



Journal of Applied Sciences

ISSN 1812-5654

science
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The Influence of Demographic Factors and User Interface on Mobile Banking Adoption: A Review

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Abstract: Of late, many banking institutions have been focusing on developing various types of financial systems for enhancing the banking services to their clients. However, they experience a challenge in this process, especially in terms of assessing the weakness rates of adoption among clients. This problem has been addressed by measuring the impact of different factors on adoption of mobile banking by adding these factors to various types of models and theories, such as, theory of reasoned action or technology acceptance model. This study aims to compile and review the previous researches that have covered the influence of demographic factors and user interfaces on the adoption the financial solutions (Internet Banking and Mobile Banking). This study has also described the current situation in developing countries especially in Jordan. The first objective of this study is to highlight the vulnerabilities of the previous adoption studies, especially in developing countries. The second objective is to comprehensively understand the differences between the various types of financial services. Ultimately, this study has elucidated various factors which influence the adoption of mobile banking and Internet banking.

Key words: Influence, mobile banking, user interface, demographic factors, adoption

INTRODUCTION

Since 1990, the growth of information technology and the revolution of Internet have significantly changed the world. The technological advancements have changed the features of the world and have made human life much easier. A lot of sectors have been benefited by the technological revolution including, economic, business and communication sectors. One of these sectors is the banking sector. Of late these sectors use technology to improve their services and extend their business operations 24 h a day, 7 days a week (AbuShanab *et al.*, 2010).

According to the International Telecommunication Union (ITU) report, the users of Internet have increased more than three times, within the past ten years, based on the indicator, the percentage will be further increased in 2012 (ITU, 2011). However, the degree of the increase differs among developed countries and developing countries. This has lead us to explore the gap between developed countries and developing countries in terms of technology adoption (ITU, 2011).

The developing countries face a lot of challenges, even at the initial stages of introducing new technologies, such as the limited availability of fixed broadband access (ITU, 2010a), influence the differences of demographic factors (age, gender, education and income) (Burke, 2002), trusting beliefs (Zhang *et al.*, 2008), perceived

usefulness, perceived ease of use, consumer awareness and perceived risk (Safeena, 2010).

As discussed earlier, the development in information systems and Internet usage has created a lot of opportunities for the organizations, to provide more enhanced products and services. The technological developments have made our lives easy and have removed the constraints of time and place or cost.

As mentioned above a lot fields use Information Technologies (IT) and mobiles, to provide enhanced products and services. IT has been used in health, economics, services, financial and education sectors. This study will highlight the usage of IT in the financial sector especially the banking services.

This study has reviewed the literature in two main areas such as, the impact of demographic factors on the adoption of mobile banking services and discovering their relationship with user interface. The second area reviewed the other factors that influence the adoption level.

This study focuses on Jordan, as an example of developing countries, to depict the impact of the factors. Jordan has been selected as sample because of its distinctive location in the Middle East, noteworthy cultural differences from Western cultures and the recent commitment in developing its information technology infrastructure (Al-Sukkar and Hasan, 2005; Akour *et al.*, 2006).

DEVELOPMENT USING IT IN BANKING SECTOR

According to the International Telecommunication Union (ITU) report, the last decade has witnessed a huge revolution in terms of technological advancement, The Internet users have increased more than three times within the past ten years, as shown in Fig. 1. However, the degree of the increase differs among developed countries and developing countries. This has lead us to explore the gap between developed countries and developing countries in terms of technology adoption (ITU, 2011).

It is evident that the developing countries have a low penetration rate of information technology and Internet services. However, the penetration in developed countries, is increasing at a very fast pace. Figure 2 illustrates the rate of information technology and the Internet penetration that exceeds more than 100% (ITU, 2011).

For example, Haque *et al.* (2009) have stated that due to the significant and consistent economical growth, Malaysia will soon become a developed Nation. Despite this constructive growth, the rate of adopting Internet banking is relatively low in Malaysia and it lacks research in terms of identifying the factors that influence the adoption of Internet banking. It is noteworthy, that in spite of the availability of technological facilities Internet

banking is still in infancy stage in Malaysia. Hence, it has become hard for the banking industry to design new applications and features that would enhance the dissemination of Internet banking (Haque *et al.*, 2009).

According to a report by ITU, the rate of mobile penetration is increasing rapidly, it has been reported that 90% of the world population had been covered in 2010. However, now the percentage of this penetration is different than the previous years, the report has further stated that the cellular-mobile subscriptions were very high in Europe and the America and at a good rate within the Arabic states, nevertheless the lowest percentage was in Africa as illustrated in the Fig. 3 (ITU, 2011).

Recently mobile phones are rapidly becoming the primary personal gateway to access information (Hicks and Adler, 2006). Different types of mobile phone devices, smart phones and PDA can access the Internet to get the information or services (Guirguis and Hassan, 2010). Low fees, time saving and freedom from time and place are the main advantages of handheld devices (Karjaluo *et al.*, 2002). Traditionally, “the distribution of services in the retail banking industry largely meant customers having to visit a physical branch (‘Bricks and Mortar’) to access any financial services”(Smith, 2006). Now-a-days, there is a tremendous progress on distributing banking services particularly using mobile devices.

