Factors Affecting Jordanian Consumers' Adoption of Mobile Banking Services

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Abstract

Banking in several developing countries has transcended from a traditional brick-and mortar model of customers queuing for services in the banks to modern day banking where banks can be reached at any point for their services. This can be attributed to the tremendous growth in mobile penetration in many countries across the globe including Jordan. The current exploratory study is an attempt to identify the underlying factors that affects mobile banking adoption in Jordan. Data for this study have been collected using a questionnaire containing 22 questions. Out of 450 questionnaires that have been distributed, 301 are returned (66.0%). In the survey, factors that may affect Jordanian mobile phone users' to adopt mobile banking services were examined. The research findings suggested that all the six factors; self efficacy, trailability, compatibility, complexity, risk and relative advantage were statistically significant in influencing mobile banking adoption.

Keywords: Mobile marketing services, Banking services, Consumer adoption, Jordan

1. Introduction

Banking today is undergoing a radical transformation. The symptoms are obvious; new products, new players, new channels are appearing daily. This transformation is taking place across all sectors of the banking industry. Technology is a major force in this radical transformation that led to breaking the geographical, legal and industrial barriers and has created new products and services. The escalation and convergence of wireless telecommunications has created a tremendous potential platform for providing business services. It's estimated that mobile phone users are approaching the three billion mobile subscriptions mark globally, and advertisers and operators alike are keenly aware of the opportunity to connect with potential consumers through mobile phones (Hibberd, 2007). The newly emerged service delivery channels and rapidly increasing penetration rates of mobile phones are the motivators of this study. Technology has become an increasingly vital element in the competitive landscape of the financial services industry. Innovations in telecommunications have led to usage of mobile devices in banking. Keen and Mackintosh (2001) showed that technological features play an important role in the adoption of mobile value added services. In service use, mobile phones are no longer used as they have typically been used before. Talking and text messaging (SMS) will remain, but extensive service use is expected to grow.

These facts, in addition to the more personality of mobile phones over PC's Internet and the range of computer-like functionality offered by top-of-the-range devices, are leading some observers to speculate that many people in the near future will start to see the mobile phone as an alternative to PCs). The opportunity to use advanced technologies in service delivery have created challenges to developers of financial services; competitive advantage can be gained in form of costs reduction or customer satisfaction increase or lost investing in wrong technologies. In order to rise to the challenges service providers are even more interested to enhance their understanding of consumer behavior patterns.

Electronic banking, in its diversified forms, represents an innovation in which both intangible service and an innovative medium of service delivery employing high technology convergence. The term electronic banking defined by Daniel (1999) as the provision of information and services by a bank to its customers via electronic wired or wireless channels, for example Internet, telephone, mobile phone or interactive television. Moreover, rapidly changing technology has reshaped behavioral pattern how consumers interact with their financial institutions. Consumers are also more technologically savvy than ever, reducing their uneasiness involving technological innovation. The infusion of new technologies in the services sector is ubiquitous and continues to increase. Recently emerged wireless delivery channel using mobile phones, Internet-enabled mobile phones and PDAs for banking services is one step along that path. The starting point in investigating drivers and obstacles of mobile banking adoption is to give some insights into the mobile technology development in recent years.

In Western Europe the presence of a common GSM standard and the high penetration rates of mobile phones have raised the expectations in mobile communication development. Mobile devices have become the fastest adopted consumer product to data (Dholakia et al. 2003). According to Forrester research group (2007), 219 million users will access the Internet via mobile Phone. The use of mobile phones for the implementation of electronic business transactions is additionally boosted by increasingly new technologies, such as wireless application protocol (WAP), Bluetooth, and technological developments are changed daily. Mobile banking services or operations are still in their immaturity, leaving a great deal of room for development. There is a need, therefore, to understand users' acceptance and adoption of mobile banking and to identify the factors affecting their intentions to use mobile banking. This information can assist developers in the building of mobile banking systems that consumers want to use, or help them to discover why potential users avoid using the existing system.

