Factors Influencing Customer Acceptance of M-Commerce Services in Jordan

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Abstract: The TAM (technology acceptance model) has been widely used to examine the factors that influence a person’s acceptance of new technology. In mobile commerce, trust has been proposed as an important factor affecting the adoption of this new technology. The objective of this study is to test the impact of trust and other factors on mobile commerce adoption based on the technology acceptance model. A cross-sectional survey is conducted among 130 respondents from two universities samples. Bivariate correlations and multiple regressions were used to test the hypotheses. The results shows that trust significantly influence the attitude towards accepting mobile commerce.

Key words: Customer acceptance, m-commerce, Jordan.

1. Introduction

In this context, the World Wide Web of computer networks—where the Internet is the main structure—became a very fertile soil for drastic changes in the business world. The benefits enabled by the Internet are many and varied; customers and companies’ alike benefit from the new ways of exchanging information, communicating and conducting trade as a consequence, EB (electronic business) spread at an amazing speed throughout the world [1]. In addition to the Internet, another technology that has played an increasingly important role in the society in the past twenty years is the mobile phone. With well over 5.3 billion subscribers worldwide, mobile phones have been one of the fastest adopted consumer products of all time [2]. Mobile business, commonly known as m-business, is characterized as the use of wireless networks and other mobile information technologies for organizational communication and coordination and the management of the firm. M-business promises a unique value proposition: providing access to information independent of temporal and spatial preferences [3].

The adoption and use of information systems in the workplace has remained a central concern of information systems research and practice. Explaining the user acceptance of new technologies—focusing on individual acceptance of technology by using intention or usage as a dependent variable—is frequently described as one of the most mature areas of information systems research. Research in this area has resulted in quite a few theoretical models, with roots in information systems, psychology, and sociology. However, little is known about user acceptance of mobile technologies [4].

It was also identified that most of the literature on user acceptance of mobile technology relies heavily on well-known IS theories and models such as TAM (technology acceptance model) and DoI (diffusion of innovation) theory. In addition, over 40 new models (most extended or hybrid models) have been identified.
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in the literature. However, most of them have not captured the specificities of mobile technologies or presented new constructs that have been thoroughly developed and validated. There is an apparent lack of high-quality empirical research in this area [5]. The paper is organized as follows: Section 2 is general framework; Section 3 is theoretical framework; Section 4 is data analysis; Section 5 is findings; Section 6 is conclusion; Section 7 is references.

2. General Framework

2.1 Research Problem

Today, most adult mobile phone users are technically sophisticated. They use computers and the Internet to purchase products, send and receive e-mail and play games on-line. However, with a huge number of mobile phone subscribers and ready for the next generation of e-commerce, what could be deterring this new global phenomenon from reaching its full potential?

Still in its introductory stage in some countries including Jordan, m-commerce is currently experience some growing pains. While its gift of mobility offers new-found freedom for some, others are wary that this freedom comes at a price too great to pay. Their privacy is threatened and their trust is at stake. For that reason, understanding m-commerce acceptance among Jordanian consumers’ has become a very interesting topic to explore.

2.2 Research Questions

The initial research question that will guide this study is:

1. What factors influence the acceptance of mobile commerce for Jordanian customers?
2. What is the current situation of mobile commerce in Jordan?
3. What are the limitations and barriers of developing mobile commerce in Jordan?
4. What are the key success factors of developing m-commerce in Jordan?

2.3 Research Purpose

The purpose of this study is to develop and validate a model of the factors that influence user acceptance of mobile commerce in Jordan (Fig.1). In doing so, it aims to understand the relationship between mobile commerce and technology acceptance.

2.4 Research Hypothesis

H1: Perceived usefulness negatively affects the intention to use mobile commerce.
H2: Perceived ease of use has a negative effect on the intention to use mobile commerce.
H3: Trust negatively affects intention to use mobile commerce.
H4: Social influence negatively affects intention to use mobile commerce.

Fig. 1  Independent variables dependent variable.
2.5 Theoretical Model of the Study

The model consists of two types of variables, the independent variables and dependent variable as in Fig. 1.