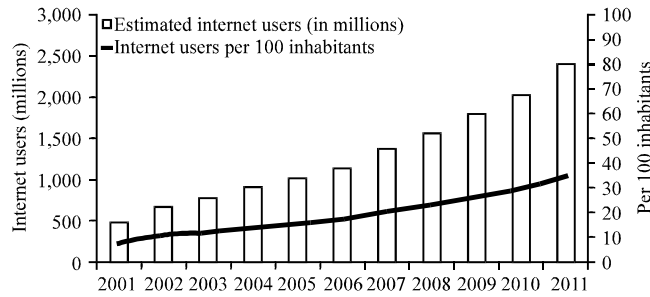


Fig. 1: Global number of internet users from 2001-2011 (ITU, 2011)

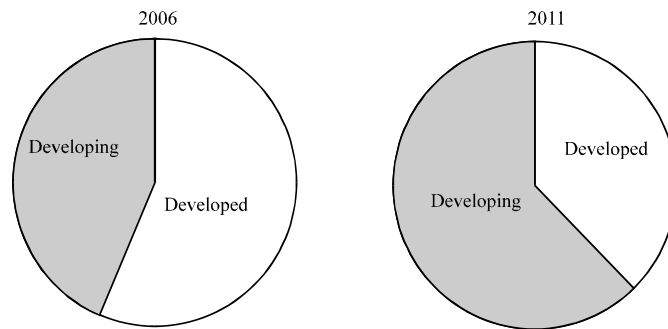


Fig. 2: Global internet users by level of development (ITU, 2011)

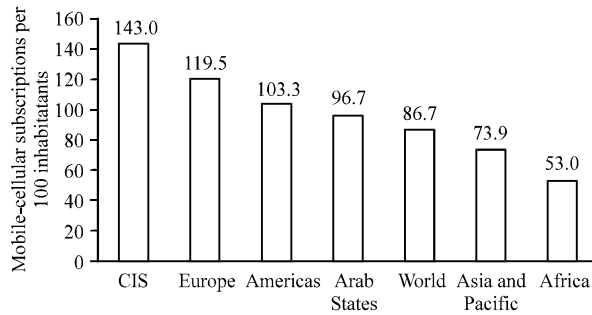


Fig. 3: Global mobile penetration in 2011 (ITU, 2011)

Electronic banking is considered as one of the most successful business-to-consumer applications in electronic commerce (Pousttchi and Schurig, 2004). Ahmed *et al.* (2011a) have mentioned that the adoption of electronic commerce could; enhance productivity, reduce cost, increase profit and enable mass customization and convenient participation of customer in different sectors. The Electronic bank comprises various types of services and transactions that are conducted via Internet, especially the E-banking.

E-banking: In Internet banking, the online banking activities are carried out with the help of the official website of the banks, the online banking services have simplified the transactions. According to Harma and Dubey (2009), Lee and Chung (2009) and Hamadi (2010), the simplest definition for Internet banking or online banking is: enabling customers to check their account balance and transfer money between accounts and can even perform online purchases while sitting in the comforts of their homes.

The shift from traditional banking methods to Internet banking has created a lot of challenges to the banking sectors. This shift has changed the ways of distributing services which consequently forced them to change their plan. It has also changed the way of attracting clients to use this new and improved method called E-banking and to retain the current clients (Hamadi, 2010).

The main benefit of using Internet banking for financial institutions is increasing the profit through “cost savings by utilizing the Internet” (AbuShanab and Pearson, 2007). “A typical Internet-based banking transaction averages about \$.01 in cost, while transactions at a physical bank location or through an ATM costs \$1.07 and \$.27, respectively (Giglio, 2002)”. Additionally, the use of online banking reduces the time necessary for customer transactions to occur (Karjaluo *et al.*, 2003).

It is evident that, E-banking facilitates the banking sector to offer an economical and undeviating means of sending information and to sell or buy products and

services. As most of the banks in developed nations have recognized the significances of E-banking, they have totally focused on providing E-banking services (Sarлак *et al.*, 2009).

The use of Internet banking, especially in developed countries, has grown rapidly over the past couple of years. The low fees, time saving and mobility are considered as most important elements of Internet banking (Karjaluo *et al.*, 2002). But there are some inhibitors to internet banking such as, complexity (Black *et al.*, 2002), the cost of a product or service (Black *et al.*, 2002), ignorance of electronic services and Internet (Sathye, 1999) and security risk (Sathye, 1999; Black *et al.*, 2002). However, in contrast to previous studies, Karjaluo has found that factors such as security is not considered as obstacle for the adoption of Internet banking (Karjaluo *et al.*, 2002).

Mobile banking: m-commerce is considered as the next big phase in technological advancement, following the e-commerce era (Chew, 2006). Mobile commerce, is the process of using a mobile phones or Personal Digital Assistants (PDAs) or any handheld devices to sell or buy products, goods and services from anywhere at any time. In other words, it is the ability to conduct commerce through a mobile device; any transaction that involves a transfer of ownership to use goods and services and done through any mobile device or personal phone is called as mobile commerce. Following the e-commerce era, the mobile commerce is thought to be the next big trend in technological evolvement, due to the changing needs of consumers (Barnes, 2002). This new trend is spreading very rapidly throughout the world, as it is one of the most convenient ways to sell or buy products and does not consume much time.