2. Research Objectives

Generally, this study attempts to study the factors that affect the adoption of mobile banking services. The specific objective is:

1) To explore what factors that may influence the Jordanian consumers' adoption of mobile banking services, and

2. Global Mobile Banking

Mobile banking is used in many parts of the world with little or no infrastructure, especially remote and rural areas. This aspect of mobile commerce is also popular in countries where most of their population is unbanked. In most of these places, banks can only be found in big cities, and customers have to travel hundreds of miles to the nearest bank. For example, In Iran, Guatemala and Mexico consumers can access mobile banking with local mobile network. In 2009, *Zain* launched their own mobile money transfer business, known as ZAP, in Kenya and other African countries. Pakistan has also launched a mobile banking solution, in coordination with Taameer Bank, under the label Easy Paisa, which was begun in Q4 2009. While in India, State Bank of India (SBI) provides bank accounts, deposit, withdrawal and remittance services, micro-insurance, and micro-finance facilities to its customers through mobile banking (Thomas, 2010).

In countries as diverse as China, Brazil and Kenya the number of new users of mobile banking soared over 100% in 12 months, as banks leapfrogged traditional service models and moved directly to mobile. The increases were not restricted to emerging markets alone though: take-up rates also surged in the UK, USA, Singapore, South Korea and Sweden where banks offered customers new services via their mobile handset. For instance, the number of mobile transactions in South Korea rose on a daily average to 287.000 in 2005 up 104%, the number of registered users by 108% in comparison to 2004 (Korea Times, 2006). Research have established that in Western Europe exists a noteworthy customer adoption of MFS. For example, Tiwari and Buse (2006) demonstrate that the "real rate of rejection" of MFS is with lower than 8%. Moreover, many bank customers are willing to pay extra for the utilization of MFS. These developments point towards an increasingly positive perception of MFS in the society. This positive shift in perception can be traced back to mainly following factors (Tiwari et al, 2006):

1) The penetration of the society by mobile phones has reached an all-time high.

2) The integration of world economies is leading to more mobility so that availability of mobile services is no more a luxury but a necessity for many.

3) The younger generations of the society seem to be fascinated by modern data and telecommunication services.

4) Mobile devices have become more powerful. Data transmission has become faster with the launch of new standards, such as the Universal Mobile Telecommunications System (UMTS).

Table 1 show the percentage of increase in mobile banking usage from 2010 to 2011 in selected countries.

Table 1: Percentage increase in mobile banking usage from 2010 to 2011

Country	Percentage of consumers using in		Increase
	2010	2011	
China	10%	25%	150%
Brazil	10%	21%	110%
Kenya	6%	18%	200%
USA	11%	22%	100%

Source: Ian Mansfield (2011)

Studies on determining the factors affecting adoption of MFS have been concentrated on twelve countries (Table 2). Moreover, maximum number of these studies (seven studies) had been conducted in USA, followed by Korea, which had five studies. It is clearly evident that there is a serious lack of literature on studies in developing and under-developed countries.

Table 2: Summary of Studies on adoption of MFS by country

Country	Year									
	02	03	04	05	06	07	08	09	10	Total
Australia					1					1
China				1						1
Finland	1									3
Germany		1							1	2
Japan			2							2
Korea			1					3	1	5
Netherlands	1									1
Newzeland						1				1
South Africa		1								1
South Korea			1							1
Sweden	1									1
Taiwan				1				1		2
USA			2	1	1	1	1		1	7
Jordan									1	1

Source: Authors compilation

3. Theoretical Background

3.1 Mobile Financial Services

Mobile Financial Services (MFS) encompasses a broad range of financial activities that consumers engage in or access using their mobile phones. MFS can be divided into two distinct categories: mobile banking (m-banking) and mobile payments (m-payments) (Boyd & Jacob, 2007). Mobile banking is defined as "a channel whereby the customer interacts with a bank via a mobile device, such as a mobile phone or personal digital assistant (PDA)" (Barnes & Corbitt, 2003). Mobile banking can also be considered as the convergence of mobile technology and financial services (Chung & Kwon, 2009). M-banking is a subset of banking as it allows everyone easy access to their banking activities via mobile handsets (Yu & Fang, 2009). With the improvement of mobile technologies and devices, mobile banking has been considered as a salient system because of such attributes of mobile technologies as ubiquity, convenience and interactivity. Mobile payments on the other hand are defined as the use of a mobile device to conduct a payment transaction in which money or funds are transferred from a payer to a receiver via an intermediary, or directly without an intermediary (Niina Mallat, 2006). Mobile devices can be used in a variety of payment scenarios, such as payment for digital content (e.g., ring tones, news, music, or games), tickets, parking fees and transport fares, or to access electronic payment services to pay bills and invoices.