2.6 Methodology

This study was based on both secondary and primary data from different sources in Jordan. Questionnaire was distributed to students at different universities in Amman (capital of Jordan). All items intended to measure the variables in this study were adopted from previously validated instruments. Regression analysis was used to analyze the data. A confirmatory factor analysis was performed to assess the reliability and validity of the model before the regression analysis was performed.

2.7 Operational Definitions

Perceived ease of use: The users are more likely to choose an application that is perceived to be easier to use than another.

Perceived usefulness: The degree to which a person believes that using a particular system would enhance his or her job performance.

Trust: The consumers’ perceptions of truthfulness and believability of mobile commerce messages, in general that may lead to mobile commerce acceptance and adoption.

Social Influence: factors that are related to the influence of significant others such as family, and friends, in the decision to use a product or a service.

2.8 Literature Review

Islam, Khan, Ramayah & Hossain [6] (2011), “The Adoption of Mobile Commerce Service among Employed Mobile Phone Users in Bangladesh: Self-efficacy as A Moderator”. In this study a survey method was used to collect the data. Participants were chosen at random. The questionnaires were distributed after meeting the recipients and informing them the objectives of the survey. One hundred and ten questionnaires were distributed and collected over a three weeks time period. A total of 110 questionnaires were distributed. Of 110 questionnaires, 100 were completed in full. Ten questionnaires were rejected as they were not fully answered. These questionnaires were distributed to mobile phone users in two major cities in Bangladesh– Dhaka and Chittagong.

After testing the hypothesis of this study, the authors found that the degree of awareness and knowledge was not related as a critical factor to the adoption of m-commerce services in Bangladesh. A significant finding of this study is that the convenience of mobile and WAP/GPRS enabled devices does not have a significant impact towards the adoption of m-commerce services. The pricing and cost is a significant factor of the adoption of m-commerce services. The study suggests that the security and privacy is a significant factor of the adoption of m-commerce services. The study suggests that the rich and first information is found to be strongly correlated to the adoption of m-commerce services. Perceived usefulness was not found to be an important factor in influencing people to adopt m-commerce services. This study provides future researcher with several avenues. Future work can examine whether the gender difference has any significant influence on the m-commerce adoption level researchers can also attempt to investigate the moderating effects of different age groups of the user on the m-commerce adoption in Bangladesh.

Sreenivasan & Noor [7] (2010), “A Conceptual Framework on Mobile Commerce Acceptance and Usage Among Malaysian Consumers”. The authors used the UTAUT (unified theory of use and acceptance of technology) model to combine views from eight different acceptance theories (performance expectancy, effort expectancy, social influence, facilitating conditions, gender, age, experience, and voluntariness of use). The authors designed questionnaire that consist of elements addressing three areas: privacy sensitivity,
trust and m-commerce technology acceptance, and demographic used to identify moderating factors. The questionnaires have been given to the students from various major universities in Malaysia. The authors believe that m-commerce acceptance and usage model can be developed according to the Malaysian context. The potential of m-commerce in Malaysia is untapped and it will receive more attention if it is well tailored and communicated.

Barakat & El Sheikh [8] (2010), “Trust and user acceptance of Mobile advertising”. The authors developed the TAM to examine the factors that influence a person’s acceptance of new technology. Subjects for this study were Jordanian consumers age 15 and above surveyed at shopping centers in Amman, Jordan. A total of 342 visitors were asked to take part, and 186 people agreed. The response rate was a little higher for the group under age 25 and lower for the group over age 45. The regression results indicated that trust and utility has a strong positive influence on acceptance.

Rouibah [9] (2007), “Does Mobile Payment Technology Mnet Attract Potential Consumers? The Case of Kuwait”. The research approach is exploratory and presents findings from both a quantitative and qualitative perspective. Author reviewed existing literature on electronic and m-payment. To complete this task, several online databases were searched including (Pro Quest Direct, Science Direct, ACM Digital Library, and Google Scholar). A brainstorming session was held with 20 students enrolled in a course dedicated to e-commerce and m-payment. A literature review of existing models about ICT adoption was conducted, and the main characteristics of Arab culture were also identified. Survey instrument was then distributed to over 230 students at Kuwait University. The selected students were selected because of the following: student can be considered a convenient sample as Mnet is a new technology in Kuwait, and less people are aware of its existence. The most important result is that gender and experience are two important factors in ICT acceptance in Kuwait. Study results reveal that perceived trust seems to affect intention to use Mnet of potential users regardless of their experience. With regard to gender, perceived trust affects intention to use Mnet only of female users. In addition, social norm and privacy play the weakest effect on intention to use Mnet, which are in line with the effect of these two variables on camera mobile phone usage in Kuwait

