Determinants of M-Commerce: A Study on Online M-Commerce Adopters

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ABSTRACT

These days more consumers are using M-commerce than e-commerce. Based on this in the present study an attempt is made to identify the factors examining the determinants of users of mobile commerce. The results from this study will be useful for *m*-commerce companies in formulating appropriate marketing strategies, as well as developing appropriate applications that will attract more consumers.

Keywords: Adoption, Consumers, Determinants, Mobile Commerce Marketing Strategies.

1. INTRODUCTION

Mobile commerce refers to commercial transactions conducted through a variety of mobile equipment over a wireless telecommunication network in a wireless environment (Barnes, 2002; Coursaris and Hassanein, 2002; Gunsaekaran and Ngai, 2003). Currently, these wireless devices include two-waypagers/SMS (short message systems), wireless application protocol (WAP)-equipped cellular phones, personal digital assistants (PDA), Internet-enabled laptop computer with wireless access capacity, and consumer premise IEEE 802.11(a/b) wireless net-work devices (Leung and Antypas, 2001). M-commerce applications can be broadly divided into two categories: content delivery (i.e., reporting, notification, consultation) and transactions (i.e., data entry, purchasing, promotions) (Balasubramanian et al., 2002; Leung and Antypas, 2001). With the explosive growth of the mobile telephone population, combined with the development of wireless technologies, M-commerce is becoming increasingly important to many businesses nowadays (Hung et. al., 2003). According to Wireless Week (2004),there are currently 94.9 million M-commerce users in 2003 worldwide and the segment is expected to grow to 1.67 billion by 2008. In addition, global revenues from

M-commerce are $6.86 billion in 2003 and expected to reach $1554.37 billion in 2017 (Wireless Week, 2004).Although many analysts have predicted that M-commerce will become another mainstream business application, following electronic commerce, others have ex-pressed some reservations about its return-on-investment (ROI) potential. For example, a recent survey among 1,205 U.K. companies across 15 sectors has found that 65% of firms do not plan any M-commerce strategy in the near future (Thomas,2003). But, a consumer survey from 1,000 online users also reveals that 55% of the respondents show interests in new services made available by M-commerce service providers (Meyer, 2001). In addition, many other factors may hinder consumer usage of this new ICT application. These include cost of access (35%), credit card security (33%), difficult navigation (11%), and low access speed (9%) (Smith, 2001).Although there have been many recent publications that discuss various marketing issues related to M-commerce technologies and applications (Balasubramanian et al., 2002; Barnes, 2002; Coursaris and Hassanein, 2002; Leung and Antypas, 2001; Kumar and Zahn, 2003), but only a few scholars have attempted to explain factors influencing the adoption of M-commerce (Coursaris and Hassanein, 2002;NG-Kruelle et. al., 2002). As such, this study aims to investigate why consumers decide to adopt M-commerce.
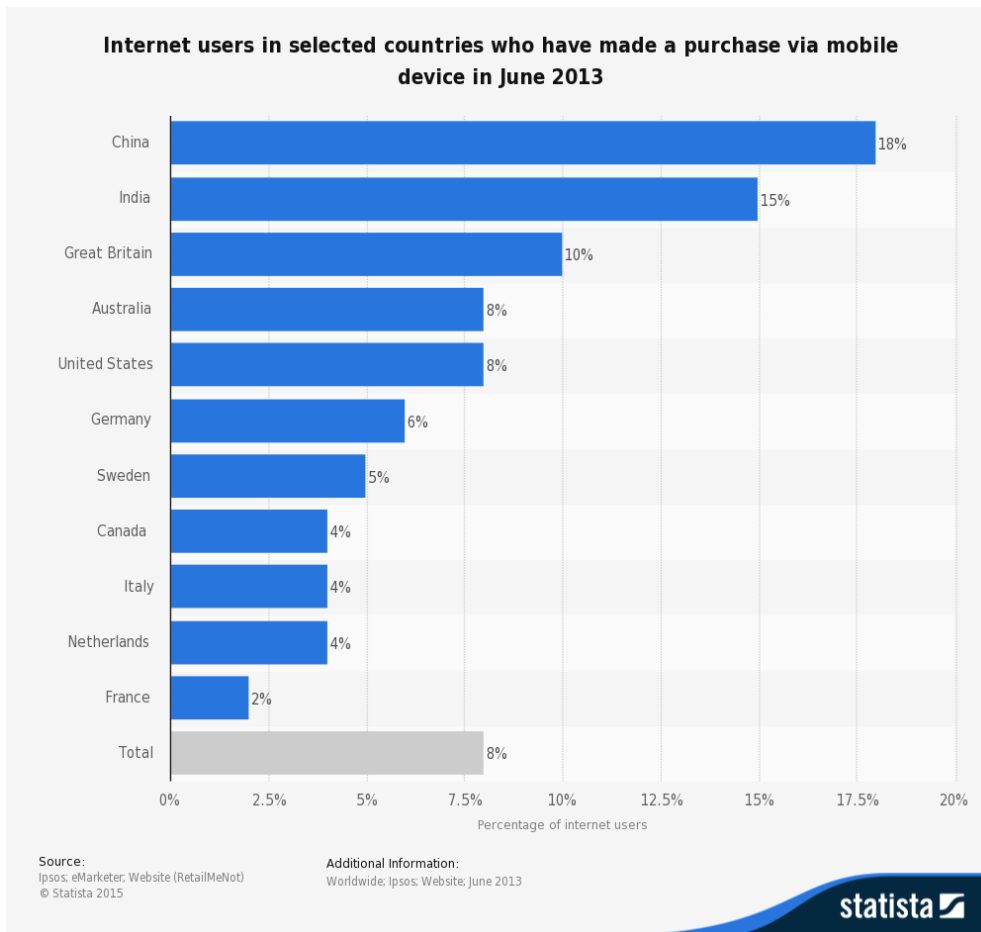