Payments for physical goods are also possible, both at vending and ticketing machines, and at manned point-of-sale (POS) terminals (Mallat et al., 2008). The terms "mobile banking" and "mobile payments" describe distinct but in some cases overlapping sets of products. Some m-banking platforms provide services, such as money transfers, that are considered forms of mobile payment, while some m-payments products are so closely linked to bank accounts as the source of funds that they assume m-banking functions (Boyd & Jacob, 2007). MFS refer collectively to a set of applications that enable people to use their mobile telephones to manipulate their bank account, store value in an account linked to their handsets, transfer funds, or even access credit or insurance products (Donner & Tellez, 2008). Ultimately, under-banked consumers may benefit most from platforms that integrate both m-banking and m-payments features to provide a truly comprehensive financial services solution (Boyd & Jacob, 2007). However, mere presence of the technology or even enrolling the consumers for the service may not serve the ultimate cause. There had been cases where even a large number of enrollments had failed to translate into actual usage (Krugel, et al., 2010).

3.2 Banking and Mobile Sectors in Jordan

Banking Sector. The first beginnings of the Jordanian banking sector go back to the year 1925, when the Ottoman Bank commenced its operations in the country as the first commercial bank, followed by Arab Bank in 1934 and the British Bank of the Middle East in 1949. The banking sector remained limited to these three banks until 1955, when three new commercial banks were incorporated during the period 1955 - 1960, namely, Jordan National Bank, Jordan Bank, Cairo - Amman Bank in addition to Rafidein Bank, which opened its first branch in Jordan in 1957. The banking sector did not experience any major developments during the period of the 1960s since no other banks, either local or foreign, emerged. However, with the beginning of 1970s, the banking sector in Jordan started to undergo a major transformation, both in quality and quantity. Several Jordanian commercial banks were opened (Jordan Kuwait Bank, Jordan & Gulf Bank, Petra Bank, and Syrian Jordanian Bank). In addition, several foreign banks opened new branches in the country since then (CitiBank, Chase Manhattan, and Credit & Commerce Bank). Other financial institutions, specialized banks and investment banks commenced operations in Jordan, which eventually led to the integration of the Jordanian financial market, in terms of the variousness of its units and financial tools available.

The development of the Jordanian banking sector passed through different stages, which can be outlined as follows: First Stage (1925 - 1967) which extended from the starting of the banking sector until 1967, was characterized by the limitation of the banking sector in terms of number of operating banks, total assets and functioning in addition to the absence of the Central Bank, which was established in 1964. Second Stage (1968 - 1973) did not witness any significant developments within the banking sector in Jordan. Third Stage (1974-1981) was characterized by the major accomplishments achieved by the Jordanian economy in general, and the banking sector in particular, which witnessed a huge expansion in terms of operating units, total assets and variousness of financial tools used. The total number of banks increased to 17 banks, with a total of 174 branches. Fourth Stage (1982-1990) despite the difficult conditions encountered by Jordanian banks during this period, the banking sector managed to increase total deposits in local and foreign currencies, and increase total credit facilities by the end of 1988. Fifth Stage (1990 - 1993) was dominated by the Gulf crisis and the resulting consequences, deprivation of Jordan from its traditional markets in Iraq and Gulf states. Sixth Stage (1994 - 2000) the tight fiscal policy adopted by the Central Bank of Jordan led to a shrinkage in liquidity within the domestic market, which in turn led to a minor growth of deposits in local currency. Nevertheless, licensed banks in Jordan have managed to increase their assets, deposits and credit facilities by the end of 1998. By 2008 the total number of banks in Jordan has increased to 23 banks of which 8 international.

Mobile Sector. The use of mobile technologies is increasingly widespread especially among Asian countries such as Jordan. Various applications can be observed among the users, which ranged from telephone conversation and simple text messages (SMS), to multimedia messaging services (MMS) and internet access, depending on the capability of each mobile phone technology and services rendered. These applications have been made possible through various developments in the mobile telephone technology such as GPRS, WAP, and the 3G standard. The 3G telephone enables users to access data, voice, and video, as well as internet access through wireless application protocol (WAP). Jordan is increasingly open to international telecommunication companies, investors and operators with the introduction of the first Telecommunications Regulatory Act in the region, which allows room for private sector investment and responsibility for major telecommunication licenses and projects. The government awarded a third GSM license by the end of 2003 and two licenses for international operators in 2004.

