Examining factors that effect on the acceptance of mobile commerce in malaysia based on revised UTAUT

Mohammed A.Sabri Alrawi[1], GanthanNarayanaSamy[2], RasimahCheMohd Yusoff[3],
Bharanidharan Shanmugam[4], Rajasekaran Lakshmiganthan[5], NurazeanMaarop[6],
Norshaliza Kamaruddin[7]
[1,2,3,6,7]Razak Faculty of Technology and Informatics, UniversitiTeknologi Malaysia, Malaysia
[4]College of Engineering, Information Technology and Environment, Charles Darwin University, Australia
[5]School of Computing and Mathematics, Charles Sturt Univeristy Study Centres, Australia

Article Info

ABSTRACT

This study presents an amended unified theory of acceptance and use of technology (UTAUT) which explores key factors affecting Malaysian consumers ' willingness to accept mobile-commerce. A questionnaire survey has been used to collect information from 400 Malaysian smartphone users using a random stratified sample and analyzed using structural equation modelling (SEM); with the use of Smart PLS 3.0. Results show that acceptance and use of mobile-commerce services can also be predicted by the behavioural intentions of users, whose performance expectancy, efforts expectations, social effects, mobility, personal innovations and perceived trust are significantly affected. From these variables, perceived trust is the most significant determinant that directly affects behavioural intention to use mobile-commerce services in Malaysia. It is then followed by mobility, personal innovation, social influence, performance expectancy then effect expectancy. Facilitating Conditions and moderating variables such as gender, age, education, income, marital status, experience and payment have no significant effect on Behavioral Intention to use mobile-commerce services in Malaysia. In conclusion, this study shows that behavioural intention and the use of mobile commerce services in Malaysia have a direct effect. The study will help dealers to avoid spending thousands of dollars on investments that have little impact on whether the customer is embracing and using mobile-commerce. The study also provides quantified indicators and offers a framework for the understanding of the Malaysia mobile-commerce system. The report concludes with a study of the effects of the research findings and provides recommendations for future research.

Corresponding Author:

Mohammed A.Sabri Alrawi,
Razak Faculty of Technology and Informatics,
UniversitiTeknologi Malaysia, Jalan Sultan Yahya Petra,
Kampung Datuk Keramat, 54100, Kuala Lumpur, Malaysia.
Email: asmohammed3@live.utm.my

1. INTRODUCTION

Technology impacts our lives profoundly. The Internet usage of wired networks have been changed the way we distribute, making it efficient and straightforward [1]. The use of wireless devices can, however, provide data and resources to individuals at anytime and anywhere [2]. Mobile devices are growing stronger and easier to reach since the wireless networks cover the greater part of our everyday environments [3]. According to Malaysian communications and multimedia commission survey in 2018 found that smartphones are the most common means for users to connect to the Internet , with nine out of 10 Internet users using the

app online (93.1%), up by 3.7% compared to 89.4% in 2016 [4]. This was no surprise as in the second quarter of 2018, mobile broadband subscriptions hit 36.2 million in Malaysia compared to just 2.6 million Fixedband subscriptions. This means mobile telephones are constantly and increasingly growing and are no longer just a mode for our lives, but are now considered to be needed [5]. Mobile commerce is the use in any period, anywhere, by a wireless network of mobile devices or mobile equipment to buy and sell goods, service or data [6]. The goal of the mobile-commerce project is to increase the participation of dealers and customers, both in developed and in developing countries, due to the dissemination, awareness, and use of mobile communication media.Mobile-commerce is new business technology that is changing the way organizations conduct their business between enterprise and client (B2B) and business and customer (B2C) and transforms stakeholder relationships [7]. We believed that mobile-commerce services have a prosperous future because of the widespread of smartphones. Modern procedures have generally caused market delays; businesses are trying to reduce this uncertainty by offering faster access to information in real-time to explore new commercial opportunities. The researchers found that Malaysians had a positive attitude towards mobile business [8]. In contrast, the Malaysians view the mobile exchange as highly useful and simpler than conventional trading methods [9]. The most significant factor accompanied by the presumed playfulness and the utility of M-Internet is its behavior toward mobile Internet [10].

A study applied the UTAUT model to mobile-commerce adoption behavior in Chinese consumers [11]. Throughout their study, Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Condition are significant factors that influenced the acceptance of mobile-commerce [12]. While moderating age and education have had a significant impact. Nevertheless, internet usage history has no important effect on Chinese consumers. Acceptance by consumers is one of the key principles of mobile-commerce growth and performance [13]. Also, the growing use of mobile applications by students can lead to positive perceptions [14]. The growing use of moving devices is expected to lead to new business developments in the market, such as mobile-commerce, being updated by merchant companies in Malaysia [15]. This move may result in thousands or even millions of dollars in investments that have little influence on customers adopting and using. The goal of this study is therefore to examine the factors that affect Malaysian consumers willingness to accept and subsequent use of mobile-commerce. The research also provides quantified metrics and a framework that could lead to understanding the Malaysian mobile-commerce environment. The remainder of this paper is organized as follows: the conceptual context is provided to describe the study framework, accompanied by the approach that is being implemented, and lastly, data analyzes are clarified, findings and research constraints addressed.

