



RECOGNIZING MOBILE PAYMENT SERVICES BY USING TECHNOLOGY ADAPTION MODEL

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Abstract

This study intends at introducing a modified Technology Acceptance Model (TAM) to investigate key factors that affect individuals' intention to adopt and use mobile payment (M-payment). It also helps merchandisers to avoid spending thousands or even millions of dollars on investments, may have minimal and modest effect on whether or not the individuals tend actually to adopt and to use. To reach such ends, a questionnaire was distributed to collect data from 475 undergraduate university students by using a proportional stratified random sample, and analyzed by using a Structural Equation Modeling (SEM). Results show that user's adoption and use of M-payment services can be anticipated from users' behavioral intentions, which are significantly affected by the following: perceived usefulness, perceived ease of use, subjective norm, image, output quality, and playfulness. Although there are many advantages associated with M-commerce, such as ubiquity, accessibility, convenience, localization, personalization, time sensitivity, there are as well disadvantages associated with it, such as battery consumption, limited memory, keyboards and the tiny and awkward-to-use screens on mobile phones. Heterogeneity of devices operating systems and network technologies are also challenges for a uniform end user platform. In addition, mobile phones are also more prone to theft and destruction. This study shows that there is a promising and bright future for M-payment services as more than 62% of respondents are willing to merchandise by using their mobile phones.

Keywords: *Technology Acceptance Model (TAM);; Perceived ease of use, self efficacy, perceptions of external control*

1) INTRODUCTION

In the late 1990's, Mobile commerce (M-commerce) emerged as a technology that could radically affect the electronic commerce industry by putting both voice and data transfers in consumers' hands (Pruthikrai and Joaquin, 2007). We have observed evolution of mobile communication and transferring from inconvenience of wired environments to wireless environment and performing business without any limitation in space and time (Saneifard, 2009). Electronic commerce (E-commerce) generally refers to the use of the internet and the web to transact business. Internet has become 'the key to success' for businesses especially in E-



commerce and E-business (Alrawi and Sabry, 2009; Tsekouropoulos). More specifically, e-commerce is about digitally-enabled commercial transactions between and among organizations and individuals. E-commerce provides opportunities for many organizations to enlarge their customer base and establish competitive business models to increase their revenue (Kamoun) Commercial transactions, however, involve the exchange of (e.g., money, products, services, information) across organizational or individual (Laudon and Laudon, 2007). However, the intangible nature of e-commerce may cause online consumers to be uncertain about whether products, if ordered online, will meet their needs or perform to increasing expectations.

2) LITERATURE REVIEW

To enlighten with the concept of mobile payment services by using Technology Adaption Model, Abedi et al., (2002) claimed that mobile features a wide range and an increasing number of access devices; this improved the use of mobile services such as M-commerce, M-payment, M-banking, and M-education. Mobile services have increasingly become a part of everyday life and are expected to provide a new and great business opportunity. (Gunasekaran and McGaughey, 2009; Hwang et al., 2007; Shin, 2010). The topic of M-commerce is very important at present time. There are many definitions for M-commerce, one of these definitions highly relates it to wireless E-commerce, where mobile devices are used to conduct internet businesses, either B2B or B2C market (Abdelkarim and Nasereddin, 2010). Also, M-commerce has been defined as any transaction with monetary value-either direct or indirect that is conducted over a wireless telecommunication network (Khalifa and Ning, 2008). Khalifa and Ning (2008) said that M-commerce applications have been taken off for services that are time-critical; that accomplish a task more efficiently than other methods. Jaradat and Twaissi (2010) said that "mobile phones create a new meaning for business such as mobile financial application, mobile banking, wireless electronic payment systems, micro payments, wireless wallets, and bill payment), mobile shopping, advertising and mobile intra- business (Mobile-University (getting student marks or register through mobile devices...etc))".

There are more consumers who have a mobile phone than those who have a personal computer. The total number of mobile phone subscribers has reached 8.984 million with 140% penetration rate at the end of 2002 (Telecommunication Regulatory Commission, 2003). Despite the rapidly growing number of mobile phone users in Jordan, M-commerce is relatively new phenomenon in Jordan when compared with other markets, like Europe, U.S., and Asia. Ondrus and Pigneur (2006) said that internet and M-commerce create requirements for new payment instruments to enable feasible and convenient transactions Mobile payment (M-payment). M-payment services can be considered as a special form of the electronic handling of payments (Schierz et al., 2010).

Abdullah et al. (2001) said that mobile based payment system or M-commerce is an emerging issue of E-commerce; it is recognized as one of the fastest growing and preferable medium for conducting business transactions. Mobile technology is increasingly common today in daily life; the Central Bank of Jordan (CBJ), along with the National Payment Council (NPC) adopted an initiative strategy and developed a framework with participation of all stakeholders to acquire a national mobile payment switch: Jordan Mobile Payment System (JoMoPay). The CBJ has assumed a leadership role in setting the payment systems strategy (2001-2010) in order to



coordinate the necessary actions to achieve an improvement of payment systems in Jordan (Central Bank of Jordan, 2003). Consumer's general adoption of mobile payment (M-payment) solutions is low when compared with the acceptance of traditional forms of payments (Chandra et al., 2010). Stone and Kharif claimed that the proliferation of bank accounts, credit cards, Internet banking, and the success of online payment providers such as PayPal make M-payments seem like the next natural step in the evolution of payments over World Wide Web. Therefore, this research aims to determine the factors that influence individuals' intention to adopt and use M-payment services and should help merchandisers avoid spending thousands or even millions of dollars that, on investment, may have minimal and modest effect on whether or not the individual may actually adopt and use M-payment in Jordan.