In the mobile communications market four operators, Zain Jordan, Orange Mobile, and Umniah and they all use (GSM). Official statistics show that the number of cellular subscriptions in Jordan exceeds the number of population for the first time in its history by the end of the third quarter of 2009. By 2010, the number of subscribers of mobile phone services in Jordan has more than six million subscribers and penetration rate of 101% (Al Rai newspaper 2010).

3.3 Mobile Banking Adoption

During the past decade, a considerable amount of research on mobile finance services has emerged. Majority of these studies applied research models and frameworks traditionally used within the IS literature (Hoehle & Huff, 2009). Among the different models that have been proposed, the Technology Acceptance Model (TAM) (Davis, 1989), adapted from the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), appears to be the most widely accepted among information systems researchers. The TAM posits that a user's adoption of a new information system is determined by that user's intention to use the system, which in turn is determined by the user's beliefs about the system. The TAM further suggests that two beliefs – perceived usefulness and perceived ease of use – are instrumental in explaining the variance in users' intentions.

As Davis (1989) noted, future technology acceptance research must address how other variables affect usefulness, ease of use and user acceptance. Therefore, perceived ease of use and perceived usefulness may not fully explain behavioral intentions towards the use of mobile banking, necessitating a search for additional factors that can better predict the acceptance of mobile banking. Another theory pertains to the adoption of new technology is the Diffusion of Innovation Theory by Rogers (1983). According to Rogers (2003, p.175), there are five perceived characteristics of innovation that can be used to form a favourable or unfavourable attitude toward an innovation, namely: relative advantage, compatibility, complexity, trialability, and observability. Based on that, we will use Tan and Teo (2000) and Rogers (2003) framework to test the influence of several factors on mobile bank services adoption. Six factors were included and those factors are:

1) Self efficacy: An individual's self confidence in his or her ability to perform a behavior (Taylor and Tod, 1995)
2) Trailability: The extent users would like an opportunity to experiment with the innovation prior to committing to its usage (Agarwal and Prasad, 1997)
3) Compatibility: The degree to which an innovation is viewed as being consistent with existing values of users (Agarwal and Prasad, 1997).
4) Complexity: The degree to which an innovation is considered relatively difficult to understand and use (Taylor and Tod, 1995).
5) Risk: The perceived sense of risk concerning disclosure of personal and financial information (Tan and Teo, 2000).
6) Relative advantage: The extent to which a person views an innovation as offering an advantage over previous ways of performing the same task (Taylor and Tod, 1995).

Therefore, based on our earlier discussion, we propose the following hypotheses:

H1: Self efficacy has a direct effect on consumers' adoption of mobile banking services
H2: Trailability has a direct effect on consumers' adoption of mobile banking services
H3: Compatibility has a direct effect on consumers' adoption of mobile banking services
H4: Complexity has a direct effect on consumers' adoption of mobile banking services
H5: Risk has a direct effect on consumers' adoption of mobile banking services
H6: Realtive advantage has a direct effect on consumers' adoption of mobile banking services

4. Methodology

To attain the study objectives, previous research was reviewed to ensure that a comprehensive list of measures were included. As a result, the measures of 'relative advantage', 'compatibility', 'complexity', and 'trialability' were adopted from Moore and Benbasat (1991) and the remaining factors were adopted from Brown et al., (2003). After generating the initial questionnaire for this study, and in order to ensure its validity, market experts and senior academic lecturers, were consulted to refine the instrument. Market experts and senior academic lecturers' comments enabled the researchers to gauge the clarity of the constructs, access whether the instrument was capturing the desired phenomena. Some changes and amendments were made to the questionnaire. Feedback served as a basis for correcting, refining and enhancing the instruments scales.

The questionnaire consisted of 22 items measuring seven variables. The questionnaire was administered to a convenience sample from three banks in Amman City, capital of Jordan. Of the 450 surveys distributed for this study, 301 of them were useable giving a response rate of 66 per cent, which was considered satisfactory for subsequent analysis.

The sample size decisions were primarily based on cost considerations and in line with studies on consumer attitude and adoption of electronic banking, where sample sizes used were between 114 to 1,167 respondents. The Cronbach's alpha of the 22 items was 0.922 as depicted in Table 3, which is considered very high (Nunnally 1978). According to the chosen methodological research approach the quantitative data was analyzed using statistical methods by SPSS. Statistical descriptive was used to find out the respondents demographics and general characteristics to provide a descriptive profile of the respondents.