2. UNIFIED TECHNOLOGICAL ACCEPTANCE AND USE THEORY (UTAUT)

This study examines the main factors that influence Malaysian consumers' intention to accept and use mobile-commerce subsequently. The effects of these factors will be evaluated through a modified Unified Technological Acceptance and Use Theory (UTAUT). UTAUT model was developed to explain the acceptance criteria of new technology by individual users [1]. Meanwhile, the UTAUT model has been widely useful in several studies related to the examination of mobile-commerce acceptance and usage [15] . shown in Figure 1. The UTAUT model has introduced four primary constructs, effort expectancy (EE), performance expectancy (PE), social influence (SI) and facilitating conditions (FC) as bases for clarifying acceptance procedure. These four hypotheses are thought to form usage behavior from the users' viewing platform through behavior intention to use (BI). Certainly, the four concepts have found out to be of significance in the acceptance studies. Effort expectancy (EE) defined "the degree to which using technology will provide benefits to the consumers in performing certain activities"[1]. Performance expectancy (PE) is defined as "the person believes that using the system will enhance his or her job"[1]. Social influence (SI) is defined here as "change in a person's cognition, attitude, or behavior, which has its origin in another person or group" [3] and facilitating conditions (FC) defined as "the belief that organizational and technical infrastructures exist to support use of the system"[1].

3. HYPHOTHESES DEVELOPMENT
3.1. Performance expectancy

Performance expectancy (PE) is defined as the "degree to which an individual believes that using the system will help him or her attain gains in job performance"[1]. Researchers have concluded that gender and age in favour of younger men rather than women would balance the interaction between Performance expectancy and Behavioural intention [1]. They argued that it is difficult to use new information systems like mobile commerce and less useful for old end-users. The following hypotheses were also proposed in this research:

a) H1: Performance expectancy will have a positive influence on behavioural Intention to use mobile-commerce services.
b) H1a: Gender positively moderates the relationship between performance expectancy and behavioural intention.
c) H1b: Age positively moderates the relationship between performance expectancy and behavioural intention.
d) H1c: Experience positively moderates the relationship between performance expectancy and behavioural intention.
e) H1d: Education level positively moderates the relationship between performance expectancy and behavioural intention.
f) H1e: Marital positively moderates the relationship between performance expectancy and behavioural intention.
g) H1f: Income positively moderates the relationship between performance expectancy and behavioral intention.
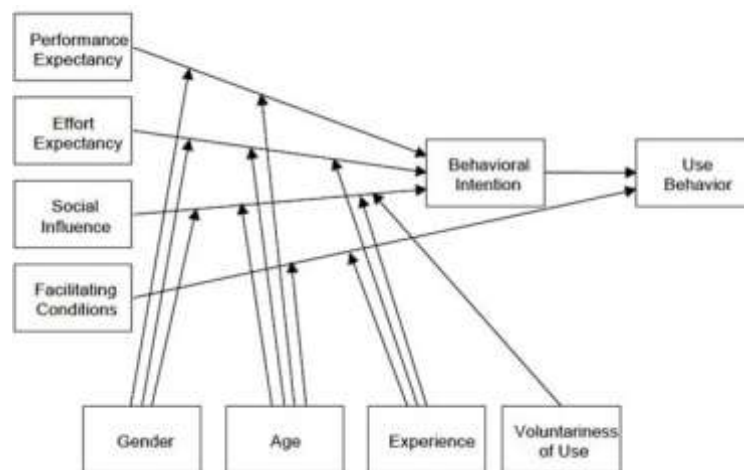h) H1g: Payment positively moderates the relationship between performance expectancy and behavioural intention.

Figure 1. Unified Theory of Acceptance and Use of Technology (UTAUT)

3.2. Effort expectancy

Effort Expectancy (EE) is defined as "the degree of ease associated with the use of the system" [1]. Researchers concluded that higher levels of computer anxiety, ease of use and commitment anticipation are in favor of women as opposed to men in new information structures such as mobile-commerce. Venkatesh and Morris have found that experience as the moderating element has found that the user uses the system as mobile-commerce has a significant effect over a longer period [16]. Therefore, in support of younger women than men, the impact of Effort expectancy on behavioral intent is moderate in terms of gender, age and experience. Performance expectancy (PE) is defined as the "degree to which an individual believes that using the system will help him or her attain gains in job performance" [1]. Researchers have concluded that gender and age in favor of younger men rather than women would balance the interaction between Performance expectancy and Behavioral intention [1]. They argued that it is difficult to use new information systems like mobile commerce and less useful for old end-users. The following hypotheses were also proposed in this research:
a) H2: Effort expectancy will have a positive influence on behavioral intention to use mobile-commerce services.
b) H2a: Gender differences positively moderate the relationship between the effect of effort expectancy and behavioral intention.
c) H2b: Age positively moderates the relationship between the effect of effort expectancy and behavioral intention.
d) H2c: Experience positively moderates the relationship between the effects of effort expectancy and behavioral intention.

e) H2d: Education level positively moderates the relationship between the effect of effort expectancy and behavioral intention.
f) H2e: Marital positively moderates the relationship between effort expectancy and behavioral intention.
g) H2f: Income positively moderates the relationship between effort expectancy and behavioral intention.
h) H2g: Payment positively moderates the relationship between effort expectancy and behavioral intention.