Few indicators about the penetration of mobile commerce were presented in one of the studies by ITU World Telecommunications, such as: “the growth of cellular mobile is slowing worldwide. In developed countries, the mobile market has reached saturation levels with on average 116 subscriptions per 100 inhabitants at the end of 2010 and a marginal growth of 1.6% from 2009-2010” (ITU, 2010b).

However, the developing countries have increased their shares of mobile subscriptions from 53-73% between 2005 and 2010 (ITU, 2010a), furthermore the rate of Internet users had grown rapidly in last five years.

According to Alqatan *et al.* (2011), the mobile technology is evolving very rapidly and offer a lot of features including creating new job opportunities and revenues for the organizations such as, personalization, localization, ubiquity, instant connectivity, time and place convenience. In short it has been accepted as part of people’s daily life (Lee and Chung, 2009). Many of researchers have defined mobile banking as an

application of m-commerce which enables customers to access bank accounts through mobile devices to conduct transactions such as, checking account status, transferring money, payments and selling stocks etc. (Amin *et al.*, 2007; Harma and Dubey, 2009; Lee and Chung, 2009; Li and Zhang, 2010; Masinge, 2010; Khraim *et al.*, 2011).

MOBILE BANKING TECHNOLOGY SOLUTIONS

Despite the previous indicators, there are still some weakness in adopting and using mobile devices in financial services, despite the existence of different mobile banking technologies. The disadvantages of the adoption of mobile commerce are: (1) small screen size of mobile devices (2) limited screen resolution and difficult keypad and (3) vulnerability of information and security risk (Siau and Shen, 2003).

The evolution of mobile banking began with the use of the Interactive Voice Response (IVR) calls which is an automated telephony system that interacts with callers and gathers relevant information and routes calls to the appropriate destinations (Patel and Marwala, 2008). Later lot of other technologies emerged especially in the domain of mobile commerce. The most popular Mobile Banking technology solutions are: (1) browser-based applications or WAP-banking (2) client-based applications or Mobile banking with PDA and (3) messaging-based applications or SMS-banking (Pousttchi and Schurig, 2004; Kim *et al.*, 2009).

Browser-based applications or WAP-banking applications use Internet protocol to access the banking portal and conduct several transactions; these types of applications require a mobile service provider with a wireless access protocol (Kim *et al.*, 2009; Masinge, 2010). Similar to the Internet banking method, the clients send a request for special services (client account balance, latest transactions, transfer money among accounts users, make buy and sell orders or goods online and stock exchange) through their mobiles and then they will receive the responses from the banking data base through the page. This solution is considered the most widespread solution for mobile banking (Pousttchi and Schurig, 2004).

The second application is client-based applications or mobile banking with smart phones; mobile banking applications were designed for the mobile phones, however, some applications enable mobile banking through PDAs and this could eliminate the technical restrictions of mobile phones (Pousttchi and Schurig, 2004). The applications installed in the smart phones will enable the connectivity and helps to conduct the transactions much easier and faster.

The third solution is messaging-based applications or SMS-banking: The client creates a short message and sends it to the authority concerned such as, a network

operator. The network operator then sends this message to the bank, then the bank can generate a SMS from current bank data like account balance or account movements and send them back to the mobile device of the customer (Pousttchi and Schurig, 2004; Laukkanen, 2007a).

The diversity in using technology for different financial solutions creates major opportunities for banks, to take advantage of these services. Some of these advantages are: decreases the cost of delivery services, resolves the issues of access to finance, 24 h service availability to clients (Coelho and Easingwood, 2003) access to the service regardless of time and place and provide privacy and savings in time and effort for clients (Suoranta, 2003).

Even though no one can deny that, mobile bank has a huge market potential, its situation in reality is disappointing (Min and Fei, 2009). Because innovations like mobile banking face different types of barriers such as “usage barrier”, value barrier, risk barrier, tradition barrier and image barrier (Harma and Dubey, 2009).

Previous studies have indicated that different clients have several reasons for resisting mobile banking. One of these reasons is the social system influence. The older and less educated people are more opposed to the adoption banking innovations. Moreover, youths, males with high level education and good income are more amenable to adopt the innovations (Baker *et al.*, 2007; Sulaiman *et al.*, 2007; Harma and Dubey, 2009). The fear of sharing personal information is also considered as a significant barrier for some clients (Harma and Dubey, 2009).

CURRENT SITUATION OF MOBILE BANKING SERVICES

Some indicators and international results, discussed in the previous sections have revealed that, there is a gap between developed countries and developing countries, due to the high levels of illiteracy; low levels of income and different cultural levels (Alafeef *et al.*, 2011).

For instance in Libya, a previous research conducted by Ahmed *et al.* (2011a) and they found that there are some barriers that hinder the adoption of electronic commerce such as: payment method, insecure credit cards billing and insufficient knowledge of the service cost contends with the technological advances in e-commerce adoption (Ahmed *et al.*, 2011b).

Some of the countries have achieved tangible results such as, China, Brazil and Kenya, where the number of new users of mobile banking increased over 100% in one year (Khraim *et al.*, 2011). The percentage of mobile banking users was also high in the UK, USA, Singapore, South Korea and Sweden, because the banks provide

their clients with new services via their mobile handsets. The Middle East is considered to be the second fastest growing region after US and Canada in adoption of mobile and telecommunication. Saudi Arabia and Iran are considered as the biggest mobile market in the area (Al-Hosni *et al.*, 2010).

