# THE DETERMINANTS OF MOBILE COMMERCE ADOPTION AMONG UNIVERSITY STUDENTS IN MALAYSIA: A CONCEPTUAL FRAMEWORK

**Nurul Labanihuda Abdull Rahman***
Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
*huda_522264@yahoo.com*

**Shahizan Hassan**
Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
*shahizan@uum.edu.my*

*corresponding author: huda_522264@yahoo.com

## ABSTRACT

*The rapidly emerging wireless and mobile network which offers a new platform to sell products efficiently is known as M-commerce (mobile commerce). While numerous studies have been carried out on technology adoption, not much is known about mobile commerce adoption in Malaysia, namely the governing factors and appropriate models that could explain the behaviours of young generations on the use of mobile commerce. Therefore, this paper attempts to propose a model of mobile commerce adoption in Malaysia by integrating the models of TAM3, and Individualism-Collectivism at Individual-Level (ICAIL) as moderating variables in the context of mobile commerce. This paper presents a basic understanding of the concept of mobile commerce and its business characteristics. It also describes several issues pertaining to mobile commerce from previous studies. Based on a thorough literature analysis, a model of determinants of mobile commerce adoption is presented. The findings from this study are important to the advancement of knowledge in the retail or service industries, specifically for members of the younger generation who are early and enthusiastic adopters of new technologies. The findings from this study allow a better understanding of their usage behaviour in employing M-commerce in their daily lives .*

**Keywords:** m-commerce, Technology Acceptance Model (TAM), individual-collectivism at individual level (ICAIL), perceived ease of use (PEOU), perceived usefulness (PEU)

## 1.0 INTRODUCTION

Social media can be defined as any online service through which users can create and share a variety of content (Bolton et al., 2013). These days, there are several social media tools that are made available to consumers via mobile marketplace applications, such as Facebook, Instagram, Twitter, Blog and Carousell. Social media are often mobilized by most companies as marketing tools to persuade people to purchase products or services offered by their companies. In Malaysia, most of the Small and Medium Enterprises (SMEs) employ Facebook as a marketing tool to attract customers as they believe such media permit fast dissemination of information to customers (Hassan et al., 2015). Studies by scholars such as Park and Valenzuela (2009) and Rawlins, Simeon, Ramdath, and Chadee (2008) suggest that members of Generation Y are frequent users of social media and they use these media primarily to stay connected with friends, obtain information and be entertained through technology.

The rise of m-commerce these days stems from the use of mobile technologies worldwide. According to Khalifa and Shen (2008), M-commerce covers a large number of services, including mobile financial services (m-banking, m-payment, and m-brokering), mobile shopping (m-retailing, m-ticketing, and m-auctions) and mobile entertainment (m-gaming, m-music, m-video, and m-betting). Generally, most of the activities carried out by members of Generation Y in m-commerce are intended for communication and entertainment purposes rather than transaction purposes (Goi & Ng, 2011). In Malaysia, m-commerce is still at the early stage and there are quite a number of studies on m-commerce in Malaysia such as Goi and Ng (2011), Hew, Lee, Ooi, and Wei (2015), and Lee and Wong (2016). Nevertheless, only limited studies have scrutinized the relationship between university students and mobile commerce applications, particularly in the aspect of transaction purposes.

As an extension of earlier research, the present study proposes a conceptual model for mobile commerce adoption by testing the Technology Acceptance Model (TAM3). This study uses an integrated model of TAM3 which combines TAM and TAM2 (Ventakesh & Bala, 2008). From their findings, Ventakesh and Bala (2008) concluded that TAM3 is a nomological network of the determinants of an individual's adoption and the use of technology. Cultural differences must also be considered where mobile adoption is concerned as the differences not only influence the user's intention to choose his or her mobile internet usage, but such dissimilarities also pose difficulties to marketers in product development and service acceptance (Eriksson, Kerem, & Nilson, 2005; Jin, Park, & Kim, 2008).

However, far too little attention has been given to the impact of culture-based factors on technology acceptance mobile commerce in Malaysia. Past literature shows that UTAUT and Hofstede's cultural moderators were used in a mobile service acceptance framework with data from an East Asian country (Venkatesh, Thong, & Xu, 2012). Moreover, Individualism-Collectivism At Individual-level (ICAIL) was used as a moderating variable between perceived ease of use, perceived usefulness, behavioural intention and subjective norm in the TAM3 model in the Middle East countries (Faqih & Jaradat (2015).