3.3. Social influence

Social influence is defined as "the degree to which an individual perceives that important others believe he or she should use the new system" [1]. Social influence is categorized as the subjective norm in TRA, TAM2, TPB/DTPB and C-TAM-TPB, social factors in MPCU, and image in IDT [1]. Social influence is a significant factor in terms of the use of mobile services [3]. Social influence influences the dedication of the user from using the information system [6]. Social influence plays an important role in the recognition and beneficial actions of modern IT adopters [7]. Social influence is one of the key factors for evaluating actions in acceptance and uses gender, age, voluntariness, and experience in favor of older women than men in the earliest stages will moderate the social influence on behavioral intention [1]. Therefore the following hypotheses are proposed in this research:

a) H3: Social influence will have a positive influence on behavioural intention to use mobile-commerce services.
b) H3a: Gender differences positively moderate the relationship between social influence and behavioural intention.
c) H3b: Age positively moderates the relationship between social influence and behavioural intention.
d) H3c: Experience positively moderates the relationship between social influence and behavioural Intention.
e) H3d: Education level positively moderates the relationship between social influence and behavioural intention.
f) H3e: Marital positively moderates the relationship between social influence and behavioural intention.
g) H3f: Income positively moderates the relationship between social influence and behavioural intention.
h) H3g: Payment positively moderates the relationship between social influence and behavioural intention.

3.4. Facilitating Condition

Facilitating conditions are defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system [1]. Technical infrastructures include software and computer equipment needed for the use of mobile-commerce [3]. In terms of age, monthly expenses and experience, Facilitating condition impact on use will be moderated to support older workers with improved interactions. The following hypotheses are thus proposed in this research:

a) H4: Facilitating conditions will have a positive influence on the behavioral intention to use m-commerce services.
b) H4a: Gender differences positively moderates the relationship between facilitating conditions and behavioral intention.
c) H4b: Age positively moderates the relationship between facilitating conditions and behavioral intention.
d) H4c: Experience positively moderates the relationship between facilitating conditions and behavioral intention.
e) H4d: Education level positively moderates the relationship between facilitating conditions and behavioral intention.
f) H4e: Marital positively moderates the relationship between facilitating conditions and behavioral intention.
g) H4f: Income positively moderates the relationship between facilitating conditions and behavioral intention.
h) H4g: Payment positively moderates the relationship between facilitating conditions and behavioral intention.

3.5. Mobility

Mobility is defined as "a new line of thought is needed for developing mobile solutions that get to the heart of the user's needs rather than technological constraints" [6]. In traditional electronic commerce, customers use their computers and laptops to conduct necessary transactions, whereas mobile phones enable users to access different services and information with no need to find a dedicated site which provides internet connection [7]. The following hypotheses are thus proposed in this research:

a) H5: Mobility will have a positive influence on the behavioral intention to use mobile-commerce services.

b) H5a: Gender differences positively moderate the relationship between mobility and behavioral intention.
c) H5b: Age positively moderates the relationship between mobility and behavioral intention.
d) H5c: Experience positively moderates the relationship between mobility and behavioral intention.
e) H5d: Education level positively moderates the relationship between mobility and behavioral intention.
f) H5e: Marital positively moderates the relationship between mobility and behavioral intention.
g) H5f: Income positively moderates the relationship between mobility and behavioral intention.
h) H5g: Payment positively moderates the relationship between mobility and behavioral intention.

3.6. Personal innovation

Personal innovativeness is defined as "the willingness of an individual to try out any new information technology" [9]. Further diffusion researches have reported that innovativeness is linked to the behavior of customer adoption [10, 11] reported, in their research, that consumer adoption of mobile shopping is influenced by personal innovativeness. [17] Stated that highly innovative people are more able to deal with different levels of uncertain situations and may have greater positive intention to acceptance. The following hypotheses are thus proposed in this research:

a) H6: Personal Innovation will have a positive influence on the behavioral intention to use mobile-commerce services.
b) H6a: Gender differences positively moderate the relationship between personal innovation and behavioral intention.
c) H6b: Age positively moderates the relationship between personal innovation and behavioral intention.
d) H6c: Experience positively moderates the relationship between personal innovation and behavioral intention.
e) H6d: Education level positively moderates the relationship between personal innovation and behavioral intention.
f) H6e: Marital positively moderates the relationship between personal innovation and behavioral intention.
g) H6f: Income positively moderates the relationship between personal innovation and behavioral intention.
h) H6g: Payment positively moderates the relationship between personal innovation and behavioral intention.