Khalifa & Cheng [10] (2002), “Adoption of Mobile Commerce: Role of Exposure”. To test the research model, authors conducted a cross-sectional survey study. A questionnaire was developed, pre-tested and then administered to mainly part-time students who had full-time jobs. Over 50% of the students had at least one graduate degree (e.g., MBA) and were enrolled in a second (and sometimes third) degree, i.e., a master’s program in electronic business. On average, the students had over 10 years of work experience. Out of 220 distributed questionnaires 202 were returned. The empirical results confirmed the hypothesized mediated and moderating effects of exposure. The verified moderating effect of exposure on the relationship between attitude and intention implies that favorable attitudes will not necessarily lead to adoption. By enhancing the individual’s perceived behavioral control, exposure affects intention formation indirectly. According to authors’ results, such exposure is likely to facilitate the adoption of mobile commerce. Interactive exposure, i.e., trial and communication with rich educational content seems to be the most effective. The effect of subjective norms on intention highlights the importance of social influence in the adoption of mobile commerce.

3. Theoretical Framework

3.1 Defining E-commerce and E-business

E-business embraces all aspects of business and market processes enabled by the computer networks such as the Internet and web technologies. As a result, similarly to IS, e-business has an interdisciplinary nature and it borrows concepts and theories from a
wide range of disciplines such as computer science, management, psychology, economics and law [11]. In order to understand the nature of e-business and to properly evaluate the possible impact of its expansion beyond the traditional limitations of the fixed-line personal computer, it is necessary to define and understand e-business.

Electronic commerce is no novelty. Some forms of e-commerce have existed for over 25 years, e.g., EDI (electronic data interchange) in sectors such as retail and automotive; and CALS (computer assisted lifecycle support) in sectors such as defense and heavy manufacturing. However, these forms of electronic commerce were limited in their diffusion. In the mid 90s, there was an explosive development in electronic commerce facilitated by the tremendous growth of the Internet and the World Wide Web.

The terms e-business and e-commerce are used interchangeably without a consistent differentiation [12]. When searching for “e-commerce” in “The Economist Encyclopedia” the result is the following: “e-commerce is the conduct of business on the Internet, including the electronic purchasing and selling of goods and services, servicing customers, and communications with business partners”. Now, when searching for “e-business” the result is: “e-business = e-commerce”. Unfortunately this notion of “e-business = e-commerce” is not restricted to the business press. It is also found in the academic e-business literature, also noticed that despite a general understanding about the differences between the definitions of e-business and e-commerce, often, these terms are not used correctly throughout many academic publications.

The authors examine a few definitions of e-commerce and e-business given by some influential authors during the past decade. Before investigating mobile business it is important to clearly understand what e-commerce and e-business are.

It is believed that there are two common elements among the endless definitions of e-commerce: 1) electronic commerce concerns some sort of economic activity (e.g., sending an electronic mail message to a recording company inquiring about price or specifications of a product would be e-commerce, while sending a message to your grandmother would not); and 2) an economic activity occurs via some electronic media, such as a computer network (e.g., walking into the local music store to check the price of a compact disk is not e-commerce, while checking the price on the World Wide Web is). They agree that there are an increasing number of e-commerce experts who distinguish between e-commerce and e-business. In their view, the main difference between the two is that e-commerce defines interactions between organizations and their customers, clients, or constituents; while e-business is a broader term that also encompasses an organization’s internal operations. Their understanding is that e-commerce typically crosses organizational boundaries and has to utilize the Internet or web while e-business does not have the same requirements. However, they use e-business rather than e-commerce throughout their book because they also consider e-business to be a more encompassing term. It is also notices that some people use the term e-commerce instead of e-business. For him, in a strict sense, e-business refers to all business activities conducted on the Internet by an individual firm or industry. In contrast, he says that e-commerce is a part of e-business; the term refers only to the activities involved in buying and selling online. These activities may include identifying suppliers, selecting products or services, making purchase commitments, completing financial transactions, and obtaining service. He concludes that people generally use the term e-business because of its broader definition and scope.