In the Malaysian context, there has been scant research that applies Hofstede's culture moderators in determining mobile adoption. Past empirical research by Zendehdel and Paim (2015) examined UTAUT (performance expectancy, social influence, effort expectancy) with Hofstede's culture moderators and looked at how culture influences an individual's intention on mobile internet usage in Malaysia. The findings indicated that collectivism/individualism was found to be the most significant cultural moderator for an individual's decisions to use the mobile internet (4G) services among Malaysian students, with social influence having a significant effect on collectivism/individualism. In this regard, the current study examines the ICAIL in one country, specifically Malaysia that has a rich cultural heritage, and diverse religions. The findings may provide a good context for further studies on consumer behaviour in Malaysia. For that reason, the researcher aims to provide a better explanation by employing Hofstede's culture (ICAIL) as a moderator with TAM3 in mobile commerce adoption in Malaysia.

## 2.0 SIGNIFICANCE OF THE STUDY

This research contributes to the advancement of knowledge for marketers of mobile commercial companies. To achieve optimum results, marketers and management need to understand the various key factors that might affect the behavioural intention of mobile commerce users. Additionally, m-commerce providers can employ appropriate marketing

strategies, for instance, by promoting these services to users who have higher education, and educating users on easier, useful m-commerce features and applications. Indirectly, such strategies can help companies develop their business better and boost their profits.

Financial service industries are also involved with current mobile financial applications such as m-banking, m-payment and m-brokering. In the 2013 Budget, SME Bank provides the "Young Entrepreneurs Fund" which focuses on youths aged 30 and below, and the bank offers a subsidized loan interest rate for loans up to RM100, 000 with a 7-year repayment period (BNM, 2012). This enables the financial services to improve their marketing communications and develop positive attitudes in order to fulfil the young generation's expectations in using their mobile financial applications. Furthermore, the research findings will help financial services to better understand young people's behaviours and problems in adopting m-commerce in Malaysia.

The Malaysian government can also benefit from the research findings as m-commerce is a part of the long-term national Multimedia Super Corridor plans. In the 2013 Budget, 50,000 small Malaysian entrepreneurs were offered a grant of RM1000 each to help with their online business under the RM50 million fund (BNM, 2012). The government has also invested heavily in the country's telecommunications infrastructure and helped to create M-commerce awareness among its citizens. Apart from benefitting the government, this research enables members of the young generation, who are early adopters of new technologies, understand their daily m-commerce usage behaviours. The funds given by the government and the availability of the financial services allow these young people to generate and increase their incomes after they leave the university.

The findings from this research also provide a new understanding of the theory used, particularly in explaining the relationships between perceived usefulness and perceived ease of use determinants in TAM and TAM 2 (Agarwal & Karahanna, 2000; Ventakesh & Bala, 2008; Faqih & Jaradat, 2015). This study will apply TAM3 to investigate the significant effect between perceived usefulness determinants (subjective norm, image, output quality and result demonstrability) and perceived ease of use determinants (self-efficacy, perception of internal control, anxiety and playfulness) in the context of m-commerce adoption in Malaysia. Additional understanding of Hofstede's culture (ICAIL) as a moderator with TAM3 in mobile commerce adoption, especially among Malaysian university students, is also given in this study. The findings will also add substantially our understanding of consumer behaviour and might be useful for users in dealing with mobile commerce in Malaysia (Zendehdel & Paim, 2015).

## 3.0 LITERATURE REVIEW

### 3.1 E-Commerce

The rapid growth of the Internet and web technologies has seen how the traditional technique in commercial activities has been replaced with new methods such as e-commerce in dealing with business transactions. Maamar (2003) defines e-commerce as "a commercial transaction that involves the transfer of information across the Internet". Most of the businesses have adopted e-commerce to compete with their rivals in the global market. However, e-commerce is still emerging and technology is steadily shifting to new technology which offers more value than e-commerce such as m-commerce (Clarke, 2001). The shift is mainly due to the unique features that the m-commerce displays such as ubiquity, personalization, flexibility and localization (Eze, Ten, & Poong, 2011).

### 3.2 M- Commerce

M-commerce is the use of mobile devices in dealing with various transactions such as buying and selling products or providing services to clients at anytime and anywhere through wireless network (Jaradat & Al- Rababaa, 2013). Mobile commerce also refers to any market transaction that is conducted via wireless handheld devices that are connected to any type of wireless network (Stafford and Gillenson, 2003). The term "any monetary transaction that is conducted by using a mobile network" is also used in defining mobile commerce (Ngai & Gunasekaran, 2007). This study adopts the definitions presented by Yang (2005) as well as Yaseen and Zayed (2010) who viewed m-commerce as an "extension of electronic commerce from wired to wireless telecommunications and has ubiquity characteristics which allow customers to connect at anytime from anywhere." Mobile commerce has unique characteristics unlike e-commerce. Figure 1 shows the mobile commerce characteristics and some examples of mobile commerce applications (Samuelsson & Dholakia, 2003).