3.7. Perceived risk

Perceived risk defined as "uncertainty affects people's confidence in their decisions" [14]. Evidence presented from previous studies has demonstrated that the individual's awareness of risk is a significant factor when adopting a new technology or service It has been discussed that high perceived risk has a negative effect on the acceptance of new technology such as mobile banking [17], mobile coupon [18] mobile payment [19] and mobile-commerce [20]. The following hypotheses are thus proposed in this research:

a) H7: Perceived Risk will have a negative influence on the behavioral intention to use mobile-commerce services.
b) H7a: Gender differences negatively moderate the relationship between perceived risk and behavioral intention.
c) H7b: Age negatively moderates the relationship between perceived risk and behavioral intention.
d) H7c: Experience negatively moderates the relationship between perceived risk and behavioral intention.
e) H7d: Education level negatively moderates the relationship between perceived risk and behavioral intention.
f) H7e: Marital negatively moderates the relationship between perceived risk and behavioral intention.
g) H7f: Income negatively moderates the relationship between perceived risk and behavioral intention.
h) H7g: Payment negatively moderates the relationship between perceived risk and behavioral intention.

3.8. Perceived trust

Trust is defined as an expectancy that the words in the spoken or written statements given to people can be relied on [21]. Trust has a great significance for study in the area of social psychology and personality [22] more than a few predictors of trust have been recognized in prior literature such as perceived site attribute and website quality [23]. Recently, there have been a few studies and hypothetical discussions on smart phones and their use and possibility to revolutionize mobile marketing and shopping. One of the most significant of these studies was piloted in Canada; this shows that perceived value, shopping style, brand trust, and age are the significant predictors of purchasers' intention to involve in mobile marketing, and the

same factors, plus education, influence intention to contribute in location-based mobile marketing [24]. The following hypotheses are thus proposed in this research:

a)   H8: Perceived Trust will have a positive influence on the behavioral intention to use mobile-commerce services.
b)   H8a: Gender differences positively moderate the relationship between perceived trust and behavioral intention.
c)   H8b: Age positively moderates the relationship between perceived trust and behavioral intention.
d)   H8c: Experience positively moderates the relationship between perceived trust and behavioral intention.
e)   H8d: Education level positively moderates the relationship between perceived trust and behavioral intention.
f)   H8e: Marital positively moderates the relationship between perceived trust and behavioral intention.
g)   H8f: Income positively moderates the relationship between perceived trust and behavioral intention.
h)   H8g: Payment positively moderates the relationship between perceived trust and behavioral intention.

3.9. Behavioral intention

Behavioral Intention (BI) is defined as "the degree to which user's motivations intend to accept and use the system" [25]. Venkatesh believes that BI has a significant positive effect on the use of technology. Thus this research proposes the following hypothesis:

a)   H9: Behavioral intention will have positive influence to use mobile-commerce services.

4.   CONCEPTUAL MODEL

A modified UTAUT is used in the present study. Figure 2 shows the model of research being tested in this study.
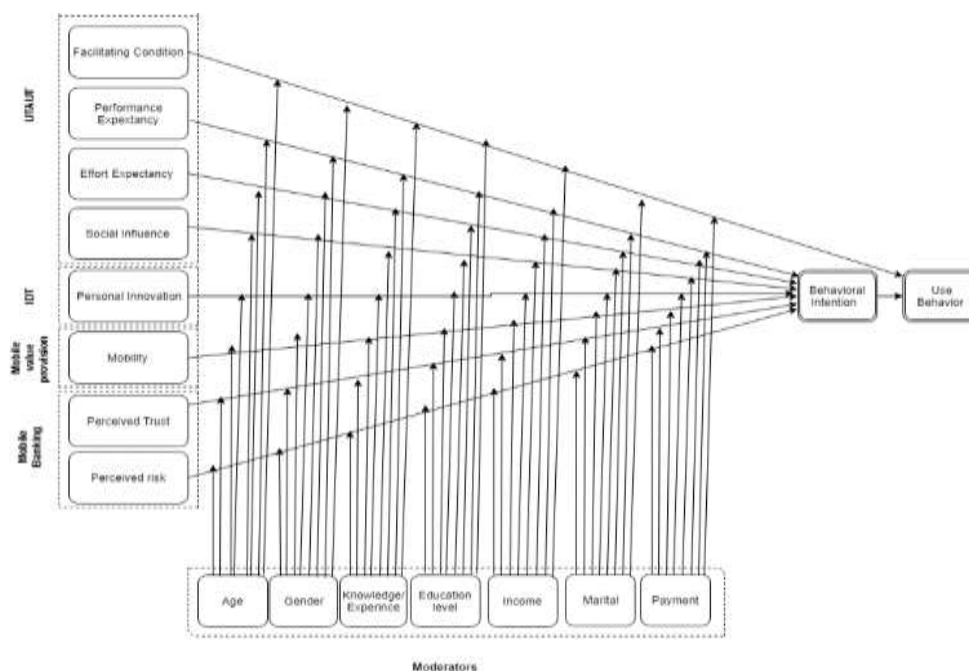

Figure 2. Proposed research model for mobile-commerce service acceptance

5.   RESEARCH METHOD
5.1. Population and sample

The quantitative survey is implemented to examine users' behavioural intention to accept mobile-commerce is using the revised UTAUT elements of PE, EE, SI, FCs, PR, PT, MOB and PI. This study is based on primary research methodology. According to [24], a survey describes the relation between population variables and sample findings can be used to generalize them. This research is being carried out in a cross-sectional study. The data collected during a cross-sectional study, whether for the population as a whole or

selected subset, can, according to Olsen and George (2004), respond to questions of research interest. Moreover, the information collected explains the situation in this study at only one point in time [25].