3.2 Understanding M-business

Similar to the e-business literature, the mobile business literature use m-business and m-commerce without a consistent. Also, the main focus of m-business research so far has been
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business-to-consumer applications based on cellular phones. Mobile e-business, commonly known as m-business, is mostly understood as e-business conducted through wireless networks. However, this definition does not seem to capture some of the unique characteristics of m-business [13].

3.2.1 Differences between E-business and M-business

Most of the existent literature aiming to understand the differences between m-business and e-business is focused on the distinction between business-to-consumer commercial applications on “wired” PCs and on cellular phones [14]. The original concept of m-commerce was centered on consumers using their cell phones and other wireless devices to purchase goods and services just as they would do using their personal computers over the Internet. It was once believed that if mobile communications and the Internet were brought together, it would rapidly generate an enormous growth of e-commerce through this new wireless extension [15]. It is easy to find some very optimistic views in the early m-business literature. One good example is the following statement: “Within five years, individual e-commerce services will be primarily delivered by wireless and the wireless terminal will become the window of choice to the transactional e-world”.

Currently it is clear that m-commerce has been a very frustrating experience to many consumers because it did not meet their euphoric expectations. It is concluded that in many ways, m-commerce and the wireless Internet have been the victims of an over-excited speculation. The use of the wired desktop-based Internet as an analogy to explain to consumers what they would get on cellular phone-based wireless Internet can be seen as a mistake and one of the major drivers of this general over-excitement and high expectations [16].

It is pointed out that when users acquired their first mobile devices or upgraded to newer models and services they did so with certain expectations of partaking in joys that would come with the capability of doing anything, anywhere and anytime—a concept widely promised and promoted by marketers. Whether these expectations were reasonable or unrealistic, people were anticipating that their new gadgets would make their lives easier and enable them to do things they could not before. However, users learned quite early that the technology currently available is only capable of delivering a crude approximation of their initial expectations. It is also pointed out that compared to e-commerce; m-commerce has the following unique characteristics that make it distinct: reach ability, accessibility, localization, identification and portability.

Reach ability refers to the idea that a person can be in touch and reached by other people 24 hours a day, 7 days a week—assuming that the mobile network coverage is sufficient and the mobile device is switched on. In contrast to reach ability, accessibility describes the fact that a user can access the mobile network at any time from any location—again, assuming adequate mobile network coverage. Localization refers to the ability to locate the position of a mobile user. As such, localization is key to providing geographically specific value-added services (so-called location-based services) and is expected to be the most distinct characteristic of m-commerce compared to e-commerce. Identification of the user can be enabled by technologies such as “smart cards” embedded or inserted in mobile devices, containing not only personal information, but also billing information. Finally, portability comprises the physical aspects of mobile devices—one is able to readily carry them.

It is suggested that m-commerce should not be viewed as e-commerce with limitations, but rather as a unique form of e-commerce with its own unique benefits. Additionally, they point out that m-commerce is not simply a new distribution channel, a mobile Internet or a substitute for PCs. Rather; it is a new way to communicate with customers [17]. It is also outlined fundamental differences between m-commerce and e-commerce in terms of their origin, technology and
the nature of the services:

Origin: Due to rapidly expanding networks and nearly free access to the Internet, e-commerce bridges distances and enables companies to display and sell goods and services cheaply to consumers and businesses around the world. In the Internet world, much is given away free or at a discount in the hope that a way will eventually be found (presumably through advertising income) to turn traffic into profits. On the other hand, m-commerce is rooted in paid services. In the telecom world, users pay for airtime, data transmitted, as well as any services they may use. Therefore, due to their different origins, the customer bases of m-commerce and e-commerce are quite different;

