana", International Journal of Modern Education and Computer Science, 7(11), pp.1-11,2015.

[35] W. H. Aslam, "Consumer Behavioural Intentions towards Mobile Payment Services: An Empirical Analysis in Pakistan". Market-Tržište, 29(2), pp.161-176,2017.

[36] H. Yan and K. Pan, "Examine User Adoption of Mobile Payment Using the TAM: A Trust Transfer Perspective. WHICEB 2014, 55. AIS Electronic Library",pp. 402-409,2014.

[37] L. Ismail, M. B. Moya, K. Bwiino and K. Ismael," Examining Determinants of Behavioural Intention in Adoption of Mobile Money Transfer Services in Uganda", ICTACT Journal on Management Studies, 3(1),pp. 433-439,2017.

[38] M.L. Yeh and Y.L. Tseng,"The College Students' Behaviour Intention of Using Mobile Payments In Taiwan: An Exploratory Research", Proceedings of IASTEM International Conference, Singapore,pp. 1-6, 2017.

[39] H. Ting, Y. Yacob, L. Liew and W. M. Lau, " Intention to Use Mobile Payment System: A Case of Developing Market by Ethnicity" Procedia-Social and Behavioural Sciences, pp.368-375,2016.

[40] S. A. Brown and V. Venkatesh, "Model of Adoption of Technology in Households: A Baseline Model Test and Extension Incorporating Household Life Cycle", MIS quarterly, pp. 399-426,2005.

[41] N. Mahomed, "Understanding Consumer Adoption of Cryptocurrencies",Doctoral dissertation, University of Pretoria,2017

[42] M. Limayem, S. G. Hirt and C. M. Cheung, "How Habit Limits the Predictive Power of Intention: The Case of Information Systems Continuance", MIS quarterly, pp.705-737,2007.

[43] L. Jia, D. Hall and S. Sun, "The Effect of Technology Usage Habits On Consumers' Intention to Continue Use Mobile Payments", Processes, 50(2), . pp179-211,2014.

[44] D. Gefen, "What Makes an ERP Implementation Relationship Worthwhile Linking Trust Mechanisms and ERP Usefulness", Journal of Management Information Systems, 21(1), pp. 263-288,2004.

[45] K. Owusu Kwateng, K. A. Osei Atiemo and C. Appiah, "Acceptance and Use of Mobile Banking: An Application of UTAUT2", Journal of Enterprise Information Management. 2(1). pp.118-151,2019.

[46] T. Kautonen, "Trust and New Technologies: Marketing And Management on The Internet and Mobile Media", Edward Elgar Publishing,2008.

[47] J. Ribeiro Dos Santos Leal, "Explaining Organizational Adoption of Technology: The Case of Cloud Platforms for Internet of Things",University of Jyvaskyla,2015.