The Middle East countries are considered to be developing countries; these countries have the desire to catch up with the developed countries in the usage of technology, through developments in the infrastructure and plans that are set for future and raising the awareness amongst the people about the need to using these services.

Jordan is amongst one of the developing countries in the Middle East that has been witnessing a rapid growth in terms of Internet banking. According to (AbuShanab *et al.*, 2010), the Internet banking has rapidly grown since 2001 and many of the Jordanian banks have started offering the financial services through Internet.

Previously, all banks from all around the world have developed different ways to provide financial services to their clients, such as ATM (Automated Teller Machine) or telephone banking and SMS; however after realizing the significance of cost savings by utilizing the Internet services most of the banks now offer Internet banking and mobile banking.

According to Eid (2004), Jordan has first witnessed the dawn of Internet in the year 1996. Based on the report from Department of Statistics in the year 2010, ninety eight percent of families in the Hashemite Kingdom of Jordan have mobile devices. The report also indicates that 27% of Internet users are aged 5 years and above during 2010. Using Internet through personal computer was more than 97% in 2010, also the percentage of users using Internet through mobile handheld “WAP or GPRS” has increased from 7.2-12.1% between 2009 and 2010 (DOS, 2010).

Based on our investigation in terms of using Internet by the Jordanians, we have found that most people are using the Internet for fun, listening to music, downloading movies or software and to access social networks such as Facebook and Twitter (DOS, 2010). However, the percentage of using Internet for banking services was only 3.6% in 2009 and 5% in 2010 (DOS, 2010).

Based on the report from the Central Bank of Jordan, there are 13 Commercial Banks, 9 Foreign Branches, 3 Jordanian Islamic Banks and 1 Foreign Islamic Branches in Jordan (http://www.cbj.gov.jo/pages.php?menu_id=34).

Table 1 shows the directory of banks operating in Jordan until 2012, with their online services. Based on the Table 1, we have understood that there is a need to investigate and discover the reasons behind the

Table 1: Directory of banks working in Jordan until 2012 with their online services provided

	Type of services				
	Mobile banking				
	SMS	IVR	E-banking	WAP	Application
Commercial banks					
Arab Bank PLC	✓	✓	✓	X	X
Arab banking Corporation (Jordan)	✓	✓	✓	X	X
Arab Jordan Investment bank	X	X	✓	X	X
Bank of Jordan PLC	✓	✓	✓	✓	X
Cairo Amman Bank	✓	✓	✓	X	X
Capital Bank of Jordan	✓	X	✓	✓	X
Jordan Commercial Bank	✓	✓	✓	X	X
Investbank	✓	X	✓	X	X
Jordan Kuwait Bank	✓	✓	✓	X	X
Jordan Ahli Bank PLC	✓	✓	✓	X	X
Societe Generale de Banque	✓	X	✓	X	X
The Housing Bank					
Trade and Finance Bank al Eihad	✓	X	✓	X	X
	✓	✓	✓	X	✓
Foreign branches					
Standard Chartered	X	X	✓	X	X
Egyptian Arab Land Bank	✓	X	✓	X	X
HSBC Bank Middle East	X	✓	✓	✓	✓
Citi Bank	✓	✓	✓	✓	✓
Rafidain Bank	X	X	X	X	X
National Bank of Kuwait	X	X	✓	X	X
Banque Audi					
Sardar Audi Group	✓	✓	✓	X	X
Blom Bank	✓	✓	✓	X	X
National Bank of Abu Dhabi	X	X	✓	X	✓
Jordanian Islamic Banks					
Islamic International					
Arab Bank PLC	✓	✓	✓	X	X
Jordan Islamic Bank	X	X	✓	X	X
Jordan Dubai Islamic Bank	X	X	✓	X	X
Foreign Islamic Branches					
Rajhi Bank	X	X	✓	X	X

✓: Provide, X: Not provide

reluctance of local commercial banks, to provide financial services through mobiles and to study the relationship among this reluctance and percentages of adopting mobile banking between members of the Jordanian society.

It is believed that, reluctance is one of reasons behind this low level adoption, moreover, the clients and demographic factors have big influence of on adoption level. From this point we must study and understand the relationship between the demographic factors and adoption level.

IMPACT OF DEMOGRAPHIC FACTORS IN ADOPTION OF MOBILE BANKING

The core area that will be covered in this review understanding the demographic factors that can have a big influence on the adoption of IT, especially in the mobile banking services; In addition, we will evaluate and measure their influence.

This study has investigated the four demographic factors such as: Age, Gender, Education and Income. Many previous researchers have selected these factors as main demographic factors (Baker *et al.*, 2007; Sulaiman *et al.*, 2007; Harma and Dubey, 2009; Alafeef *et al.*, 2011).

Previous studies have evaluated and measured the impact of these factors, by using different type of adoption theories and models. However, most of these studies had been conducted in developed countries (AbuShanab *et al.*, 2010), without evaluating or studying the situation in developing countries, where low level of education and income with different culture exists, for example the social and culture characteristics are different between Arab countries and Western countries (Baker *et al.*, 2007).

According to Rogers (1995), youngsters with high level of education and income are the early adopters of innovations. Another study in US has found that, the education and income level have positive impact on adoption level and age has negative impact on adoption of phone banking, furthermore, gender has significant influence in phone banking (Kolodinsky *et al.*, 2004). Similarly, Lee *et al.* (2003) have reported about the influence of age, education and income level in computer banking adoption.