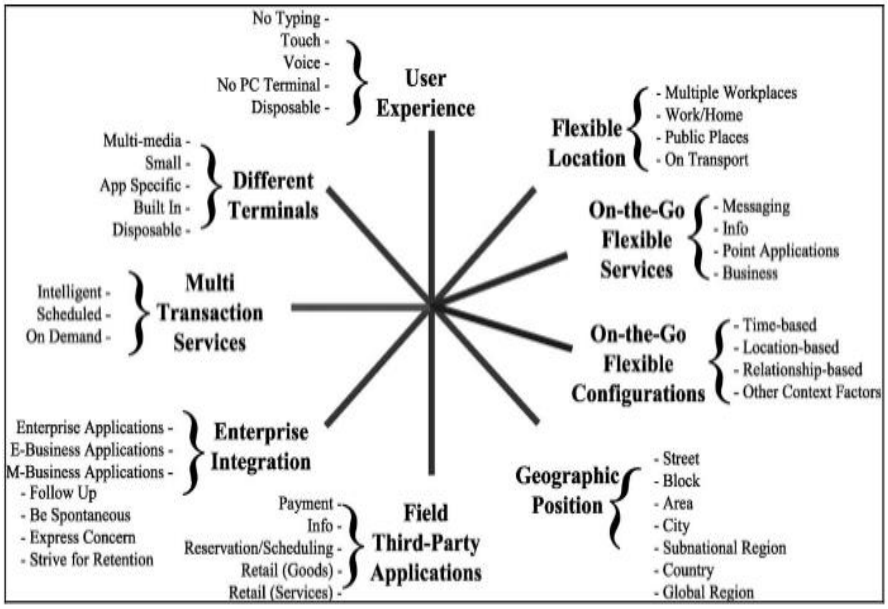


*Figure 1*: Mobile commerce characteristics.
Source: Samuelsson & Dholakia (2003)

According to Seong, Sik, and Seong (2004), the B2C business model is subdivided into three categories, namely commerce, intermediary and information. This study focuses on the mobile commerce usage among university students by applying the B2C business model. Table 1 details the categories, examples and descriptions of the mobile B2C business model.

Table 1.
*Mobile B2C Business Model, Examples and Descriptions*

| Category | Examples | Descriptions |
|---|---|---|
| **Commerce** | | A commerce model provides mobile contents or/and services for direct commercial transactions. |
| Digital | Game, MP3, e-book | |
| Physical | Electronic appliances, books | |
| Services | E-mail, banking, ticketing, download, music, reservation, community | |
| **Intermediary** | | An intermediary model delivers mobile contents and/or services from other sources to customers. |
| Stock information | Stock-related sites | |
| Contents | News, weather, entertainment, information | |
| **Information** | | An information model provides personalized information to customers' mobile terminals generally on a push basis. |
| Advertisement | SMS, coupon, banner | |
| Personalized information | Location information, stock information | |

Source: Seong et al. (2004)

### 3.3 Technology Acceptance Model (TAM3)

According to Davis (1989), TAM is constructed based on the Theory of Reasoned Action (TRA). TRA explores the relationship between perception and technology usage (Fishbein & Ajzen, 1975). However, TAM is developed to explain in detail why users accept or reject an innovative information system (Davis, Bagozzi, & Warshaw, 1989). This model claims that an innovative information system is dependent on two determinants which are perceived ease of use and perceived usefulness. Perceived usefulness is the degree to which an individual believes the system or technology is useful, therefore he/she will be more positive towards using the technology or system. On the other hand, perceived ease of use refers to an individual's perception on whether the technology can enhance his/her performance or not, and whether it is easy to use or not (Davis, 1989).

Both the TRA and the TAM models postulate that attitude has the capacity to influence behavioural intention. While Davis (1989) argued that the effect of subjective norms on behavioural intention to use is only usable in TRA and not TAM, Venkatesh and Davis (2000) claimed that subjective norms may influence one's intention to use perceived usefulness of a technology and perceived ease of use in TAM2. Therefore, Venkatesh and Davis (2000) developed TAM2 on the basis of TAM to determine the relationship among the variables. This extension of TAM includes two processes, which are the social influence processes (subjective norm, voluntariness, and image) and the cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived usefulness). Both processes are integrated into this model. These two processes are important to study the user's acceptance of technology and the system.