Technology: The fundamental infrastructure of e-commerce is the Internet. It has a well-established protocol, TCP/IP (transmission control protocol/internet protocol), which solves the global internetworking problem and ensures that computers communicate with one another in a reliable fashion. In contrast, m-commerce services are constrained by a variety of wireless media communication standards ranging from global (satellite), regional (3G, IEEE 802.11a/b, DoCoMo I-mode), to short distance (bluetooth). Cellular carriers use different systems and standards such as GSM (global service for mobile), TDMA (time division multiple access), and CDMA (code division multiple access) to compete with each other. As a consequence, m-commerce applications tend to be device and carrier dependent. The boom in e-commerce applications could be partially attributed to the widespread use of PCs, which have a complete text input keyboard, large screen, substantial memory, and high processing power. In contrast, mobile devices such as mobile phones and PDAs (personal digital assistants) still present some obstacles such as uniform standards, ease of operation, security for transactions, minimum screen size and display type;

Nature of services: The web is widely accessible enabling search and delivery of rich information. Sophisticated online transaction processes can be integrated with backend enterprise information systems. In contrast, the delivery of m-commerce applications relies on private wireless communication carriers. These services are usually delivered to a specific region, and are rather simple, personalized, location-specific and time sensitive. Also the rapid growth of e-commerce was driven by the rapid growth of dot.com companies aimed at online shopping and customer services. Gradually, the emphasis shifted to B2B, and more recently e-business, to take advantage of the real business value of the Internet. In contrast, mobile commerce started from person to person communication, and gradually more services were introduced through interactions between people and systems: checking the weather, finding a local restaurant, etc.

The major differences between m-commerce and e-commerce are summarized in Table 1.

3.3 Definition of M-business

M-business is mostly understood as wireless and/or mobile electronic business expands this notion defining m-business as the use of wireless networks and other mobile information technologies for organizational communication and coordination, and the management of the firm [19]. Similarly, Wyse points out that mobile business occurs when transactions and interactions take place electronically through communication channels that permit a high degree of mobility by at least one of the transactional/interactional parties.

On the other hand, the researchers conceptualize m-business as any phenomenon that exhibits all of the following five characteristics:

1. It involves communication, either one-way or interactive, between two or more humans, between a human (or humans) and one or more inanimate objects (such as databases) or between two or more inanimate objects (e.g., between devices);
2. At least one of the parties engaged in the communication must be mobile, in the sense that his,
Table 1  Major difference between m-commerce and e-commerce.

<table>
<thead>
<tr>
<th>M-commerce</th>
<th>E-commerce</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private mobile phone industry</td>
<td>Government-sponsored Internet</td>
<td>Sponsorship</td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
<td>Business entry cost</td>
</tr>
<tr>
<td>High mobile service charge</td>
<td>Free or low cost Internet access</td>
<td>Access cost</td>
</tr>
<tr>
<td>M-commerce</td>
<td>E-commerce</td>
<td>Technology</td>
</tr>
<tr>
<td>Circuit switched for streamlined voice communication</td>
<td>Packet-switched data transmission</td>
<td>Message transmission</td>
</tr>
<tr>
<td>GSM, TDMA, CDMA, 3G</td>
<td>TCP/IP, HTTPML</td>
<td>Protocol</td>
</tr>
<tr>
<td>Multiple incompatible standards</td>
<td>Highly standardized</td>
<td>Standardization</td>
</tr>
<tr>
<td>Mainly regional</td>
<td>Global</td>
<td>Connectivity</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
<td>Bandwidth</td>
</tr>
<tr>
<td>Phone number</td>
<td>URL with IP and domain name</td>
<td>Identity</td>
</tr>
<tr>
<td>Device-specific applications</td>
<td>General computer applications</td>
<td>Application development</td>
</tr>
<tr>
<td>Cell phones and PDAs</td>
<td>Personal computers</td>
<td>Interface device</td>
</tr>
<tr>
<td>Mobile</td>
<td>Fixed location</td>
<td>Mobility</td>
</tr>
<tr>
<td>Small screen</td>
<td>Big screen</td>
<td>Display</td>
</tr>
<tr>
<td>Voice with small key pad</td>
<td>Keyboard for full text input</td>
<td>Main input mode</td>
</tr>
<tr>
<td>Voice with small text display</td>
<td>Text and graphics</td>
<td>Main output mode</td>
</tr>
<tr>
<td>Limited processing power with small memory chip</td>
<td>Powerful CPU with large memory and disk space</td>
<td>Local processing power</td>
</tr>
<tr>
<td>Java or specific script languages</td>
<td>Support a variety of programming languages</td>
<td>Software and programming</td>
</tr>
<tr>
<td>Towards minimization</td>
<td>Towards sophistication</td>
<td>Trend</td>
</tr>
<tr>
<td>M-commerce</td>
<td>E-commerce</td>
<td>Services</td>
</tr>
<tr>
<td>Regional</td>
<td>Global</td>
<td>Service range</td>
</tr>
<tr>
<td>Person with a mobile device</td>
<td>PC connected to the Internet</td>
<td>Delivery destination</td>
</tr>
<tr>
<td>Simple transactions</td>
<td>Complete and complex transactions</td>
<td>Transaction complexity</td>
</tr>
<tr>
<td>Simple and short messages</td>
<td>Rich information</td>
<td>Information provided</td>
</tr>
<tr>
<td>Time critical</td>
<td>Less time-critical</td>
<td>Timing</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>Geographic Location</td>
</tr>
<tr>
<td>Service to a moving target</td>
<td>Service to a fixed point</td>
<td>Target mobility</td>
</tr>
<tr>
<td>Weak connection to backend business information systems</td>
<td>Strong connection to backend business information systems</td>
<td>Backend business connection</td>
</tr>
</tbody>
</table>