Quantitative method was drawn from the population of Malaysia-Kuala Lumpur that was currently using Smart Phone. Data from smartphone users were randomly collected using the Morgan random sample to conclude a paper-based self-managed survey. The respondents were intercepted and asked to respond to a brief questionnaire containing 48 statements measuring the various constructs understudy on a five-point scale. The total sample size used in the study was 370. The items to measure the constructs were borrowed from previously published studies.

5.2. Measuring the constructs

The research used a sample questionnaire for data collection based on previous studies. The research modified a measurement element from the measurements previously established. The measurement was designed using a five-point Likert scale ranging from (1) strongly disagree to (5) strongly agree. The questionnaire was pre-tested among academic doctors and experts. Due to the results of the pre-test, the questionnaire statements were amended. Quantitative method was used to evaluate the proposed model. A representative sample was given with the questionnaire. By using a stratified random sample, every smartphone user was chosen through chance from universities and employers.

5.3. Data collection

Quantitative method was used to evaluate the proposed model. A representative sample was given with the questionnaire. By using a stratified random sample, every smartphone user was chosen through chance from universities and employers.

6. RESULT AND DISCUSSION
6.1. Data analysis

The data for this study has been collected using a survey containing 48 questions. After the follow-up actions from 400 respondents, 380 give back the questionnaires. Because of unfinished replies, ten feedbacks was released from the examination. This left with 370 useable data sets 195 of the respondents is males and 175 are females for statistical examination, with a valid return rate of 92.25%. The structural equation modelling (SEM) using the Smart-PLS 3.0 software been used for data analysis. Smart-PLS software is used to calculate the loadings, factor loadings, R2, Average Variance Extracted (AVE), and Composite Reliability (CR). The PLS-SEM was positively selected in this examination because it is well suited for complex models with a large number of hypotheses and links [24] and equally important PLS-SEM is more proper than other statistical tools for examining the effects of moderators [25] as in the case of the present examination.

6.2. Reliability and validity

The reliability and validity of measuring tools have been tested via Smart-PLS 3.0 to calculate the convergent validity and reliability of each measure, following these important statistical subjects with discriminant validity. The convergent validity and reliability features have been assessed by the combination of the factor loading, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) as presented in the Table 1. Composite Reliability (CR) larger than 0.7 is acceptable, then, the CR following the improvement of the reliability of the questionnaire is possible via removing the items increasing error. Results of this study for composite reliability indicated that the CR ranged between 0.889 and 0.950. In addition, the AVE for all construct was around above 0.5 (ranged between 0.637 and 0.825). (AVE) for each hypothesis is further than each of the squared correlation among constructs. Therefore, the outcomes verify that convergent validity (AVE) and Composite Reliability (CR) exist for the constructs of this paper as shown in Table 1. High outer loadings on a hypothesis show that the correlated item of each construct has much association with the construct. This feature is also frequently called indicator reliability which can be measured by outer loadings; a common instruction of thumb is that the (standardized) outer loadings should be 0.708 or higher. Indicators with very low outer loadings (below 0.40) should, however, always be removed from the scale [24]. Table 1 also displays the outer loadings of all items for all reflective construct in initial and modified measurement model according to these findings all outer loadings were above threshold of 0.5 except two items related to perceived risk (PR5) and perceived Trust (PT3) which were deleted from initial measurement model due to low loading factor which was less than 0.5 which confirmed their low contribution to related constructs.