In previous research, TAM2 has explored the additional factors that influence perceived usefulness. However, for perceived ease of use, an individual will form his or her perception on a system based on several anchors pertaining to the individual's general beliefs with regards to computer use (Ventakesh, 2000). Bearing this limitation in mind, Ventakesh and

Bala (2008) developed a model of TAM3 which concerns the perceived ease of use determinants by building the anchoring and adjustment of human decision- making. This model is able to present the determinants of individual usage in technology. In addition, Ventakesh and Bala (2008) argued that perceived usefulness will not influence perceived ease of use and the determinants of perceived ease of use will not influence perceived usefulness. Therefore, TAM3 does not posit any cross-over effects.

### 3.3 Individualism- Collectivism at individual level (ICAIL)

An individual's needs which are different from the needs of a group are known as individualism-collectivism and this term also connotes the preference of an individual to act as an individual and not as a member of a group (Srite & Karahanna, 2006). ICAIL also plays an important role in influencing consumers' perceptions and intentions in the mobile commerce context (Sun & Zhang, 2006; Van Slyke, Lou, Belanger, & Sridhar, 2010). Individuals with low characteristic such as low in individualism face difficulties to make any decisions when purchasing online (Van Slyke et al., 2010).

## 4.0 RESEARCH MODEL

The research model in this study was adapted from the TAM3 model. This study used an integrated model of TAM3, which combined TAM and TAM2. Subjective norm and image represent the social influence process in TAM2. Voluntariness was dropped because usage of the Internet was not being mandated, nor was there any expectation that it would be mandated in future. In the TAM3 model, two variables, which were 'result demonstrability and output quality' were added to the determinants of perceived ease of use, namely 'self-efficacy, anxiety, playfulness and perception of external control.' The factors under adjustment in TAM2 and TAM3, particularly experience, perceived enjoyment and objective usability, were omitted since this study focused only on the early adoption of mobile commerce among university students in Malaysia. The job relevance construct was also dropped since the focus of this study was the undergraduate students who were presumed to be unemployed while studying. In addition, this model used ICAIL as a moderating variable in mobile commerce adoption. The research model for this study is presented in Figure 2 below.