Mattila (2003) has analyzed the Internet banking behavior of mature customers; she has found that, having a good level of education and household have significant effect on adoption level (Karjaluo *et al.*, 2003). In terms of the factors affecting the adoption of mobile banking services, she has indicated that all demographic factors have significant effect (Mattila, 2003).

Mirza *et al.* (2009a, b) have also contacted few more important studies in Iran in terms of discussing the roles of demographic features in adopting internet banking, these studies have revealed that, the demographic features effectively influence the adoption of internet banking services.

As a foundation for this study Alafeef *et al.* (2011) carried out some online surveys, to reflect the current situation in Jordan. The main purpose of this survey was to evaluate and investigate the role of age, gender, education and income in the adoption of mobile banking in Jordan. The results of survey was compatible with what we have mentioned earlier.

Age: The influence of age is noticeable in various earlier researches. For example, Wood (2002) has identified that younger adults less than 25 years old are interested in adopting any new technology, more than older customers. Venkatesh and Morris (2000) have also suggested that, it

is extremely important to understand the age differences, particularly in adoption study of any new technology. Mattila *et al.* (2003), have studied the internet banking behavior mature customers', she has reported that the majority of Internet banking users are middle aged (Karjaluo *et al.*, 2003).

Sulaiman *et al.* (2007) have conducted a study in Malaysia, to investigate the consumers' behavior and motivation towards this innovation (mobile banking). They have found that mobile banking is more popular among younger consumers (Sulaiman *et al.*, 2007). They have returned this result for penetration of mobile devices such as, a Personal Digital Assistant (PDA) or smart phone between younger clients.

One of the most important studies indicates that the "younger people who are working in a good, well-paid profession do not perceive mobile banking to be as risky as other online customers" (Harma and Dubey, 2009). Laukkanen (2007b) has argued that the high levels of education, income, long Internet banking usage experience and high Internet banking usage frequency are some of the reasons that influence the adoption mobile banking (Laukkanen, 2007a).

Mirza *et al.* (2009b) have stated that age does not have prominent influence of in the adoption of online banking services. Hence, age is not considered as a critical variable for banks that plan to offer Internet banking services.

To study or evaluate the impact of age, the researcher must divide the users' age into groups; some researchers such as Mattila have divided them into 4 groups. Mattila (2003) has argued that the users of mobile banking are often from the age group of 25-34 years old, whereas non-users were relatively older compared to other groups. Every third of non-users (31.7%) belong to age group of 35-49 years old and 25.9% to 50 to 64 years old (Mattila, 2003).

However, the situation in Middle East is different, for example in Saudi Arabia "the factor of age was important in influencing differences in IT adoption", because the population Saudi Arabia is relatively young. The percentage of those aged less than 45 is very high, also the percentage of those aged 65 or above was just less than 3% (Baker *et al.*, 2007). Another study has indicated about the impact of younger people within the Arabic world, it has showed that the younger people in the Arabic world helped the Arabic organizations to bring through and adopt the technological change (Hill *et al.*, 1998).

In the other countries in Middle East such as Jordan, we have identified that the majority of potential users of mobile banking services are between 17 and 35 years old

(Alafeef *et al.*, 2011). Because this category have unique features compared with other categories such as familiarity with the latest mobile technologies (Mattila, 2003), high level of education and experience (Alafeef *et al.*, 2011).

The previous positive indicators have encouraged the banking sector to target this category, in marketing and strategic planning to increase the adoption level, by encouraging the younger cohorts to adopt the application. This will make them as a potential group of users for mobile banking application in Jordan (Alafeef *et al.*, 2011).

Education: The education level plays important role in consumers' attitude towards online shopping (Monsuwe *et al.*, 2004). The previous studies have indicated that the customers, are more familiar in using nontraditional means such as online shopping (Burke, 2002). Li *et al.* (1999) have mentioned that the main reason for this is the education which is positively correlated with an individual's level of Internet literacy.

According to Hill *et al.* (1998) education is one of the social factors that have motivated the Arab individuals towards adopting IT. They have also found that, the education level is an important factor that has impact on organizational behavior, especially in terms of adopting new technology. Another study has found that the education level is the most important avenue to improve social standing in Arab society (Baker *et al.*, 2007).

Harma and Dubey (2009) have reported that the clients who are less educated and old, are significantly more opposed to banking innovations, than the other members of a social system. Another important study conducted by Sulaiman *et al.* (2007) in Malaysia has revealed that only 2.9% of the respondents who have secondary education and below are adopters. But 75% of the adopters have high level of education (university level).

When it comes to discuss the current situation of education and its influence within developing countries, we have found many differences between countries in same area. For example, the education level in Yemen is much different than the level in Gulf Countries. Another research by Ahmed *et al.* (2011b), has indicated that the high rate of illiteracy has heavily hindered the implementation of e-commerce in Libya (Ahmed *et al.*, 2011a).

Many researchers have classified the education level of respondents into 4 groups: (1) University degree or above (2) Diploma/Higher Diploma degree (3) Secondary school education and (4) Primary school. Thus, in our previous research we have found that, there is a significant relationship between the level of education

and the percentage of adopting mobile banking. The potential users of mobile banking will have secondary school education and above (Alafeef *et al.*, 2011).

