EFFECTIVE FACTORS OF THE ADOPTION OF MOBILE BANKING SERVICES BY CUSTOMERS

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Abstract
This research is proposed to detect the effective factors of using the mobile banking services in Saderat Bank by using the Technology acceptance theory, Dissuasion of innovation theory, and also advice from national banking specialists. The model divides the effective factors of the adoption of mobile banking services to the two parts: mobile banking technology characteristic and demographic characteristic, Mobile banking technology characteristic includes perceptions of M-banking, ease of use, usefulness, cost, risk, compatibility with their lifestyle, and their need for interaction with personnel. And demographic characteristics cover gender, age, marital status, the level of education, and the yearly income. In this research we used a descriptive-field study methodology, by taking a sample of 666 people, where 350 people were mobile banking services users and 316 people not using the Saderat Bank services. We employed some descriptive statistics as well as statistical inference to find out the effective factors of using mobile bank services. According to the results of this research, among different mobile banking technology characteristics, the compatibility variables, the cost of using, trial ability and profitability were ranked by customers as effective factors of using the mobile banking services. It is worth to note that the other factors such as ease of use, risk and need for interaction were not important for using mobile banking services from the customer's perspective. Moreover, the gender factor was effective factor among demographic characteristics, while the marital status was not an important factor for using these services.
Key words: *Mobile communication systems, Banking, Consumer behavior, Iran*

INTRODUCTION
The financial services industry, specifically the retail banking sector, has experienced significant changes brought about by the interaction between competitive pressure, customer needs, and technological innovation. A service delivery evolution has occurred as customers move toward technology-based self-service as an alternative to the traditional inter-personal service encounter. This provides benefits to both the bank, as it decreases the cost per transaction, and the customer, who is offered increased convenience. As a result, today's banking takes place increasingly through electronic channels, and given the penetration and rapid diffusion the mobile phone has achieved around the world, it is understandably hailed as "the new service frontier" in this online Environment. The mobile phone has led to a

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profound revolution in our soci society because of its social and economic impact (Ghezzi et al., 2010).At the present time, we could actually consider it to be a growing activity (Zhu, 2010) and one of the future payment tools (Ondrus & Pigneur, 2006; Zhu, 2010)

Mobile phone banking or M-banking is an emerging facet of electronic banking that, unlike traditional phone banking services, which offer very limited functions, is a rich platform for automated banking and other financial services. It is a wireless service delivery channel that offers increased value for customers by providing "any time, anywhere" access to banking services. Mobile payment can be defined as any type of individual or business activity involving an electronic device with connection to a mobile network enabling the successful completion of an economic transaction (Liébana-Cabanillas, 2012).

Given the benefits to the banking customer, Juniper Research (2009) predicts that the number of M-banking users will exceed 150 million globally by 2011. However, trends in M-banking thus far show that consumer uptake around the world has fallen below the expectations of both academics and industry specialists.

This supports the notion that technological advances and service availability do not automatically lead to widespread adoption and use. It also suggests a lack of knowledge about the motivators and inhibitors that influence the adoption of this mobile service (M-service), which is corroborated by the limited research that has been undertaken in this area.

As such, there have been repeated calls for the investigation of factors that predict or explain the adoption, acceptance, and use of M-banking.

This paper applies the theories of technology acceptance and the diffusion of innovations to the adoption of M-banking technologies. Empirically, we examine whether and how the characteristics that describe the adoption of new innovations are related to consumer adoption of e-banking technologies. We include adoption as well as intentions to adopt in our measurement. Further, the paper identifies the key motivators and inhibitors that influence consumers' attitude toward and intention to use M-banking, leading to its adoption and diffusion in the general population. The results of this study may therefore provide marketers with information that could be useful in attracting customers to M-banking.

To achieve the above, this paper is divided into the following sections. Firstly, the extant research on M-banking and attitudinal theory will be reviewed. This is followed by an explanation of the methodology adopted. Third, the findings of the study are presented. Fourth, the implications of this research are discussed, with particular focus on how marketing professionals in the retail banking industry can leverage and minimize the identified motivators and inhibitors in order maximize consumer uptake of M-banking. Finally, the limitations and conclusions of the research are offered.

LITERATURE REVIEW

Rogers (1962) proposed a model of the diffusion of innovations that included five product or service characteristics postulated to influence consumer acceptance of new products and services: relative advantage, compatibility, simplicity/complexity, observability, and trial ability. Several researchers have incorporated pieces of Rogers's model in empirical work that examined technological innovations.