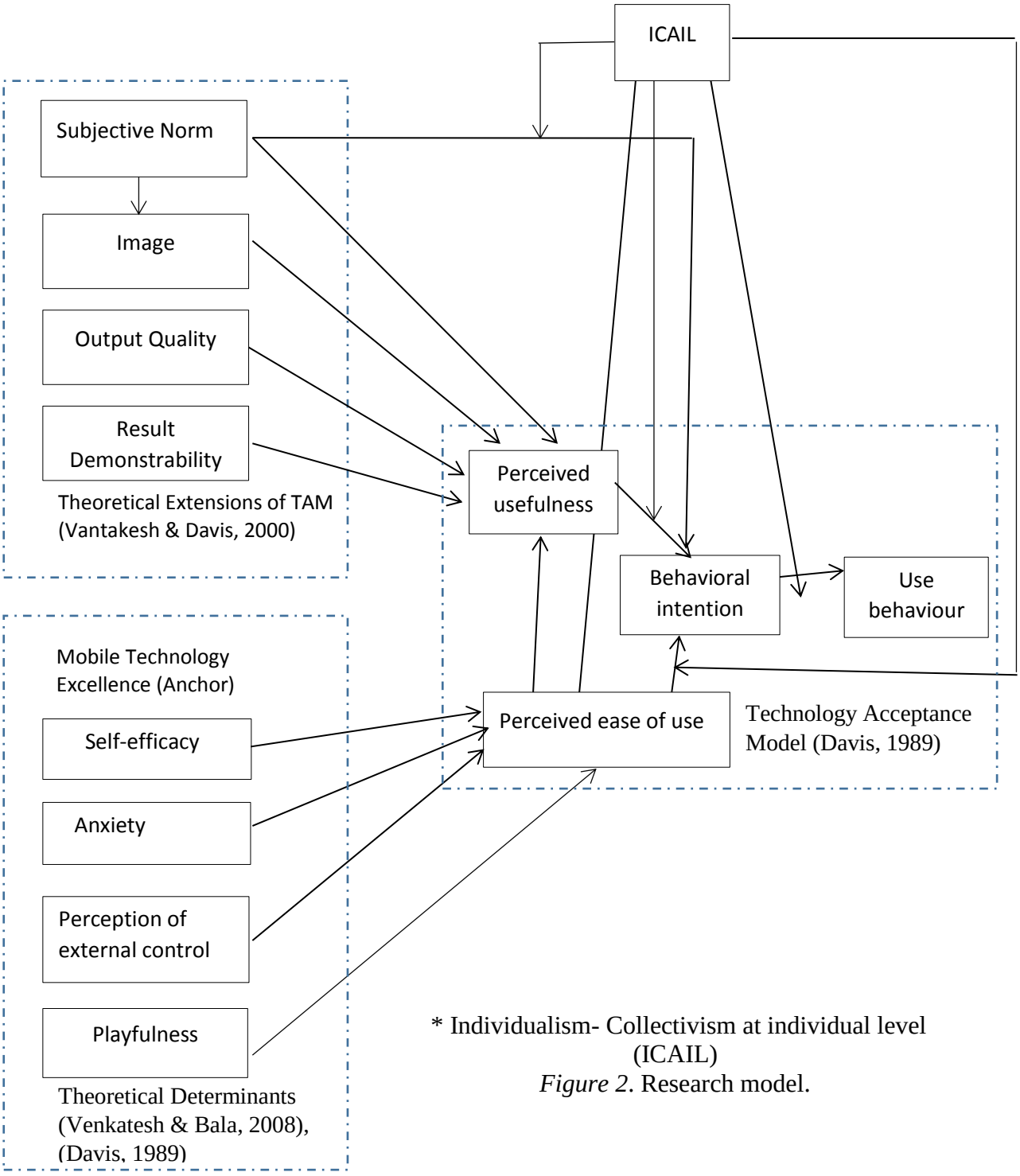


*Figure 2*. Research model.

### 4.2 Perceived usefulness, perceived ease of use and behavioural intention

Previous studies suggested that perceived usefulness influence the intention of potential Internet shoppers (Koufaris, 2002). Besides that, TAM indicates that perceived ease of use influences the intention to use the actual system usage (Wei, Marthandan, Chong, Ooi, & Arumugam, 2009). In the context of mobile commerce, previous empirical studies showed that perceived ease of use has a positive influence in the adoption of mobile commerce (Khalifa & Shen, 2008; Wei et al., 2009). Other researches, specifically Ventakesh's and Davis' (2000) found perceived ease of use has an indirect effect on perceived usefulness.

Kim, Mirusmonov, and Lee (2010), on the other hand, noted the direct positive effect of ease of use on usefulness and their findings echo the findings of similar studies on online banking (Yaghoubi, 2010).

### 4.3 The influence of Subjective Norm

Subjective norm can be defined as an individual's perception that people who are close to him or her think whether he or she should or should not perform the behaviour (Fishbein & Ajzen, 1975). Subjective norm is regarded as an important factor which shows direct determinants of behavioural intention for TRA (Fishbein & Ajzen, 1975), TPB (Ajzen, 1991), TAM2 (Venkatesh & Davis, 2000) and UTAUT (Venkatesh, Morris, Davis, & Davis, 2003). Previous studies also reported that subjective norm has a significant relationship with behavioural intention (Wei et al., 2009; Jaradat & Rababaa, 2013, Faqih & Jaradat, 2015). Nevertheless, Davis et al. (1989) and Mathieson (1991) found that subjective norm had no significance on intention and perceived usefulness in their empirical comparison of TAM and TRA.

### 4.4 The influence of Image

Ventakesh and Bala (2008) postulated that image will positively influence perceived usefulness through processes of internalization and identification in TAM2. Empirical research consistently reported that image positively affects the perceived usefulness of information technology adoption (Teo and Pok, 2003; Chan and Lu, 2004; Faqih & Jaradat, 2015). Venkatesh and Davis (2000) however, found that social constructs such as subjective norm, social factors and image are not significant when the systems usage is optional. Therefore, further study is needed to clarify the effects of image on mobile commerce adoption.

### 4.5 The influence of ICAIL

In TAM3, Faqih and Jaradat (2015) suggested that ICAIL will moderate three relationships between perceived ease of use and perceived usefulness, perceived usefulness and behavioural intention, perceived ease of use and behavioural intention, behavioural intention and behavioural use and subjective norm and behavioural intention. However, Al-Smadi (2012) claims that the IC had no effect on consumers' perceived usefulness of the use of e-banking services in Jordan, while Yoon (2009) argues that the IC had no significant effect on the original TAM relationships on the intention to use e-commerce in China.

### 4.6 The influence of output quality

Output quality will explain significant variance in perceived usefulness over and above job relevance because a different underlying judgemental process is involved (Ventakesh and Davis, 2000). Previous studies found that perceived output quality directly affects perceived usefulness (Ventakesh & Bala, 2008). Meanwhile, studies in Thailand demonstrated that system quality and service quality play central roles in influencing the degree of trust that the consumers have in using Internet banking (Namahoot & Laohavichien, 2015). However, they suggested that information quality shows negative influence on the use online banking service.