Source: adapted from Zhang, Yuan and Archer (2003), Ref. [18] p.57.

her, or its ability to communicate is not contingent on being at a fixed physical location at a particular point in time;

3. The ability to communicate must possess the potential to be continuously maintained for at least one of the parties during a substantial physical movement from one location to another;

4. The communication signals between parties must be primarily carried by electromagnetic waves, without direct sensory perception of the signals;

5. If humans are communicating, at least one seeks to benefit economically from the communication, either in the short or the long run. If the communication is entirely between inanimate objects, such communication must be ultimately aimed at creating economic benefits for a human or a firm.

3.4 Mobility

For quite a long time, mobility has been almost exclusively a theme of interest of disciplines such as environmental psychology and behavioral geography—primarily focusing on human temporospatial cognition and movement. Within the IS discipline, the interest in mobility and various issues relating to “being mobile”
is quite new, e.g., only recently IS scholars have started to investigate temporal, spatial and structural impacts caused by the dissemination of mobile ICT [20]. Additionally, only in the past decade, the interest in mobile technologies has migrated from being purely technical—concerned with devices and technological capabilities—to a more sociological and philosophical approach that considers the dialectic between technology and society. It is pointed out that there is a clear need to improve the operationalization of the latent constructs of user mobility which they believe to be a complex and multidimensional concept that has not been explored systematically in information systems research.

Mobility is often referred as the most important feature of mobile business. However, as Saiu and Shen [21] argue, issues concerning mobility are discussed without a clear understanding of “mobility” itself and that the concept of mobility and the significance of “being on the move” are used in remarkably diverse ways. They believe that because of such diversity of definitions, current mobility studies lack a well-defined common ground as well as thorough attempts to develop theory, both of which are essential for the sustained development of any scholarly discourse in social sciences. Mylonopoulos and Doukidis [22] also acknowledged the diversity of viewpoints in the current literature on mobility. They identified five “streams” of work in this area: 1) aiming to understand the philosophical nature of mobility; 2) focusing on the purpose/need of mobility; 3) aiming to categorize mobility; 4) researching the physical manifestations of mobility (in terms of users, devices and services); and 5) examining the effects of mobility on society. It is also found that the mobile business literature still is in a stage of conceptual bewilderment regarding mobility.

Tarasewich and Nickerson [23] developed a concept of mobility which expands the traditional view, understanding that being mobile is not just a matter of people travelling but it relates more to the interactions people perform and the way in which they interact. By relating mobility to interaction, they expand the concept to embrace spatial, temporal and contextual mobility. Spatial mobility is the most immediate aspect of mobility in the social lives. The rapid diffusion of mobile ICTs has energized human geographical movement, in urban life and work environments. The support provided by these technologies increases the human natural tendency to be geographically independent. Spatial mobility refers not only to extensive geographical movement of people; it also signifies the global flux of objects, information, and spatial reality (cyberspace)—creating complex patterns of human interaction.