Table 3

Variable	No. of Items	Cronbach's alpha
Self efficacy	**3**	**95.7**
Trailability	**3**	**78.0**
Compatibility	**3**	**89.7**
Complexity	**3**	**87.7**
Risk	**3**	**74.3**
Relative advantage	**4**	**84.4**
Mobile banking Adoption	**3**	**68.1**

5. Data Analysis and Results

Table 4 depicts a summation of the study's respondents' demographic information. Respondents were generally representative of the general statistics of the population in Jordan. Table 4 summarizes the demographic profile by age, sex, educational level, employment and income. The study sample was divided between males by 70.8% percent while female were 29.2% percent only of the total study sample. Age groups show that youngest category (18-29) got the highest percentage with 27.9% of the study sample, while the percentage was 22.6% for the age group between 30-39 years. The third category was for the age group between 40-49 years and those who are greater than 60 with both getting 16.6% percentage. While the age group between 50-59 years received the lowest percentage of 16.3%. With regards to occupation, Table 4 shows that 14.8% of the sample is public sector workers, while the percentage was higher for workers in the private sector with 21.7%.

While for respondents with own business it counted about 25.0% of the respondents and the smallest percentage goes to students with only 16.1% and retired with 22.1%. For education, the highest percentage was 58.5% for respondents with a bachelor's degree, and the second category was for respondents with General Certificate of Secondary Education by 23.9% of the study sample. While respondents with post graduate degree got 17.6% only. The last category was for income, and the results show that 44.5% of the study sample of those who earn a monthly income less than 350 received the highest percentage, while the percentage was 26.2% of those whose income is from 351-700, while the percentage was 15.9% for those whose income is between 701 – 1000, and 11.3 for those whose income is between 1001-1500, while the lower percentage of 2% for those of income higher than 1501.

Consumers' mobile banking usage is displayed in Table 5. Only 23 percent of the consumers use the mobile for conducting banking transactions. While the majority 66.0 percent use it for send and receiving calls and 11.3 percent for SMS, which also could be related to banking services. A total of 77.4 percent of the consumers know what is meant by WAP and about 54.1 percent have mobile phones that are WAP enabled. Almost 61.0 percent of the consumers are willing to use mobile in banking in future.

Table 4: Demographic profile of the respondents

Demographics	Frequency	Percentage
Gender		
Male	213	70.8
Female	88	29.2
Total	301	100%
Age		
18-29 years	84	27.9
30-39 years	68	22.6
40-49 years	50	16.6
50-59 years	49	16.3
60 years and over	50	16.6
Total	301	100%
Occupation		
Public Sector	45	14.8
Private Sector	66	21.7
Own Business	76	25.0
Student	49	16.1
Retired	67	22.1
Total	301	100%
Education		
High school	72	23.9
First Degree	176	58.5
Post Graduate	53	17.6
Total	301	100%
Household income		
Under 350 JD	134	44.5
351-700JD	79	26.2
701-1000JD	48	15.9
1001-1500 JD	34	11.3
More than 1501JD	6	2.0
Total	301	100%

Table 5: Mobile banking usage

What do you use your mobile Phone for?		
- Make and receive calls	198 (65.7)	
-SMS	34 (11.3)	
-Banking	69 (23.0)	
	Yes	***No***
Do you know what WAP is?	233 (77.4)	68 (22.6)
Is your phone WAP enabled?	163 (54.1)	138 (45.8)
Are you willing to use mobile phone in banking?	183 (60.7)	118 (39.2)

Table 6 illustrated the arithmetic Grand Mean for the scores of responses for all the study variables statements by using SPSS package. When this Grand Mean compared with the 5-points scale from 1 to 5, it was found that it is greater than the agreement point (+3). Results of the respondent's categorization of the main study (High >3, Neutral =3, and Low <3), so, this means it is under the category (High) for each variable.

Table 6

Variable	No. of Items	Grand Mean	Std. Deviation
Self efficacy	3	3.62	1.30
Trailability	3	4.04	.787
Compatibility	3	3.80	1.08
Complexity	3	4.07	.868
Risk	3	4.01	.693
Relative advantage	4	3.93	.775
Mobile banking Adoption	3	4.08	.812

6. Hypotheses Testing

Table 7 summarizes the results of hypotheses testing of this study. To test hypothesis 1, Pearson Correlation coefficient was calculated between self efficacy as independent variable and mobile banking adoption as dependent variable, and it was equals to r(n=301)=0.786, p.= 0.02, R^2=0.660, which means 66.0% of the variance in mobile banking adoption can be explained by self efficacy. In order to test the strengths of the relationship between self efficacy and mobile banking adoption, both of them were entered into a regression equation. Self efficacy aspect was significantly related to mobile banking adoption. The standardized regression coefficient is equal to 0.786. And the T-value is equal to 37.878, which is significant. Therefore, hypothesis 1 is accepted.