Trial ability refers to the ability of consumers to experiment with a new innovation and evaluate its benefits. The extent to which various financial institutions offer "introductory" M-banking to their customers impacts the trial ability and accessibility of the innovation. Empirical studies on the acceptance of technologies have found consistently positive relationships between usefulness and to a lesser extent, ease of use, and the adoption of a variety of specific technologies, ranging from computer software to e-mail (see, for example, Davis, 1989; Karahanna et al., 1999; Chau and Hu, 2001).

Relative advantage *is* the degree to which consumers perceive a new product or service as different from better than its substitutes (Rogers, 1962). In the case of M-banking, savings of time, money and convenience have been cited as relative advantages. At the same time, financial management conducted online raises concerns of privacy, a relative disadvantage for some. Consumers who must supply myriad personal information before being permitted to use the innovation may be inhibited from adopting a given M-banking service.

Simplicity/complexity is the extent to which consumers perceive a new innovation as easy to understand or use. For consumers without previous computer experience, or for those who believe that e-banking is difficult to use, adoption of these innovations may be thwarted.

Compatibility is the extent to which a new product or service is consistent and compatible with consumers' needs, beliefs, values, experiences, and habits. In the case of M-banking, we must consider the degree to which a given technology fits in with the banking behavior of a consumer, and the way in which they have historically managed their finances. Technological service innovations differ from other commodities in so far as their adoption may require behavior different from consumers' typical routines (Gatignon and Robertson, 1985). This includes "bricks and mortar" issues such as not having a branch bank to visit, as well as "paper" issues including receiving statements electronically and not in the mail.

A further refinement of Rogers' original model added the dimensions of *perceived risk* as well as product involvement (that is, how involved consumers are in related product categories; Lockett and littler, 1997). This study found that risk-averse households were less likely to adopt direct banking and households that used other technologies (ATMs and buying products over the telephone) were more likely to adopt direct banking. The researchers conclude that "perceived innovation attributes appear to be better predictors of adoption behavior than personal characteristics"

The Technology Acceptance Model (TAM), proposed by Davis (1989), incorporated the characteristics of perceived ease of use and perceived usefulness into a model of technology acceptance. Empirical work related to diffusion of technological innovations has expanded the use of the TAM model to include individual differences and attitudes as defined by the Theory of Reasoned Action.

Explorations of demographic correlates of technology acceptance have produced differing results with respect to significant relationships to adoption. In part, these differences may relate to the sets of variables included in the analysis. Gender has not been found to have a direct effect on adoption of technology in general (Taylor and Todd, 1995; Gefen and Straub, 1997), but men and women appear to have different acceptance rates of specific computer technologies, with men more likely to adopt (Gefen and Straub, 1997). Results with respect to gender may be confounded by marital status. When it comes to bank accounts, married couples may have jointly held accounts; thus at the household level, adoption of M-banking may be related to the combination of marital status and gender, with married couples more likely to adopt than either single males or single females. Research has also linked age and adoption of technologies, with younger persons being more likely to adopt. Race has not often been included in studies of technology adoption. Lee and Lee (2000) did find that for direct bill payment, minorities were less likely to have already adopted the technology. Increases in income and education tend to be positively related to the adoption of an innovation. Laukkanen et al. (2007) summarized 18 factors into five barriers, namely Usage, Value, Risk, Tradition, and Image barriers. uncovered that the value and usage barriers were the most intense barriers to mobile banking adoption, while tradition barriers (such as preferring to chat with the teller and patronizing the banking office) were not an obstacle to mobile banking adoption . Amin et al. (2008) supported security and privacy as two important dimensions under the construct of perceived credibility.   Cruz et al. (2010) observed that banks has very large potential to offer mobile banking services to people living

in remote villages where only few computers are connected to the Internet. Riquelme and Rios [2010] surveyed 681 Singaporean consumers and concluded that perceived usefulness, social norms and risks (in the order of influence) were three crucial factors influencing the adoption of mobile banking. Dasgupta et al. (2011) suggested that the emerging mobile banking may give banks a good commercial opportunity providing their services to rural people who are unable to access the Internet   In another research the impact of age on the acceptance of mobile payment systems by analyzed consumers, based on a behavioral model and the factors that determine this model. The proposed behavioral model, named MPTAM, relies on the extension of the TAM model through the variables of trust and risk.BesidesThey have analyzed the differences between the groups created according to age.(Liébana-Cabanillas et al.,2014)