### 4.7 The influence of result demonstrability

Moore and Benbasat (1991) posit result demonstrability as the "tangibility of the results of using the innovation' and will directly influence perceived usefulness". Empirically, the relationship between result demonstrability and perceived usefulness is consistent with the job characteristics model and can enhance the knowledge of the Internet user through the

actual results of work activities (Ventakesh & Bala, 2008). However, several studies showed that although result demonstrability does not support perceived usefulness, it has a positive relationship with behavioural intentions to use m-payment (Faqih & Jaradat, 2015).

### 4.8 The influence of self- efficacy

In TAM3, Venkatesh and Davis (2000) found that individual computer self-efficacy is a strong determinant of perceived ease of use. In the context of mobile commerce, self-efficacy refers to the judgment of one's ability, knowledge or skills in using mobile commerce. Past studies indicated that self-efficacy has a positive influence on perceived ease of use of a technology (Venkatesh and Davis, 1996; Venkatesh, 2000; Agarwal & Karahanna 2000) and mobile services (Wang, Lin, & Luarn, 2006). However, Hayashi, Chen, Ryan, and Wu (2004) found that computer self-efficacy does not have significant influence on learning outcomes in the continuing usage of the e-learning system. Thus, further studies need to look at self-efficacy from a different perspective to determine an individual's ability in performing any action that is necessary in any situation (Wood and Bandura, 1989).

### 4.9 The influence of anxiety

Venkatesh (2000) defines computer anxiety as "an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers". In the early technology adoption period, a user's characteristic in using new technology is lower and imparts on the user's perception of perceived ease of use (Venkatesh, 2000). Previous studies consistently reported that computer anxiety is negatively significant to perceived ease of use (Ventakesh and Bala, 2008; Al-Gahtani, 2016). However, Sam, Othman, and Nordin (2005) observed that undergraduate students have moderate computer anxiety, high computer self-efficacy and medium attitude towards the Internet especially for educational tasks such as e-mail communications. Their study found that although individuals use the Internet frequently, they continue to be uncomfortable and the levels of computer anxiety among the undergraduates remain unchanged.

### 4.10 The influence of perceptions of external control

Perception of external control relates to mostly two aspects. The first is the resources users need in order to use a specific system, such as downloading and implementing the software on the smartphone, and the second is the support staff, particularly employees from the mobile operators to help users overcome any technological barriers (Venkatesh, 2000; Teo & Pok, 2003). Monzavi, Zarei, and Ghapanchi (2013) classified perception of external factors into four categories: organizational, social, individual and technological factors on beliefs about perceived ease of use and perceived usefulness. The individual factor is found to be a significant predictor of perceived ease of use, while organizational, social, and technological factors have an indirect effect on users' beliefs in perceived ease of use. Therefore, further research is necessary to examine the effect of other predictors of users' beliefs on IT adoption.

### 4.11 The influence of playfulness

The final anchor that affects an individual's perceived ease of use is computer playfulness. Ventakesh (2000) suggests that computer playfulness is independent of the system and is different for each individual. Previous studies consistently reported that system-specific traits in playfulness changed based on the individual's level of playfulness (Hackbarth, Grover, & Yi, 2003). The more playful an individual is towards computers, the more likely they will experiment with new systems and have a more positive perceived ease of use (Ventakesh, 2000; Ventakesh and Bala, 2008). However, Atkinson and Kydd (1997) draw an opposite

conclusion in a survey they conducted on undergraduate and postgraduate students majoring in business administration. They found a weaker relationship between perceived playfulness and actual use when the consumers use Internet for educational purposes. Hence, more empirical studies are needed to validate this argument.

## 5.0 CONCLUSION

In conclusion, this study may provide a good context for culture-based factors with the application of Hofstede's culture moderators on technology acceptance for mobile commerce in Malaysia. Based on the analysis of previous studies and related theories, the researchers are able to have a better understanding of a suitable model that can be used to examine the antecedents of mobile commerce adoption among university students in Malaysia. In the proposed model, the researchers anticipate that perceived usefulness will have a significant relationship with subjective norm, image, output quality, and result demonstrability. On the other hand, mobile technology excellence, namely self-efficacy, anxiety, perception of external control, and playfulness are anticipated to have significant impacts on perceived ease of use. Last but not least, the individual-collectivism at individual level (ICAIL) is expected to have a significant impact on perceived ease of use, perceived usefulness, behavioural intention, and subjective norm. In order to test and validate this proposed model, an empirical study needs to be conducted, and this study will be carried out by the present researchers.