Table7:

	Independents	**Dependent**	**Person Correlation**	**R^2**	**Result**
H_1	Self efficacy	Mobile banking adoption	0.786	0.660	Accepted
H_2	Trailability	Mobile banking adoption	0.657	0.530	Accepted
H_3	Compatibility	Mobile banking adoption	0.668	0.540	Accepted
H_4	Complexity	Mobile banking adoption	0.534	0.581	Accepted
H_5	Risk	Mobile banking adoption	0.434	0.320	Accepted
H_6	Relative advantage	Mobile banking adoption	0.674	0.730	Accepted

For the second hypothesis as shown in Table 7, Pearson Correlation coefficient was calculated between Trailability as an independent variable and mobile banking adoption as dependent variable. There is a significant positive correlation between trailability and mobile banking adoption which equals to r(n=301)= 0.657, p.= 0.00, R^2=0.530, which means that 53.0% of the variance in mobile banking adoption can be explained by trailability. Both of them were entered into a regression equation, trailability aspect was significantly related to mobile banking adoption. The standardized regression coefficient is equal to 0.657 and the T-value is equal to 21.122, which is significant. Therefore, hypothesis 2 is accepted.

While for the third hypothesis as shown in Table 7, Pearson Correlation coefficient was calculated between compatibility as an independent variable and mobile banking adoption as dependent variable. There is a significant positive correlation between compatibility and mobile banking adoption which equals to r(n=301)= 0.668, p.= 0.05, R^2=0.540, which means that 54.0% of the variance in mobile banking adoption can be explained by compatibility. Both of them were entered into a regression equation, compatibility aspect was significantly related to mobile banking adoption. The standardized regression coefficient is equal to 0.668. And the T-value is equal to 28.493, which is significant. Therefore, hypothesis 3 is accepted. By the same method the fourth hypothesis was tested as shown in Table 7, Pearson Correlation coefficient was calculated between complexity as an independent variable and mobile banking adoption as dependent variable. There is a significant positive correlation between complexity and mobile banking adoption which equals to r(n=301)= 0.534, p.= 0.00, R^2=0.581, which means that 58.1% of the variance in mobile banking adoption can be explained by complexity. Both of them were entered into a regression equation, complexity aspect was significantly related to mobile banking adoption. The standardized regression coefficient is equal to 0.534. And the T-value is equal to 22.893, which is significant.Therefore, hypothesis 4 is accepted.

As depicted in Table 7, fifth hypothesis was tested by Pearson Correlation coefficient and it was calculated between risk as an independent variable and mobile banking adoption as dependent variable. There is a significant positive correlation between complexity and mobile banking adoption which equals to r(n=301)= 0.434, p.= 0.00, R^2=0.581, which means that 58.1% of the variance in mobile banking adoption can be explained by complexity. Both of them were entered into a regression equation, complexity aspect was significantly related to mobile banking adoption. The standardized regression coefficient is equal to 0.434. And the T-value is equal to 18.154, which is significant.Therefore, hypothesis 4 is accepted. Relative advantage was the last factor tested in Table 7. Pearson Correlation coefficient was calculated between relative advantage as an independent variable and mobile banking adoption as dependent variable. There is a significant positive correlation between relative advantage and mobile banking adoption which equals to r(n=301)= 0.674, p.= 0.00, R^2=0.730, which means that 73.0% of the variance in mobile banking adoption can be explained by relative advantage. Both of them were entered into a regression equation, relative advantage aspect was significantly related to mobile banking adoption. The standardized regression coefficient is equal to 0.674. And the T-value is equal to 22.218, which is significant.Therefore, hypothesis 4 is accepted.