2. LITERATURE REVIEW

M-commerce is described as, "e-commerce business processes and models carried out on a mobile terminal" (Gordon *et. al.*, 2001). This view can however be expanded to include the other M-commerce services e.g.

location-based services, airtime purchases, ringtone downloads and mobile payments (including Point-of-Sale payments). Abu Bakar and Osman (2005) defined m-commerce as exchange or buying and selling of commodities and services through wireless handheld devices such as cellular telephones and personal digital assistant (PDAs). According to Feng *et al.*, (2006), m-commerce is a new and innovative business opportunity with its own unique characteristics and functions, such as mobility and broad reachability. This study adopts the definition of m-commerce as any transaction, involving the transfer of ownership or rights to use goods and services, which is initiated and/or completed by using mobiles devices to access computer-mediated networks with the help of a mobile device.

3. MODEL DEVELOPMENT

Adoption is an individual's decision to become a user of a product or a service. This study seeks to find out the factors that influence the adoption of M-commerce by online consumers from the existing literature. Mobile Commerce refers to either direct or indirect commercial transactions conducted through mobile devices. Mobile applications may be divided into two broad categories, content delivery and transactions (i.e. m-billing, m-ticketing, m-marketing etc.). According to Watson et. al., 2002, mobile services are important for firms and consumers because of ubiquitous, universal, and anytime anywhere access to information and services, and the possibility for unique and personalized exchange of information. The main purpose of this research is to determine the factors affecting the adoption of M-commerce by consumers (Users) and to enable the stake holders to prioritize and allocate necessary resources. Technology Acceptance Model proposed that perceived usefulness (PU) and perceived ease-of-use (PEOU) can be used to predict the behavioral intention to adopt a technology. PU refers to the extent to which an individual's expectation to use a technology, improves his/her job performance whereas PEOU is the belief that using the technology will be free of effort (Davis, 1989; Fusilier and Durlabhji, 2005). This theory therefore supports two constructs, Perceived Usefulness and Perceived Ease of Use. The Theory of Planned Behavior states that behavioral intention to perform an activity is determined by attitude, perceived behavioral control, and subjective norm (Ajzen, 1991; Fusilier and Durlabhji, (2005).According to Khalifa and Shen, (2008), TPB focuses on social and individual factors which influence the adoption of a technology. The Theory of Planned Behaviour further states that behavioural intention to perform an activity is determined by attitude, perceived behavioral control, and subjective norm (Ajzen, 1991; Fusilier and Durlabhji, 2005). Diffusion of Innovation Theory states that there are five perceived attributes of an innovation that can determine the adoption of an innovation (Rogers, 1995; Chong and Ooi, 2008). The five perceived attributes of the innovation are relative advantage, compatibility, complexity, trialability and observability (Rogers, 1995). Relative advantage is the "degree to which an innovation is perceived as being better than the idea it supersedes". Compatibility is defined as the degree to which an innovation is perceived as "consistent with past values, past experience, and the needs of the potential adopters". The complexity of an innovation is whether the innovation is "perceived as relatively difficult to use and understand". Trialability refers to whether an innovation may be "experimented with, on a limited basis". Lastly, observability is whether the "results of an innovation are visible to others" (Rogers, 1995). This study is therefore informed by a combination of the three theories i.e. TAM, TPB and DOI which together support the social, behavioral and technological constructs determining the adoption of m-commerce by users.
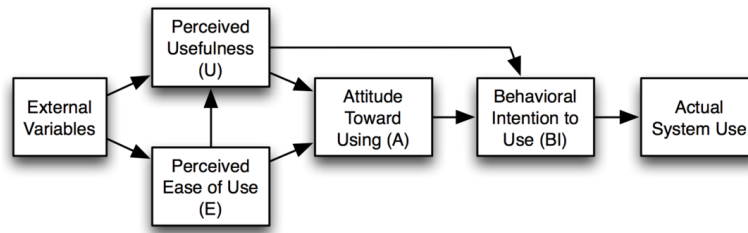
1. Perceived Usefulness