## 6.0 REFERENCES


Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *MIS Quarterly*, 24 (4), 665–694.

Ajzen, I. (1991). Theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

Al-Gahtani, S. S. (2016). Empirical investigation of e-learning acceptance and assimilation: A structural equation model. *Applied Computing and Informatics, 12*(1), 27-50.

Al-Smadi, M.O. (2012). Factors affecting adoption of electronic banking: An analysis of the perspectives of bank' customers. *International Journal Business Social Sciences*, *3* (17), 294–309.

Atkinson, M., & Kydd, C. (1997). Individual characteristics associated with World Wide Web use: an empirical study of playfulness and motivation. *ACM SIGMIS Database*, *28*(2), 53-62.

Bolton, R. N., Parasuraman, A., Hoefnagels, A., Migchels, N., Kabadayi, S., Gruber, T., Loureiro,K,Y., & Solnet, D. (2013). Understanding Generation Y and their use of social media: A review and research agenda. *Journal of Service Management*, *24*(3), 245-267.

BNM. (2012).The 2013 budget speech. Retrieved from http://www.bnm.gov.my/files/2012 /bs13.pdf

Clarke III, I. (2001). Emerging value propositions for m-commerce. *Journal of Business Strategies*, *18*(2), 133.

Chan, S.C., Lu, M.T., (2004). Understanding internet banking adoption and use behaviour: A Hong Kong perspective. *Journal Global Information Management*, 12 (3), 12–43.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer

technology: A comparison of two theoretical models. *Management Science, 35*(8), 982-1002.

Eriksson, K., Kerem, K., & Nilsson, D. (2005). Customer acceptance of Internet banking in Estonia. *International Journal of Bank Marketing, 23*(2), 200-216.

Eze, U., Ten, M., & Poong, Y. (2011). Mobile commerce usage in Malaysia assessing key determinants. *Proceedings of the International Conference on Social Science and Humanity*. (pp. 265–269). Singapore.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Faqih, K. M., & Jaradat, M. I. R. M. (2015). Assessing the moderating effect of gender differences and individualism-collectivism at individual-level on the adoption of mobile commerce technology: TAM3 perspective. *Journal of Retailing and Consumer Services*, 22, 37-52.

Goi, C. L., & Ng, P. (2011). Perception of young consumers on mobile phone applications in Malaysia. *World Applied Sciences Journal, 15*(1), 47-55.

Hassan, S., Shiratuddin, N., Sakdan, M. F. A., Hashim, N. L., Salam, S. N. A., & Sajat, M. S. (2015). Social media as persuasive technology for business: Trends and perceived impact in Malaysia. Sintok, Kedah: Universiti Utara Malaysia.

Hackbarth, G., Grover, V., & Yi, M.Y. (2003). Computer playfulness and anxiety: Positive and negative mediators of the system experience effect on perceived ease of use. *Information & Management,* 40(3), 221-232.

Hayashi, A., Chen, C., Ryan, T., & Wu, J. (2004). The role of social presence and moderating role of computer self-efficacy in predicting the continuance usage of e-learning systems. *Journal of Information Systems Education, 15*(2), 139.

Hew, J. J., Lee, V. H., Ooi, K. B., & Wei, J. (2015). What catalyses mobile apps usage intention: An empirical analysis. *Industrial Management & Data Systems*, *115*(7), 1269-1291.

Jaradat., M. R. M., & Al- Rababaa. M. S. (2013). Assessing key factors that influence the acceptance of mobile commerce based on modified UTAUT. *International Journal of Business and Management, 8*(23), 102-112.

Jin, B., Yong Park, J., & Kim, J. (2008). Cross-cultural examination of the relationships among firm reputation, e-satisfaction, e-trust, and e-loyalty. *International Marketing Review, 25*(3), 324-337.

Khalifa, M., & Shen, K.N. (2008). Drivers for transactional B2C m-commerce adoption: Extended theory of planned behavior. *Journal of Computer Information System*, 48(3), 111-117.

Koufaris, M. (2002). Applying the technology acceptance model and flow theory to online consumer behaviour. *Information Systems Research*, *13*(2), 205-223

Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior, 26*(3), 310-322.

Lee, W. O., & Wong, L. S. (2016). Determinants of mobile commerce customer loyalty in Malaysia. *Procedia-Social and Behavioral Sciences*, *224*, 60-67.

Maamar, Z. (2003). Commerce, e-commerce, and m-commerce: What comes next? *Communications of the ACM, 46*(12), 251-257.