7. DISCUSSION AND CONCLUSIONS

This study is one of the few, so far, which investigate the factors that affect mobile banking services adoption. In this research we have defined several factors that act as drivers for mobile banking adoption. Based on the literature review and the above empirical results, we manage to outline the factors that influence mobile banking adoption in Jordan. The research findings show that all the six factors; self efficacy, trailability, compatibility, complexity, risk and relative advantage affect Jordanian consumers' adoption of mobile banking services. The results of this study is supported by many previous studies such as Deans and Gray (2010), who explore the potential factors that may influence the intention of mobile phone users to adopt mobile marketing services. Deans and Gray found that seven perceived characteristics play an important roles in determining consumer decision intention to adopt mobile marketing namely; relative advantage, compatibility, complexity and trialability, perceived risk, trustworthiness and permissibility.

While Irwin et al., (2003) study on South Africa cosumers show that four factors only affected the mobile banking adoption namely; trailability, lower perception of risk, customer needs and relative advantage. On the other hand, the researchers found that compatibility, complexity, mobile phone experience, facilitating conditions, and self-efficacy did not show any influence on mobile banking adoption. Another study support the findings of our study is Chavidi and Mulabagula (2004) who study the perceived barriers for the adoption of mobile banking services by the account holders of different banks in Malaysia. They found that the ease of access to relevant information or service is the most important feature in mobile banking. This goes with our result which show that complexity can influential factor in mobile banking adoption. Based on that banks need to minimize complicated procedures and need to enhance ease of use to attract more consumers. Nadim and Noorjahan (2008) study go inline with this study concerning complexity and risk. They found that perceived usefulness, ease of use, security and privacy, and customer attitude are significantly and positively related to customer adaptation.

Relative advantage, such as mobility factor was proven to be a very important trigger for mobile banking adoption. Customers like the idea of being up-to-date in technological advancement and being early adopter means that they have to tolerate possible initial glitches and invest time and effort in learning. The findings by Deans and Gray (2010) suggested that relative advantage of mobile marketing is the strongest influence in building consumers' intention decision to adopt mobile marketing. Risk has an effect on consumers' mobile banking adoption and this result is consistent with Wu and Wang's (2005) findings, which can be attributed to users' previous experience with online services which may imply that consumers are more aware of the existence of potential risk. Ulivieri's (2004) argue that a consumer goes on doing something that initially seemed to be risky or dangerous but little by little she/he becomes more confident; it is a form of basic trust derived from habit and from the decreasing perceived probability of damage. According to Kim et al., (2008), consumers are often faced with at least some degree of risk or uncertainty in using mobile technology.

Based on the above findings, we may put forward the following suggestions about incorporating innovative solutions in the banking sector, particularly by utilizing mobile services:

1) Due to changing customer needs, it's important to adapt new innovative solutions in banking services with those new needs.

2) In order to improve the bank public image, innovative mobile banking services can be a very important tool in achieving this target, particularly when the firm actively engages in shaping standards for emerging technologies.

3) Banks can use mobile services as a positive competitive advantage as well as differentiation strategy with rivals.

4) Banks offering mobile services may use this service as an attraction tool for prospective customers;

5) Finally, innovative mobile services are expected to open up a new distribution channel for banks to enforce their multi-channel strategy; for technology-providers they open a new channel of revenue.

8. REFERENCES

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. NJ: Prentice- Hall.

Bitner, M. J., Brown, S. W. and Meuter, M. (2000). Technology Infusion in Service Encounters. *Journal of Academy of Marketing Science, 28*, 138-149.

Buse S, (2002) Der mobile Erfolg – Ergebnisse einer empirischen Untersuchung in ausgewählten Branchen, in *Electronic Business und Mobile Business - Ansätze, Konzepte und Geschäftsmodelle*, 91-116, F Keuper (Ed), Gabler Verlag, Wiesbaden.

Boyd, C., & Jacob, K. (2007). Mobile financial services and the underbanked: opportunities and challenges for mbanking and mpayments. Chicago, IL: The Center for Financial Services Innovation.

Barnes, S. J., & Corbitt, B. (2003). Mobile banking: concept and potential. International Journal of Mobile Communications, 1, 273-288.

Brown, Irwin., Zaheeda Cajee., Douglas., Daves and Shuan, Stroebel., (2003). Cell phone banking: Predictors of adoption in South Africa-an exploratory study. International Journal of Infomration Management, 23, 381-394.

Chung, N., & Kwon, S. J. (2009). The effect of customers' mobile experience and technical support on the intention to use mobile banking. Cyber Psychology and Behavior, 12, 539-543.