Income: Mobile banking service providers must be able to understand the influence of demographic factors on the adoption level, by segmenting the clients into groups, according to their education level, language, age, gender and income level. When the bank understands the relationship it will guide the marketing plan to specific groups. By encouraging them to adopt these services they can maintain existing customers and acquire new customers.

In as the case of online shopping, income level influences the usage of online shopping (Monsuwe *et al.*, 2004). A lot of researchers have stated that, income level is an extremely important factor that has a strong influence on the adoption level (Masinge, 2010).

Sulaiman *et al.* (2007) has highlighted relationship of income on the adoption level in Malaysia. He has stated that none of the respondents, who earned below RM1500/500\$ monthly were using mobile banking but 89.7% of the respondent who earned between RM5000/1650\$ to RM7000/2300\$ monthly were using the mobile banking (Sulaiman *et al.*, 2007). According to Mirza *et al.* (2009b) the demographic features such as, the gender and the job designation are two significant factors that influence the adoption of internet banking in Iran.

This result was consistent with our previous research which has indicated that, there is a negative impact of income amongst Jordanians compared to other developing neighboring countries in the Arabic region. This is the main reason for the Jordanians to avoid the using mobile banking. According to World Bank, Jordan is an upper middle-income country with a per-capita GNI (Gross national income) of \$4,390. This is considered to be an obstacle of the adoption level (Alafeef *et al.*, 2011). This result is consistent with other results from other researches which were conducted by Ahmed *et al.* (2011a). And they have found that the low income per capita is the main barrier that affects the adoption e-commerce in general (Ahmed *et al.*, 2011b).

Depending on all of the previous researches the adoption of mobile banking is widespread amongst high-income earners which is consistent with (Karjaluto *et al.*, 2003; Sulaiman *et al.*, 2007; Alafeef *et al.*, 2011). "Reason for this is that higher household incomes are often positively correlated with possession of computers, Internet access and higher education levels of consumers" (Lohse *et al.*, 2000).

This issue guides us to consider how to attract people, who have low level income to adopt mobile banking, by designing of application to make it in small size, compatible with different types of phones not just

smart phones and ability to work within different infrastructure such as low speed of connection.

Gender: According to Laforet and Li (2005) masculine gender are more interested in using various types of technologies. Venkatesh and Morris (2000) have investigated the relationship between gender differences and the percentage of adoption. They have identified that the gender is an important determinant of technology adoption and usage. Venkatesh and Moris (2000) mentioned that the two different studies conducted in Germany and UK have indicated that the percentage of men is more than women.

Men express a greater interest in using various types of technology, because they have positive features. As example, Monsuwe *et al.* (2004) has studied the relationship between the gender differences and online shopping and has found that the men are more positive in using online shopping than women, whereas females prefer traditional way of shopping or by catalog. Straub *et al.* (1997) have found that men are more likely to adopt specific computer technologies. Furthermore, Mirza *et al.* (2009a) have also indicated that in Iran, Internet banking services are heavily used by masculine gender as compared against the feminine gender.

Almost most of previous studies have obtained same results about the relation or influence of gender on IT using or adoption. In Malaysia, Ainin Sulaiman has conducted a research to explore the differences between males and females in adoption of mobile banking. He has revealed that approximately 70% of males use mobile banking, as against 34.4% of the females (Sulaiman *et al.*, 2007). In contrast, DeBaillon and Rockwell (2005) on has found that the influence of gender differences on adoption level of Internet banking is not significant.

In other areas, "Arabian region has a long-standing cultural tradition and entrenched social norms that distinctly define the gender roles" (Hu *et al.*, 2010). For example, "In Saudi Arabia, as in other Arab states, there is a sharp division of labor between men and women" (Baker *et al.*, 2007). So there are weaknesses in adopting or using different types of IT solutions among females. This situation exists, because traditionally, women have not adequately participated in the Saudi workforce (Haddad, 1998). Al-Gahtani *et al.* (2007) has same opinion about that, where, women constitute a minority of the work force in this region and the women do not use or adopt any new technology. Women account for almost two thirds of the population in the Arabian region but unfortunately only represent 4% of its Internet users (Al-Gahtani *et al.*, 2007).

However, in Jordan, we have conducted survey to evaluate the relationship between gender and Internet

usage. The result has indicated that the percentage of male Jordanian Internet users is higher than females (Alafeef *et al.*, 2011). This is due to the fact that men are willing to take risks and are anxious to try out any new technological products more than women.

Besides this, "men also read more technological magazines and have a greater involvement with technological products" (Sulaiman *et al.*, 2007). And in Arabic state the men have willingness to use or try any new technology more than women. The following table (Table 2) summarizes the related studies in the field of demographic factors and their impact.

Other factors: Many of other factors which are related to the characteristics of people, have a great influence on the adoption of the innovation or technologies, for example culture is considered to be a significant factor that has a strong influence on adopting technology. Especially, social and cultural characteristics of Arabic and Islamic societies are very different from those of the West. Several authors have explored that the weak adoption of any new technology could be related to differences in culture within the specific countries (Al-Sukkar and Hasan, 2005; Akour *et al.*, 2006).