Mathieson, K. (1991). Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research, 2*(3), 173-191.

Moore, G. C., & Benbasat, I.(1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2, 192-222.

Monzavi, T., Zarei, B., & Ghapanchi, A. H. (2013). Investigating the impact of external factors on user perceptions: A case study of software adoption in Middle East. *The International Technology Management Review*, *3*(3), 160-174.

Namahoot, K. S., & Laohavichien, T. (2015). An analysis of behavioral intention to use Thai Internet banking with quality management and trust. *The Journal of Internet Banking and Commerce*, *2015*.

Ngai, E. W. T., & Gunasekaran, A. (2007). A review for mobile commerce research and applications. *Decision Support System*, *43*(1), 3-15.

Park, N., Kee, K. F., & Valenzuela, S. (2009). Being immersed in social networking environment: Facebook groups, uses and gratifications, and social outcomes. *CyberPsychology & Behavior*, *12*(6), 729-733.

Rawlins, J. M., Simeon, D. T., Ramdath, D. D., & Chadee, D. D. (2008). The elderly in Trinidad: Health, social and economic status and issues of loneliness. *West Indian Medical Journal*, *57*(6), 589-595.

Sam, H. K., Othman, A. E. A., & Nordin, Z. S. (2005). Computer self-efficacy, computer anxiety, and attitudes toward the Internet: A study among undergraduates in Unimas. *Educational Technology & Society*, *8*(4), 205-219.

Samuelsson, M., & Dholakia, N. (2003). Assessing the market potential of network-enabled 3G m-business services. *Wireless Communications and Mobile Commerce*, 23-48.

Seong, L. C., Sik, S. H., & Seong, K. D. (2004). A classification of mobile business models and its applications. *Industrial Management & Data Systems*, *104*(1), 78-87.

Stafford,T.F., & Gillenson.M.L. (2003). Mobile commerce: What it is what it could be? *Communications of the ACM*, 46 (12), 33-34.

Srite, M., Karahanna, E. (2006). The influence of national culture on the acceptance of information technologies: An empirical study. *MIS Q*. 30 (3), 679–704.

Sun, H., & Zhang, P. (2006). The role of moderating factors in user technology acceptance. *International Journal of Human-Computer Studies*, *64*(2), 53-78.

Teo, T.S.H., Pok, S.H. (2003). Adoption of WAP-enabled mobile phones among Internet users. *Omega* 31 (6), 483–498.

Van Slyke, C., Lou, H., Belanger, F., & Sridhar, V. (2010). The influence of culture on consumer-oriented electronic commerce adoption. *Journal of Electronic Commerce Research*, *11*(1), 30.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating perceived behavioral control, computer anxiety and enjoyment into the technology acceptance model. *Information Systems Research*, *11*(4), 342–365.

Venkatesh, V., & Davis, F.D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision Sciences Journal*, *27*(3), 451-481.

Venkatesh, V., & Davis, F.D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186-204.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, *36*(1), 157-178.

Venkatesh, V., & Bala, H. (2008).Technology acceptance model 3 and a research agenda on interventions. *Journal of the Decision Sciences Institute*, *39*(2), 273–315.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.

Yang, K. C. (2005). Exploring factors affecting the adoption of mobile commerce in Singapore. *Telematics and Informatics*, *22*(3), 257-277.

Yaghoubi, N. M. (2010). Factors affecting the adoption of online banking-an integration of

technology acceptance model and theory of planned behavior. *International Journal of Business and Management*, *5*(9), 159.

Yaseen. S.G. & Zayed, S. (2010). Exploring critical determinants in deploying mobile commerce technology. *American Journal of Applied Sciences*, *7*(1), 120-126

Yoon, C. (2009). The effects of national culture values on consumer acceptance of e-commerce: Online shoppers in China. *Inf. Manage*. 46 (5), 294–301.

Wang, Y. S., Lin, H. H., & Luarn, P. (2006). Predicting consumer intention to use mobile service. *Information Systems Journal*, 16(2), 157-179.

Wei, T.T., Marthandan, G., Chong, A.Y.L., Ooi, K.B., & Arumugam, S. (2009).What drives Malaysian m-commerce adoption? An empirical analysis. *Journal of Industrial Management & Data Systems*, 109(3), 370-388.

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review*, *14*(3), 361-384.

Zendehdel, M., & Paim, L. (2015). PredictingIintention of mobile Internet usage in Malaysia: Extending the unified theory of acceptance and use of technology. *Taylor's Business Review*, *5*(1), 81-97.