Chavidi N., and Mulabagula G. (2004). Barriers to mobile Internet Banking services adoption: an empirical study in Klang valley of Malaysia. The Internet Business Review, Issue No. 1.

Deans, Kenneth R., and Gray Brendan J. (2010). Third screen communication and the adoption of mobile marketing: A Malaysia perspective. International Journal of Marketing Studies, Vol. 2, No. 1; May 2010

Donner, J., & Tellez, C. A. (2008). Mobile banking and economic development: linking adoption, impact, and use. Asian Journal of Communication, 18, 318-332.

Daniel, E. (1999). Provision of Electronic Banking in the UK and the Republic of Ireland. *International Journal of Bank Marketing, 17*, 72-82.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13, 318-339.

Dholakia, N., Dholakia, R. R., Lehrer, M. and Kshetri, N. (2003). Global Heterogeneity in the Emerging M-Commerce Landscape. In Nan Si Shi (ed.), *Wireless Communication and Mobile Commerce.* Idea Group Publishing, Singapore.

Forrester Research group [Xonline] www.forrester.com, access date on 2007.

Hoehle, H., & Huff, S. (2009). Electronic banking channels and task-channel fit. Paper presented at the Thirtieth International Conference on Information Systems.

Krugel, G., Desai, S., Solin, M., Leishman, P., Davidson, N., Tellez, C., et al. (2010). Annual Report 2010. London: GSM Association.

Kim, D. J., Ferrin, D., & Rao, H. (2008). A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems, 44*, 544-564.

Ian Mansfield (2011) Mobile Banking Surges As Emerging Markets Embrace Mobile Finance. Cellular-news, 12th May.

Meuter, M. L., Ostrom, A. L., Roundtree, R. I. and Bitner, M. J. (2000). Self-service Technologies: Understanding Customer Satisfaction with Technology-based Service Encounters. *Journal of Marketing, 64,* 50-64.

Mohr, J. (2001). *Marketing of High-Technology Products and Innovations*. Prentice Hall, Upper Saddle River.

Mallat, N. (2006). Exploring Consumer Adoption of Mobile Payments - A Qualitative Study. Paper presented at the Helsinki Mobility Roundtable, Helsinki, Finland.

Mallat, N., Rossi, M., & Tuunainen, V. (2008). An empirical investigation of mobile ticketing service adoption in public transportation. Pers Ubiquit Comput, 12, 57-65.

Mathieson, K., Peacock, E., & Chin, W. W. (2001). Extending the technology acceptance model: The influence of perceived user resources. Database for Advances in Information Systems, 32, 86-112.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information System Research,* 2(3), 192-222.

Nunnally, J. (1978). Psychometric Theory. 2nd edition. McCraw-Hill, New York.

Nadim J., and Noorjahan B. (2008). The role of perceived usefulness, perceived ease of use, security and privacy, and customer attitude to engender customer adaptation in the context of electronic banking. African Journal of Business Management, l, 32-40.

Rogers, E. M. (1983). Diffusion of innovations (3rd Ed.). New York: The Free Press A Division of Macmillan Publishing Co., Inc.

Rogers, E. M. (2003). Diffusion of innovation (5th Ed.). New York: Simon & Schuster, Inc.

Steward, D. W. (1981). The Application and Misapplication of Factor Analysis in Marketing Research. *Journal of Marketing Research, 18,* 51-62.

Tan, M. and Teo, T. S. H. (2000). Factors Influencing the Adoption of Internet Banking. *Journal of the Association for Information Systems, 1,* 1-42.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. Information Systems Research, 6, 144-176.

Tiwari R. and Buse S, (2006) The Mobile Banking Prospects: A Strategic Analysis of Mobile

Commerce Opportunities in the Banking Sector, Hamburg University Press, Hamburg.

Thomas, Friedman (November 2, 2010). "Do Believe the Hype". *New York Times*

Ulivieri, F. (2004). Naïve approaches to trust building in web technologies (Vol. 15426B): ISTC-Technical report.

Zeithaml, V. A., Parasuraman A. and Berry L. L. (1990). *Delivering Quality Service*. Free Press, New York.

Yu, T. K., & Fang, K. (2009). Measuring the post-adoption customer perception of mobile banking services. Cyber Psychology and Behavior, 12, 33-35.

Wu, J. H., & Wang, S. C. (2005). What drives mobile commerce? An empirical evaluation of the revised Technology Acceptance Model. Information & Management, 42, 719-729.