Empirical investigation was conducted by Srite (2006) to examine the issue of the acceptance of technology across two cultures such as China and the US. In general, this study has shown that national culture affects the acceptance and use of information technologies. Bandyopadhyay and Fraccastoro (2007) have used Hofstede's dimensions of culture to compare India as developing country and the U.S. as developed country, they have found that culture did impact behavioral intention through perceptions of social influence (i.e., individuals in different cultures react differently based on what significant others think).

Language is the other that influences technology adoption, for example in countries where English is not the official language, such as Arabian States or African states, the language plays an important role in the adoption of various types of Information Technology (Baker *et al.*, 2007). Sometimes the language of application is considered as an obstacle. For example, some of banks depend on the outsource firms to develop the application or purchase application and mostly these applications do not support multiple languages. This is considered as an obstacle of the applications.

IMPACT OF USER INTERFACE ON ADOPTION LEVEL

The previous sections have demonstrated that there is a relationship between age, education, income and

Table 2: Summary of related studies in field of impact the demographic factors

References	Country	Innovation type	Significant constructs			
			Age	Gender	Education	Income
Darian (1987)	-	In-home shopping	✓	X	✓	✓
Greco and Fields (1991)	USA	Interactive home video	✓	X	✓	✓
Rogers (1995)	-	Innovativeness	✓	X	✓	✓
Venkatesh and Morris (2000)	Indonesia	Technology acceptance	✓	X	X	X
Lee <i>et al.</i> (2003)	-	Computer banking	✓	X	✓	✓
Karjaluoto <i>et al.</i> (2003)	Finland	Internet banking	X	X	✓	✓
Mattila (2003)	Finland	M-banking	✓	✓	✓	✓
Kolodinsky <i>et al.</i> (2004)	USA	IVR	✓	✓	✓	✓
Sulaiman <i>et al.</i> (2007)	Malaysia	M-banking	✓	✓	✓	✓
Lankkanen (2007b)	Finland	E-banking	X	X	✓	✓
Baker <i>et al.</i> (2007)	Saudi Arabia	Technology implementation	✓	✓	✓	X
Harna and Dubey (2009)	India	Banking innovations	✓	X	✓	✓
Masinge (2010)	South Africa	M-banking	✓	✓	✓	✓
AbuShanab <i>et al.</i> (2010)	Jordan	Internet banking	✓	✓	✓	X
Alafeef <i>et al.</i> (2011)	Jordan	Mobile banking	✓	✓	✓	✓

✓: Was covered, X: Wasn't covered

gender with the rate of adoption of any innovation. But logically, the solution to these problems is through the governmental plans at the country level.

For example, the government must attempt to improve the learning process to raise the educational levels and to eradicate illiteracy. Raising the level of personal income by providing employment opportunities to offer a decent life style for people, instill computer culture amongst females in general and amongst individuals, who are over 40 years old, to adopt technology to saving time, effort and money.

It was noted that the users in some developing countries such as Jordan with current conditions do not care much about security issues or website encryption, because until now most of individuals do not use the service (Alafeef *et al.*, 2011).

In general, the use of mobile devices and PDA is becoming increasingly popular, this penetration of mobile devices and wireless networks have made the use of mobiles become an integral part of our lives. But there are problems with using mobile devices to navigate the websites on the Internet. The majority of web content are tailored for desktop computers which have a large display area and high connection speed, compared with mobile devices which have smaller display area and limited connection bandwidth” (Phatak and Mulvaney, 2002; Shrestha, 2007; Guirguis and Hassan, 2010).

The user interface is the medium of communication between the user and computer by using a particular software application. Beside that it is the physical means of communication between a person and a software program or operating system (Bajwa and Chaudhary, 2006). In the due course of evolution of user interface has witnessed the inclusion of the cognitive and emotional aspects of the user's experience (Laurel and Mountford, 1990).

So the user interface is considered to be a part of the mobile banking application, therefore, it is an important

factor that determines preference level. Furthermore, it is important to focus on the quality of interface design and how the information is displayed (Bharati and Chaudhury, 2004). Previous research, have revealed that the user interface design is crucial in attracting customers. Several studies have looked into the impact of website design upon e-service performance and revealed that website design plays a major role in customer satisfaction (Ayyash *et al.*, 2011).

In mobile banking, the user interface is considered as the first point of contact between clients and bank system. “Therefore, it is important that a good image is presented, as users will form their impressions based on this initial information” (Everard and Galletta, 2006).

While implementing E-banking, the human must not be considered as a non-living thing on whom we have supremacy and their actions can be affected by constituting physical rules. It is important for the banks to be conscious of human aspects as they are imperative in the implementation of E-banking. A user-friendly web-interface is considered as significant feature that affects the adoption internet banking among Iranian clients according (Sarlak *et al.*, 2009).

Numerous studies have explored that the influence of user interface elements such as display formats, colors and graphs versus tables and how these factors affect customer satisfaction (Everard and Galletta, 2006). Oppermann (2002) has stated that there are four dimensions to structure the user interface depending on “user interface reference model” which it developed by Dzida, (1) The input/output dimension (the look), (2) the dialogue dimension (the feel), (3) the technical or functional dimension (the access to tools and services) and (4) the organizational dimension (the communication and co-operation support).