Table 1. The result of convergent validity

Construct	Item	Initial model	Modified	Cronbach's Alpha	CR	AVE
Consumer Intention	BI2	0.901	0.901	0.918	0.942	0.804
	BI3	0.923	0.923			
	BI4	0.905	0.905			
	BI5	0.856	0.856			
Effort Expectancy	EE1	0.858	0.858	0.900	0.926	0.715
	EE2	0.819	0.819			
	EE3	0.837	0.837			
	EE4	0.850	0.850			
	EE5	0.863	0.863			
Facilitating Conditions	FC1	0.905	0.905	0.929	0.95	0.825
	FC2	0.915	0.915			
	FC3	0.912	0.912			
	FC4	0.902	0.902			
Mobility	MOB1	0.894	0.894	0.918	0.942	0.803
	MOB2	0.923	0.923			
	MOB3	0.899	0.899			
	MOB4	0.868	0.868			
Performance Expectancy	PE1	0.803	0.803	0.875	0.909	0.666
	PE2	0.739	0.739			
	PE3	0.851	0.851			
	PE4	0.853	0.853			
	PE5	0.83	0.83			
Personal innovativeness	PI1	0.874	0.874	0.812	0.889	0.728
	PI2	0.896	0.896			
	PI3	0.785	0.785			
Perceived risk	PR1	0.881	0.887	0.932	0.948	0.786
	PR2	0.868	0.876			
	PR3	0.901	0.904			
	PR4	0.911	0.918			
	PR5	0.456	deleted			
	PR6	0.842	0.848			
Trust	PT1	0.816	0.824	0.888	0.922	0.748
	PT2	0.886	0.891			
	PT3	0.479	deleted			
	PT4	0.853	0.869			
	PT5	0.869	0.875			
Social influence	SI1	0.808	0.808	0.905	0.925	0.637
	SI2	0.823	0.823			
	SI3	0.803	0.803			
	SI4	0.832	0.832			
	SI5	0.756	0.756			
	SI6	0.76	0.76			
	SI7	0.802	0.802			

6.3. Factor result

Structural equation modelling (Partial Least Squares; PLS) was applied to test the research hypothesis and evaluate the research hypothesizes. According to the research model, in the first section through a path model the effect of effort expectancy, performance expectancy, social influence, facilitating condition, personal innovation, mobility, perceived risk and perceived trust on consumer intention to use mobile was examined. Figure.3 shows the path model without considering the moderators. The model includes 48 items describing eighths latent constructs: performance expectancy, effort expectancy, facilitating conditions, social influence, mobility, perceived trust, perceived risk and personal innovation. The structural equation modelling (SEM) using the Smart-PLS V 3.0 software was used to be responsible for the required analysis to work for the objectives of this examination. The analysis of the measurement models has shown statistically recognized compatibility between data and the proposed model. Hence, according to [25], The model is fit to the data Figure 3 shows significant structural interactions between the research variables and their respective significance levels of the standardized path coefficients. The hypotheses (H1, H1g, H2, H3, H3b, H4, H4b, H4g, H5, H5b, H6, H7a, H7b, H8, H8g and H9) are strongly supported. However, (H1a, H1b, H1c, H1d, H1e, H1f, H2a, H2b, H2c, H2d, H2e, H2f, H2g, H3a, H3c, H3d, H3e, H3f, H3g, H4a, H4c, H4d, H4e, H4f, H5a, H5c, H5d, H5e, H5f, H5g, H6a, H6b, H6c, H6d, H6e, H6f, H6g, H7, H7c, H7d, H7e, H7f, H7g, H8a, H8b, H8c, H8d, H8e and H8f) is not supported.
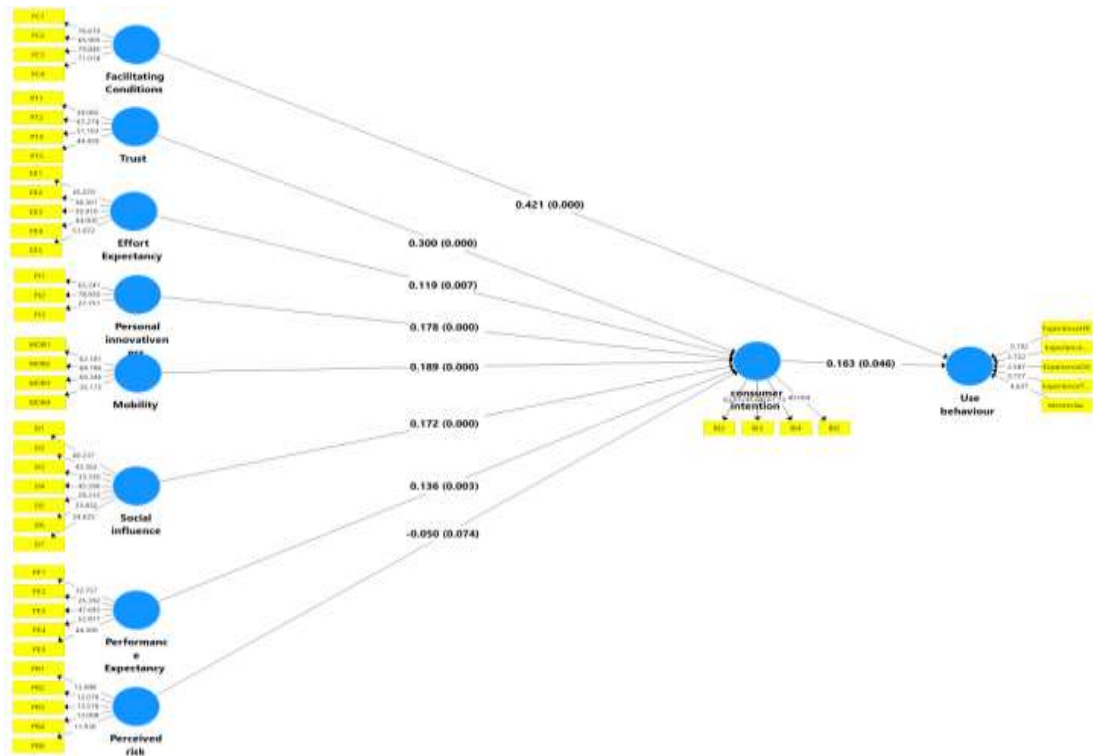
Figure 3. Path model without moderators