Temporal mobility refers to “when” human interactions occur. The recent developments of ICTs have significantly transformed temporal attributes of human interaction. It can no longer be explained from a linear “clock-time” perspective; it is now highly mobilized into multiple temporal modes based on each actor’s perspective and interpretation of time itself. This creates a complex social environment where temporal aspects of interactions among humans are constantly tangled and renegotiated. The increasing temporal mobilization of human interaction is simultaneously creating new opportunities and constraints for the ecology of social life.

Contextual mobility constitutes a crucial aspect of interaction just as time and space do. Understanding the context—“in what way,” “in what particular circumstance,” and “towards which actor(s)”—a task is performed can be critical for capturing the nature of interactions. Mobile ICTs influence the context of interaction in various ways by diversifying modalities of interaction. In addition, the relationship between interaction among people and the contexts in which they are occurring is becoming more flexible.

3.5 User Acceptance of Technology

User acceptance of new technology is often described as one of the most mature research areas within the information systems discipline [24].
Research in this area has produced many theoretical models—with roots in information systems, psychology and sociology—and still is a critical and pertinent issue for the IS field. This section presents a review of some prominent models of the IS literature on user acceptance of information technology. This is followed by a review of the literature on user acceptance of mobile technologies.

The study of user acceptance and use of technology have produced several research streams. One stream of research focuses on individual acceptance of information technology while other streams have focused on implementation success at the organizational level, among others. The theoretical models that are included in this review have in common the intention to use and/or usage of technology as the key dependent variable.

The researchers pointed out that the role of intention as a predictor of behavior (e.g., usage) is also critical and it has been well established in the IS discipline. A large literature survey was carried out in order to identify some of the most prominent user acceptance models/theories used in the m-business domain (Section 2.5 for more details). Five theories/models emerged from this review: 1) TRA (theory of reasoned action); 2) TAM (technology acceptance model); 3) TPB (theory of planned behaviour); 4) DoI (diffusion of innovation); and 5) UTAUT (unified theory of acceptance and use of technology). The first four models will be briefly reviewed in the following subsections. The UTAUT will be reviewed in depth, since it will be used as the foundations of the user acceptance component of this research.

3.6 Theory of Reasoned Action

The TRA (theory of reasoned action) has been drawn from social psychology and is one of the most fundamental and influential theories of human behavior it is also recognized that this theory has been used to predict a wide range of behaviors.

3.7 Technology Acceptance Model

The TAM (technology acceptance model) was originally adapted from the TRA, however unlike the TRA, the final conceptualization of TAM excludes the attitude construct in order to better explain intention parsimoniously. It presents two independent variables: perceived usefulness which is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance”; and perceived ease of use—defined as “the degree to which a person believes that using a particular system would be free of effort” [25].

TAM is possibly one of the most used models found in the IS literature. In early 2006, in the Institute for Scientific Information’s Social Science Index there were over 450 journal citations to the two journal articles that introduced TAM.

The technology acceptance model is tailored to IS contexts, and was designed to predict information technology acceptance and usage in the workplace. It has been widely applied to diverse set of technologies and users. Subsequently, the researchers presented TAM2. It extended the original TAM by including subjective norms as an additional predictor of intention in the case of mandatory settings.

3.8 Unified Theory of Acceptance and Use of Technology

The UTAUT (unified theory of acceptance and use of technology) provides a sound basis for understanding user acceptance research within the IS domain. Therefore, it is reviewed in depth in this section.

In order to develop the UTAUT, the researchers conducted the following steps: (1) reviewed user acceptance literature and discussed some prominent models; (2) empirically compared eight models and their extensions; (3) formulated a unified model that integrates elements across the eight models; and (4) empirically validated the unified model.
4. Data Analysis

The selection of universities sample of this study followed the sampling procedures suggested by Sudman. According to Sudman, sampling from only one entrance of a shopping centre can create a socioeconomic or geographical bias. Therefore, various locations such as door entrances and different stores were rotated to avoid potential biases. Intercepted visitors were informed of the purpose of the study. They were then asked to spare about 10 minutes to answer the questionnaire. A total of 263 visitors were asked to take part, and 163 people agreed. The response rate was a little higher for the group under age 27 and lower for the group over age 37. Among the questionnaires answered, nine responses were unusable, because more than 15% of the total items were missing. The total number of usable questionnaires was 130.