Awad (2000) has proposed 13 criteria to evaluate electronic banking web site such as “color scheme” type and shape of icons, page content, service offer, primary

Table 3: Review of recent empirical studies

Significant constructs	Method	Type of service	Research aim	References
Easiness-to-use of the service and speed of service delivery	Survey	Internet banking	To increase the understanding of today's bank customer's divergent preferences, needs and wants	Karjaluoto <i>et al.</i> (2002)
The efficiency, convenience and safety	Qualitative in-depth interviews	Internet banking	The aim of this researcher is to explore and compare consumer value creation in Internet and mobile banking	Laukkanen (2005)
He suggested new measures such as perceived financial costs and prior computing experience	Personally administered questionnaires	Mobile banking	To investigate factors that determine an individual's intention to use mobile banking among bank customers	Amin <i>et al.</i> (2007)
Trusting beliefs, perceived usefulness, ease of use and perceived security	Empirical data, questionnaire	Online bank	Focuses on the major considerations interacting with online bank and systematically measures factors affecting customer's interactions with online bank services	Zhang <i>et al.</i> (2008)
The trust primarily works as an indirect antecedent of user's intention to adopt mobile banking through its impact on perceived usefulness (PU)	Survey	Mobile banking	Integrates trust into Technology Acceptance Model (TAM) and examined the role of trust based on a multidimensional perspective	Liu <i>et al.</i> (2009)
Perceived usefulness, perceived ease of use, consumer awareness and perceived risk are the important determinants of online banking adoption	Interviews and survey	Online banking	To examining the impact of perceived usefulness, perceived ease of use, consumer awareness on internet banking and perceived risk on the acceptance of internet banking by the consumers	Safeena (2010)
Consumption concept, consumer experience and perceived usability	Questionnaire survey method empirically	Mobile banking	Analyze decision-making factors of the adoption of mobile banking financial services	Li and Zhang (2010)
Internet trust, perceived risk, propensity to trust, familiarity with Internet	Empirical study survey	Internet banking	To investigate the role of internet trust as a specific form of technology trust in the context of internet banking	Grabner-Krauter and Faullant (2008)
Importance of Internet to banking needs, compatibility, trainability, complexity, site utilitarian orientation	Online questionnaire	Internet banking	Examines the determinant structure of customers' attitude system's characteristics on adoption of internet banking	Ndubisi and Sinti (2006)
Convenience, accessibility, feature availability, bank management and image, fees and charges, privacy, security, content, speed	Questionnaire	E-banking	To explore the determinants of users' adoption momentum of E-banking in Malaysia	Poon (2007)
Reliability, assurance, responsiveness, control, enjoyment, intent to use, financial risk, performance risk, physical risk, social risk, psychological risk, age, employment, education, income, residence	Mail survey	Internet banking	To examine consumers' choices between electronic banking and non-electronic banking in New Zealand	Christopher <i>et al.</i> (2006)
Perceived security, familiarity with the Internet, exposure to online banking advertisements, use of other banking products, demographics	Interactive questionnaires	Internet banking	To identify empirically the factors underlying the decision to adopt online banking in Poland	Polasik and Wisniewski (2009)
Perceived risk, customer innovativeness, performance risk, security risk, social risk, time loss risk, privacy risk	Internet survey	Internet banking	To analyses how consumer innovativeness can be used as a variable to positively influence internet banking adoption both directly and reducing consumer perceived risk	Aldas-Manzano <i>et al.</i> (2009)

offer, ancillaries, category site in relation to bank size, professionalism, speed, consistency, personalization, security and scalability. So, we must take these criteria into consideration, when planning to design the user interface.

If the banking sector wants to develop a mobile banking system, it must consider the extent of customer trust and satisfaction (Lee and Chung, 2009). Because, when the customers use the service or application, they must be confident and must believe that there is a return on their investments by saving money, time and effort.

However, now we have important questions: (1) what is the relationship between user interface and adoption of mobile banking and (2) what is the relationship with demographic factors? The user interface plays an important role in the customers' confidence and satisfaction. Everard and Galletta (2006) have argued that "good interface design quality such as presentation,

format and processing efficiency enhance the formation of trust" and trust is important factor in adoption level.

According to Koukia *et al.* (2006) the main stimulus in the interface design of mobile commerce applications should decrease the unwillingness of consumers in adopting m-commerce. "One of inhibitors is the existing intimidating m-commerce interface which was developed on the foundation of e-commerce designs". However, we cannot ignore many other significant factors that influence the adoption of m-commerce. The Table 3 summarizes these factors from the recent empirical studies on adoption of Internet banking or mobile banking.

Table 3 illustrates that a lot of studies that have focused on the measures that have influenced the different variables in adopting Internet banks and mobile banking. The table gives indicators about the most significant factors like ease of use, usefulness, trust and security or risk issues.

CONCLUSION

The aim of our study was to highlight the influence of demographic factors and user interface on adoption of Mobil Banking. The main strengths of this research are, deriving its variables from previous conceptual and empirical researches. Based on this review we had noted some of important issues which were related with adoption studies. The first one is reluctance of local commercial banks to provide financial services through mobiles especially in developing countries. Secondly, in some cases the influence of demographic factors was more significant than other factors. Most of previous studies had been conducted in developed countries, without evaluating or studying the situation in developing countries, where the situation is different. This study had also linked the impact of demographic factors and user interface in adoption of new technologies. Having good interface design such as presentation, format and processing efficiency will enhance the formation of trust, where, trust is an important factor in influencing the adoption level.

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