According to Hong *et. al.,* (2008), Perceived usefulness is a prominent factor which is widely used in explaining consumer behavior towards a new technology. According to Davis, (1989), Perceived Usefulness of a system may be defined as the extent to which individuals believe that using the new technology will enhance their performance. Therefore perceived usefulness can influence the intention to accept and adopt mobile commerce directly or indirectly. Garrison, (2009) and Khalifa & Shen, (2008) in their study argued that Information Systems and M-commerce provides evidence on the significant effect of Perceived Usefulness on adoption intention. Hence it would be essential to include perceived usefulness in the model.

A number of empirical studies (Wei *et. al.,* 2009; Khalifa & Shen, 2008; Kim & Garrison, 2009) support Perceived Usefulness as a primary predictor of M-commerce adoption. According to Wei *et. al.,* (2008), this Construct assess the extrinsic characteristics of mobile commerce and further shows how mobile commerce can help the users to achieve task-related goals, effectively and efficiently. Mao et. al., (2005), in their study "Overcoming barriers to the successful adoption of mobile commerce in Singapore" explored the key factors that influence the usefulness, ease of use and intensions to use advanced mobile phone services for payments. The results portrayed a positive relationship between Perceived Usefulness and the intention to use mobile services.

2. Perceived Ease of Use

Perceived Ease of Use (PEOU) can be defined as the degree to which the prospective user expects a new technology to be free of effort. It is further described as the internal belief of mental effort involved in using a system. This study defines it as the degree to which the user expects the system to be user friendly. According to Davis, (1989); an individual may believe that an application is useful, but he or she might also find that the system is difficult to use. PEOU is considered as an important determinant in adoption of past Information Technologies such as intranet (Chang, 2004), 3G (Liao *et. al.,* 2007), online banking (Guriting and Ndubisi, 2006; Jahangir and Begum, 2008), wireless internet (Lu *et. al.,* 2003), internet commerce (Cho *et. al.,* 2007) and recently m-commerce (Lin and Wang, 2005; Wang and Barnes, 2007; Kurnia *et al.,* 2006; Mallat *et al.,* 2006; Luarn andLin, 2005). Many previous empirical studies show that perceived ease of use has a positive influence in theadoption of mobile commerce (Khalifa and Shen, 2008b,Kim and Garrison, 2009; Wei et. al., 2009). Many user stake PEOU as a crucial factor since many of them are common citizens who are not necessarily adept in technology. This construct should therefore be included in the model.

3. Perceived Cost

Perceived cost construct can be defined as the extent to which an individual believes that using a technology is costly. Cost is essential in setting up and in the delivery of M-commerce services. Cost can slow down

the expansion of a new technology. Cost consist of the initial purchase price of the hand set, ongoing usage cost, subscription fee, service fee, communication fee and maintenance fee or upgrade cost. According to Hong *et. al.*, (2008), Wei *et. al.*, (2009) in a study on m-commerce adoption, identified cost factor as one of the reasons that can slow down the adoption of M-commerce. In this study, perceived cost has been identified as an important determinant for consumers to decide whether to adopt M-commerce or not.

4. Personal Innovativeness

Personal Innovativeness is the willingness of an individual to try out any new information system. It has been observed that highly innovative individuals are active information seekers about new technologies. Innovative individuals have been found to be dynamic, communicative, curious, adventurers, and stimulation–seeking. According to (Bhatti, 2007; Li *et. al.*, 2007); Personal Innovativeness has a strong influence on adoption of innovations such as mobile commerce. Li *et. al.*, (2007) found out that there is a relationship between personal innovativeness and the adoption of mobile commerce. A person who is innovative is more likely to adopt a new technology (Anthony, 2007). Personal innovativeness is therefore a predictor of m-commerce adoption and is included in the model.