3) THEORETICAL BACKGROUND

This study extensively investigates the key factors that affect individuals' intention to use M-payment in Jordan. These key factors include Subjective Norm, Image, Output Quality, Job Relevance, Result Demonstrability, Self Efficacy, Perceptions of External Control, Anxiety, Playfulness, Perceived Ease of Use, Perceived Usefulness, Experience and Voluntariness as moderators. These factors are chosen because of their strong agreement received from previous studies and because of their applicability and suitability in the context of M-payment. This research will evaluate the effects of these factors by using the Technology Acceptance Model 3 (TAM3).

1) Mobile payment:

M-payment is one of the most critical drivers for successful M-commerce or M-business. M-payments are defined as any payment transaction which uses a mobile communication device (e.g. mobile phone) to initiate, activate, and to confirm the payment (Chandra et al. (2010). Mallat (2007) defined M-payments as the use of a mobile device to conduct a payment transaction in which money or funds are transferred from payer to payee either via intermediary or directly. Poustchi (2003) defined M-payment as "a type of payment transaction processing in the course of which – within an electronic procedure – the payer (at least) uses mobile communication techniques in conjunction with mobile devices for initiation, authorization, or completion of payment". M-payment refers to a system using mobile devices to handle local or international transactions, such as pay bills and perform banking transactions (Gerpott and Kornmeier, 2009). Shin (2010) claimed that Mpayment system can be understood as a point-of-sale payment made through a mobile device, such as a cellular phone or personal digital assistant. Mpayment refers to a payments for goods, services, bills, Call costs, Digital content such as (mobile ring tones, online game subscription, news, video etc.), Costs for using services and Costs for transportation affairs using a mobile device (such as a mobile phone, smart-phone, or personal digital assistant (PDA), PALM) (Abedi et al., 2012; Dahlberg, Mallat, Ondrus, and Zmijewska, 2008).

Mobile phones have several characteristics which make them useful for payment purposes.



- 1) The proliferation of mobile telecommunications technology has made mobile phones increasingly common and available for users as we mention above (8.984 million with 140% penetration rate).
- 2) When compared with fixed-line computers and telephones, mobile phones are closer to the user. They support the storing of personal information and facilitate its use as a payment instrument.
- 3) Existing telecom (Zain, Orang, and Umniah) operator billing systems are already suitable for handling micropayment transactions.
- 4) The success of early mobile content services such as logos and ring tones suggests that consumers are already accustomed to using their mobile devices for payment purposes (Mallat, 2007).

Stone and Kharif (2011) said that "Sixty years after the creation of the plastic credit card, big corporate names are backing a new wave of payments technology a tap with a phone by using NFC, rather than a swipe with a credit card". Near Field Communication (NFC) defined by Kuspriyanto et al. as a short-range wireless technology which is the advanced development of RFID, NFC technology is currently used for namely sharing, pairing, and transacting. It occurs in a very close distance of less than 10 cm, so, it will be very secure. Khan claimed that currently M-payments are a small portion of overall payment acceptance. However M-payment will be an evolution not revolution (Stoughton et al., 2011). Thus, M-payment acceptance is an unprecedented opportunity for merchandisers (Khan). Mobile devices can be used to carry out payment transactions for physical goods or digital content (e.g., ring tones, coupons, logos, news, music, or games), for auctions, tickets, parking fees and transport fares, or to access electronic payment services to pay bills and invoices.

2) Technology Acceptance Model (TAM):

Technology Acceptance Model (TAM) was initially developed by Davis (1989) to predict individual's acceptance, adoption and use of new technologies. The model suggests that when users are presented with a new technology, a number of factors affect their decision concerning how and when they will accept and adopt and finally use the new system (M-payment). The theoretical basis of the model was derived from Theory of Reasoned Action (TRA) by Fishbein and Ajzen's (1975). The original TAM, depicted in Figure 1, aimed to examine the attitude and belief of users that affect their intention to accept or reject Information and Communication Technologies (ICTs).

CONCLUSIONS

Based on theoretical considerations, we derived a research model based on TAM; to specify key drivers of an individual's intention to adopt and use of M-payment services. Using data from a large-scale survey conducted in Jordan, we found empirical support for the proposed model. Moreover, it does have a significant and indirect effect on both Behavioral Intention to use and Actual Use through Perceived Usefulness of M-payment services, and also has a significant, positive and direct effect on Perceived Usefulness of M-payment services, implying that those who consider M-payment to be useful (improve performance, increase productivity,



enhance effectiveness) also perceive it as easy to use (clear and understandable, does not require a lot of mental effort, easy to get what they want) without any effort and easy to use procedure, which is consistent with prior research.

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