The results of boot strapping method as shown in Table 2, show a p-value for each relation. All structural model relationships were significant considering a p-value = 0.05 except perceived risk. Based on the results of bootstrapping, effort expectancy had a positive and significant (β=0.119, p<0.05) on consumer intention. Mobility also had a positive and significant impact on consumer intention (β =0.189, p<0.05). According to these results it was found that performance expectancy (β=0.136, p<0.05), personal innovation (β=0.178, p<0.05), social influence (β=0.172, p<0.05) had a positive and significant effect on consumer intention. Perceived trust had the highest regression coefficients (β=0.300, p<0.05) among all independent variables on consumer intention. Based on this model it was found that both consumer intention (β=0.163, p<0.05) and facilitating condition (β=0.421, p<0.05) had positive and significant influence on use behavior among respondents.

Table 2. Test of the total effects using bootstrapping (without Moderators)

Path	β	SE	T Value	P Value
Effort Expectancy -> consumer intention	0.119	0.044	2.69**	0.007
Mobility -> consumer intention	0.189	0.05	3.768**	<0.001
Perceived risk -> consumer intention	-0.05	0.028	1.789	0.074
Performance Expectancy ->consumer intention	0.136	0.046	2.94**	0.003
Personal innovativeness -> consumer intention	0.178	0.038	4.63**	<0.001
Social influence -> consumer intention	0.172	0.044	3.948**	<0.001
Trust -> consumer intention	0.300	0.039	7.61**	<0.001
consumer intention -> Use behavior	0.163	0.082	1.993*	0.046
Facilitating Conditions -> Use behavior	0.421	0.07	6.019**	<0.001

** Significant at 0.01 level, * Significant at 0.05 level

7.   CONCLUSION

This paper aims to evaluate the main factor that affects mobile-commerce acceptance in Malaysia. To achieve this, a simple model was developed and measured based on a modified unified technology acceptance and use theory (UTAUT). The results suggest that: First, user acceptance and use of Mobile-commerce services can be predicted from the users' Behavioral Intentions, which are affected significantly by performance expectancy, effort expectancy, social influence, facilitating condition, mobility, personal innovation and perceived trust and among these variables, perceived Trust is the most significant

determinant that directly affects Behavioral Intention to use mobile-commerce services in Malaysia followed by Mobility, Personal Innovation, Social Influence, Performance Expectancy then Effect Expectancy. Second, the results show that mobility has a significant direct impact on behavioral intention and some studies also shown mobility is a significant determinant of mobile adoption intentions. Third, personal innovation has a significant effect on behavioral intention to use mobile-commerce service in Malaysia. This finding shows that highly innovative people are one of the most important success factors in the implementation of technology throughout the adoption process. This result is consistent with previous research, for example Fourth, Performance Expectancy has a significant impact on mobile-commerce services. This result shows that Malaysia's mobile-commerce consumers are positive and expect their success. This result agrees with the previous study such as Fifth, the results reveal a direct significant behavioral intention on Effort Expectancy. They claim that if consumers are seeking self-performing value or a hedonic product, perceived ease of use would have greater value than the perceived utility that affects their intended use. The result shows that the programmers of mobile-commerce will continue to develop user-oriented and user-friendly applications, which should usually be simple to use. This finding is compatible with the previous study, including Sixth, facilitating conditions have a significant effect on Behavioral Intention to use mobile-commerce services. A possible explanation is that smartphone customers think there is the infrastructure necessary for dealing with mobile-commerce, such as hardware and software. This result corresponds with Seventh, the result of perceived trust have direct significant on behavioral intention. Some studies suggest that functionality may expand to establishing ties to clarify consumer confidence. Eighth, the perceived risk was found to have a significant negative impact on the customers' intention to adopt mobile-commerce services in Malaysia. This was in line with many past studies by . Consumers have seen greater risks and uncertainties, such as data loss and theft of financial information, as they are a disincentive to use mobile-commerce services. Accordingly, stakeholders must plan to offer mobile-commerce services more securely to improve consumer acceptance. Nineth, the results indicate that they are not endorsed, as they have been suggested under moderating variables (gender, age, marital status, income, education level, method of payment and experience), so they do not affect the adoption of and use of mobile-commerce services. In conclusion, this study finds that a direct effect exists in Malaysia between behavioral intention and the eventual use of mobile-commerce services. This indicates that consumers in Malaysia are willing to accept and use mobile-commerce by concentrating on the above factors.

The research will help to develop policies, provide quantified metrics and provide a framework that could lead to a comprehension of Malaysia's mobile-commerce environment. This study will allow retailers to avoid spending thousands or even millions of dollars on investments which will have no effects on the customer embracing or using mobile-commerce services in Malaysia. These findings encourage the telecommunications industry and stakeholders to invest in mobile-commerce services in Malaysia by concentrating on the factors mentioned above.