Table 2 provides the respondents’ demographic characteristics. The size of the 18 to 37 age group was 95.4% which is larger than the Jordanian population statistics of 82%. Similarly, a sample size of participants who are age 33 and older was 10% and that is smaller than that of the Jordanian population statistic of 31%. The result is reasonable, since younger groups constitute important market segments for mobile commerce.

Table 3 shows that female and male respondents accounted for 79.2% and 20.8%, respectively. Thus, the difference between female and male sample is significant. The R value for the four independent variables (usefulness, ease of use, trust, and social influences) was 0.818, and the $R^2$ of 0.669 indicated that 66.9% of the variance in user acceptance of mobile commerce could be explained by the independent variables (usefulness, ease of use, trust, and social influences). The results indicated that the four constructs were significantly related to user acceptance of mobile commerce.

The authors conducted multiple regression analysis and extracted the table of coefficients as shown in Table 4 below.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Demographic characteristics (age).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>% Valid</td>
</tr>
<tr>
<td>18-22</td>
<td>75</td>
</tr>
<tr>
<td>23-27</td>
<td>29</td>
</tr>
<tr>
<td>28-32</td>
<td>13</td>
</tr>
<tr>
<td>33-37</td>
<td>7</td>
</tr>
<tr>
<td>More than 37</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>130</td>
</tr>
</tbody>
</table>

*F*: frequency.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Demographic characteristics (gender).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>% Valid</td>
</tr>
<tr>
<td>Male</td>
<td>103</td>
</tr>
<tr>
<td>Female</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>130</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Coefficients.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Unstandardized Coefficients</td>
</tr>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.314</td>
</tr>
<tr>
<td>Usefulness</td>
<td>0.739</td>
</tr>
<tr>
<td>Ease of use</td>
<td>0.234</td>
</tr>
<tr>
<td>Trust</td>
<td>0.226</td>
</tr>
<tr>
<td>Social Influences</td>
<td>0.196</td>
</tr>
</tbody>
</table>

5. Findings and Practical Implications

The coefficients for the final model are reported in Fig. 2 and the model is represented by:

H1: The regression coefficient for perceived usefulness is 0.450 ($p = 0.000, p \leq 0.05$). The regression results in Table 4 indicated that the H1 hypothesis stands. Perceived usefulness positively affects the intention to use mobile commerce. This result is similar to that of Davis et al., Straub et al., Szajna, Igbaria (1997), and Thompson et al. that perceived usefulness is positively related to acceptance.

H2: For the second hypothesis, the regression coefficient is 0.189, and the significance level is 0.013 ($p < 0.05$). Therefore, ease of use is positively related to user acceptance of mobile commerce.

H3: The regression coefficient is 0.174, and the significance level is 0.022 ($p < 0.05$). Therefore,
perceived trust is positively related to user acceptance of mobile commerce.

H4: The regression coefficient is 0.151, and the significance level is 0.078 (p > 0.05). Therefore, social influence is positively not related to user acceptance of mobile commerce.

Usefulness has a much stronger positive influence on acceptance than ease of use and trust. In particular, based on the beta value and the significance levels, Ease of use plays relatively a marginal role in the prediction and the explanation of acceptance.

6. Conclusions

The theoretical background for the study was adopted from technology acceptance model. In addition to the usefulness, ease of use and trust constructs found in the technology acceptance model, social influence was added as a fourth construct to the model. These constructs were found to be significant in determining user acceptance of mobile advertising.

Acceptance is one of the crucial keys to successful applications choice and use. Clearly, many factors influence technology acceptance according to Davis and others. The regression results indicated that usefulness has a strong positive influence on acceptance. Therefore, the findings of this study partially supported the hypothesis designed in the research model: usefulness, ease of use, trust and social influence are the key attributes that affect user acceptance of mobile commerce.

The finding suggests that as long as the technology is touching the consumers’ live, the willingness to accept is increasing. Thus, it recommends that the specialized culture and customized services such as considering the religious beliefs and the adoption of Arabic languages will be more acceptable by the individual in the Middle East. The study also suggests that the mobile commerce investors and providers have to ensure the stable infrastructure and appropriate strategy that can be focused in niche market and location based services which will promote mobile commerce adoption successfully.

References

Factors Influencing Customer Acceptance of M-Commerce Services in Jordan