5. Demographic Variables

A study carried out by Cutler *et. al.*, (2003); Liebermann and Stashevsky, (2002); Teo, (2001); Herna´ndez *et al.*, (2011); revealed that the demographic profiles of users influence the adoption of internet and computer technologies. Educational level has been found to have a positive relationship with online transactions. Rhee and Kim, (2004) and Chinn and Fairlie, (2006) found that people with high education level were more likely to use the internet. This is because they have more so ending power and might be more willing to purchase using mobile services. They might also have better knowledge of computers or mobile devices and are likely to use them to carry out online transactions. Recent studies have suggested that younger users tend to adopt m-commerce more than older users (Dai and Palvia, 2008).Gender is also a demographic variable that has been examined in computer adoption studies (Igbaria and Chakrabarti, 1990; Teo, 2001). The above study shows that males in general were more receptive to technologies when compared to their female counterparts. Among the reasons provided in the literature include the fact that males have higher self-efficacy, and are more confident about exploring new technologies. Teo (2001) also found that males and females have different internet usage patterns, whereby females tend to use the internet for communication such as messaging, while males tend to use the internet for downloading and purchasing. Yang(2005), carried out a research to explore the factors affecting the adoption of m-commerce in Singapore. Their research reveals that innovativeness, past adoption knowledge; demographic factors and past behavior have a positive effect on adoption of m-commerce.

6. Perceived Trust

According to Rousseau *et. al.*, (1998), trust is defined as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another". Trust is important because it helps consumers overcome perceptions of uncertainty and risk (McKnight 2002) and helps build appropriate favorable expectations of performance and other desired benefits (Gefen, 2000).

Trust is more crucial and complex in M-commerce environment than in traditional commerce due to its uncertain environment (Lu *et. al.*, 2003; Cho *et. al.*, 2007) and information asymmetry (Cho *et. al.*, 2007). The buyers and sellers normally complete the transaction through these technologies without necessarily meeting each other face to face. The buyers will therefore be worried that their personal information and money will be transferred to third party without their knowledge (Luarn and Lin, 2005). Consumers' confidence about privacy and security of a system may significantly influence adoption and usage of m-commerce. In this study, trust is defined as the extent to which an individual believes that using m-commerce is secure and has no privacy threats. Perceived Trust therefore is an important construct which affects consumer behavior and determines the success of M-commerce adoption (Wei *et. al.*, 2009). It is an important predictor which explains the adoption in a number of existing technology adoption studies e.g. (Wei *et. al.*, 2009; Cho *et. al.*, 2007). Sadi and Noordin (2011), in an exploratory analysis of the factors influencing adoption of M-commerce in Malaysia reveals that trust identified as a key factor influencing the adoption of M-commerce. A similar study carried out by Mashagba et. al., (2013) revealed that trust, risk and security had an effect on M-commerce adoption. This study therefore adopts it as a key factor influencing the adoption of M-commerce by online consumers and includes it in the model.

7. Social Influence

According to Lu *et. al.*, (2003), social influence is defined as an individual's belief that it is significant for other individuals to engage in an activity. Subjective norm is studied in both TRA and TPB as the important determinant to explain the adoption of a system. Rao and Troshani,(2007). Fan *et. al.*, (2005), argue that a user would be more likely to suggest and recommend a service to others, if he or she is satisfied with the service. Khalifa and Cheng, (2002) also revealed that SI had strong effect on consumer IU or adoption of m-commerce.

This study adopts Social Influence as a predictor of the adoption of m-commerce and therefore includes it in the model.

8. Perceived Behavioral Control

According to the Theory of Planned Behavior, perceived behavioral control is defined as individual perceptions of how easy or difficult it is to perform a specific behavior. The perceived behavior is an important determinant of behavioral intentions by reducing perception of control, confidence, and effortlessness in executing a behavior. (Pavlou *et., al,* 2007). A significant number of researches in mobile commerce have highlighted the importance of Perceived Behavioral

Control by demonstrating its influence on key dependent variables (Pavlou *et al.*, 2007; Perdersen, 2005; Khalifa & Shen, 2008).Pedersen (2005) further argued that Generally PBC comprises of individual constraints which include and are not limited to economy, experience and skill in service usage.

4. CONCLUSION

This study aimed at identifying the factors that influence adoption of m-commerce by online consumers. Using the existing literature, the study has shown that perceived usefulness, Perceived ease of use, perceived cost, perceived trust, personal innovativeness, perceived behavioral control, social influence and demographic

variables influence the adoption of m-commerce by online users. According to Wang and Barnes (2007), trust is much more significant than the other constructs; this implies that trust building between the customers and vendors should be a major concern for the mobile service providers while improving the usefulness of the system which in turn will impact positively on the adoption of m-commerce. Perceived cost is also an important factor; therefore, this study suggests that the creative promotional and pricing strategies, including cost reduction should be implemented to attract more price-conscious customers. The social influence should be taken into account to encourage the adoption of m-commerce. For instance, the service providers should attract customers via various social networks and channels, such as word of mouth and informal seminars (Lu et. al., 2008)The outcome of the study will guide companies that offer M-commerce related products in the selection of digital products and in pursuance of future commercial opportunities. The government should formulate policies especially focusing on trust and security, to encourage m-commerce adoption by online consumers.

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