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BIOGRAPHIES OF AUTHORS

Mohammed A Sabri Alrawi, Received the degree in Computer Science from Alrafidain University College, Iraq, the M.Sc. degree in Computer Science (Information Security) from Universiti Teknologi Malaysia (UTM) 2013, and Full time Ph.D. Candidate in Mobile Commerce from Universiti Teknologi Malaysia (UTM). After Master Graduation from The Universiti Teknologi Malaysia (UTM), His current research interests include Mobile Commerce, Mobile Applications and accpetnace, UTAUT, Mobile application development, Information Security Policy, Intrusion Detection System, cyber security, IoT threats, Malware analysis and Cyber Risk Management.
Email: asmohammed3@live.utm.my

DR. Ganthan Narayana Samy, is currently a Senior Lecturer at the Razak Faculty of Technology and Informatics (FTIR), Universiti Teknologi Malaysia (UTM), Malaysia. He received his Master degree in Information Technology from University of Malaya (UM), Malaysia in 2004, and a Master degree in Economics from National University of Malaysia (UKM) in 2001. He also obtained his Ph.D degree in Computer Science from Universiti Teknologi Malaysia (UTM), Malaysia in 2012. Apart from lecturing, he also contributed his service as Program Coordinator for Doctorate of Software Engineering (DSE) and currently serving as Head of MPROTEC Research Group. He has published more than 80 research papers in which more than 40 research papers are indexed publication. His Scopus h-index is 6, and his number of citations in Scopus is 206. His research interests include Information Security Risk Management, Healthcare Information System Security, Cloud Computing and Information Security Policy. He is also on the Scientific and Technical Committee & Editorial Review Board on Humanities and Social Sciences for World Academy of Science, Engineering and Technology (WASET), since 2018.
Email: ganthan.kl@utm.my

DR. Rasimah Bt Che Mohd Yusoff, is currently a Senior Lecturer at Razak Faculty of Technology & Informatics, UTM Kuala Lumpur. She received her Bachelor of Computer Science from Heidelberg College, Ohio, USA. Her Master of Science in Multimedia from University Putra Malaysia and her PhD in Visual Informatics from Universiti Kebangsaan, Malaysia. Her research interests include augmented reality, multimedia in education, acceptance of new technologies.
Email: rasimah.kl@utm.my

DR. Bharanidharan Shanmugam, received his Ph.D from Universiti Teknologi Malaysia in 2010 specialising cyber security. He is currently a Lecturer at Charles Darwin University and part of cyber research group. His current research interests include Intrusion Detection System, cyber security, IoT threats, Malware analysis and Cyber Risk Management. Dr. Bharani is also part of Australia Information Security Association Darwin chapter focusing on enriching cyber digital skills for next generation and elders.
Email: bharanidharan.shanmugan@cdu.edu

Rajasekaran Lakshmiganthan, is working as an IT Coordinator at Charles Sturt University Study Centre Melbourne. He received the Bachelor of Science (Computer Science) in 1995 and the Master of Computer Applications in 1998 from the University of Madras, Chennai, India. He has been working with various roles in tertiary education sector and in IT industry for the past 22 years in Australia, Malaysia and India. His research interests include internet of things (IOT), software engineering, web engineering, database systems and teaching pedagogy. Also, he has been developed web applications by using various Information Technologies include .Net, OpenSource, Java with various DBMS. Also, he has experienced in Manual Testing, Automation Tools (Quick Test Professional), Test Management Tools (Quality Centre), Defect Tracking Tools as well as Version Control Tools.
Email: rlakshmiganthan@studygroup.com

DR. Nurazean Maarop, is currently a Senior Lecturer with Universiti Teknologi Malaysia (UTM), Malaysia. She received the BSc degree in Computer Science as well as MSc Computer Science from Universiti Teknologi Malaysia. She also obtained the Ph.D degree from University of Wollongong, Australia. Apart from lecturing, she also contributed her service as Program Coordinator and Head of Research Group. She has published more than 130 research papers in which more than 50 are indexed publication. Her h-index is 4, and her number of citations in Scopus is more than 70. His research interests include Success Model of Information Systems, Diffusion and Adoption of Technology, Information Security Related Issues, Health Informatics, Government Informatics, Enterprise Architecture, and Digital Transformation. She has been serving as the Editorial Board member of Open International Journal of Informatics, since 2018.
Email: nurazean.kl@utm.my

DR. Norshaliza Kamaruddin, is working as a lecturer at University of Technology Malaysia. She received the Bachelor of Information Technology at University Utara Malaysia in 1996. She pursued her Master of Computer Science (Multimedia) in 2000 and in 2016 she received her Doctorate of Philosophy (Image Processing) from University of Malaya, Malaysia. She has been working as a lecturer of computer science in many private colleges and Universities for the past 22 years in Malaysia. Her main research interest is image processing of images, however her research interest also includes web engineering and multimedia.
Email: norshaliza.k@utm.my