TABLE 1: Studies Utilizing TAM

Source	Technology	Relevant Findings
Davis (1989)	PROFS and XEDIT; Chart-Master and Pendraw	TAM scales exhibited high convergent, discriminant, and factorial validity. Perceived usefulness and perceived ease of use were significantly correlated with both self-reported current usage and self-predicted future usage. Perceived usefulness had a significantly greater correlation with usage behavior than did ease of use.
Taylor & Todd (1995)	Computing Resource Center	TAM provided a good fit to the data. Significant paths: perceived ease of use to perceived usefulness, perceived ease of use to attitude, perceived usefulness to attitude, and behavioral intention to actual usage.
Hu et al. (1999)	Telemedicine	Perceived usefulness was a significant determinant of attitude and intention. Attitude was a significant determinant of behavioral intention. However, perceived ease of use was not significant on both attitude and intention.
Lederer et al. (2000)	World Wide Web	The effect of perceived usefulness and perceived ease of use on usage was significant. Significant antecedents of ease of use were ease of understanding and ease of finding. Significant antecedent of usefulness was information quality.
Plouffe et al. (2001).	A smart card-based payment system	Perceived ease of use significantly affected perceived usefulness. Both perceived ease of use and perceived usefulness significantly affected the intention to adopt.
Chen et al. (2002)	Virtual store	Perceived ease of use had a positive effect on both perceived usefulness and attitude toward using the virtual stores. Perceived usefulness had a significant effect on attitude toward using the virtual stores. Attitude affected behavioral intention and behavioral intention significantly affected the actual usage.

Teoh & Md Nor (2007)	Mobile Banking	Perceived usefulness and perceived ease of use had a positive effect on the intention to use mobile banking. Additional factor that affect the intention to use mobile banking is perceived security.
Laukkanen [2007]	Mean-end theory	Perceived benefits (i.e, location free and efficiency) are main factors encouraging people to adopt mobile banking
Amin et al. [2008]	TAM	Perceived usefulness, easy-of-use, credibility, , amount of information, and normative pressure significantly influence the adoption of mobile banking
Cruz et al. [2010]	TAM and theory of resistance to innovation	The cost barrier and perceived risk are highest rejection motives, following are unsuitable device, complexity, and lack of information
Riquelme and Rios [2010]	TAM, TPB, and IDT	Usefulness, social norms, risk influences the intention to adopt mobile banking
Dasgupta et al. [2011]	TAM	Perceived usefulness, easy-of-use, image, value, self-efficacy, and credibility significantly affect intentions toward mobile banking usage.
Yu,2012	TAM	social influence, perceived financial cost, performance expectancy, and perceived credibility, individual intention ,gender and age, gender performance expectancy perceived financial cost, and the age ,facilitating conditions and perceived self-efficacy on actual adoption behavior.
LiébanaCabanillas (et al.,2014)	TAM	age on the acceptance of mobile, payment systems by consumers,. The proposed behavioral model, named MPTAM, relies on the extension of the TAM model through the variables of trust and risk. analyzed the differences between the groups created according to age.

HYPOTHESES

As such, this research will contribute to innovation diffusion literature by validating and extending Curran and Meuter's (2005) SST Attitude/Intention to Use Model. Attitudes reflect people's favorable or unfavorable feelings towards a given behavior which means that attitudes are developed in time, as people acquire experience. (Herrero et al.,2006) The first

antecedent belief of the model, perceived usefulness (PU), is defined by Davis (1989, p. 320) as the "subjective probability that using technology will increase the individual's performance". Perceived usefulness (PU) has been found to have a positive relationship with both attitude and usage intention, for example, perceived usefulness (PU) positively influences mobile internet and M-services acceptance.. The other construct sourced from TAM is perceived ease of use (PEOU), which is defined as the "degree to which the user expects the target system to be free of effort" (Davis et al.,1989, p. 985) and has also been found to have a positive relationship with attitude and intention to use technology (Curran and Meuter, 2005). Curran and Meuter (2005) subsequently added two additional antecedent beliefs to TAM: need for interaction; and risk.The first of the additional constructs is need for interaction, which is the desire to retain personal contact with service personnel during a service encounter (Dabholkar, 1992; Dabholkar, 1996). Recent research has shown that some consumers choose to use technology in order to avoid the provider's employees or other customers (Meuter et al., 2000). The second additional construct is perceived risk, which is the consumer's belief regarding the likelihood of suffering a loss in pursuit of a goal (Pavlou, 2003). Studies in M-commerce (i.e. Wu and Wang, 2005) and wireless finance (i.e. Kleijnen et al., 2004) have shown that high perceived risk has a negative influence on technology adoption . we hypotethesize:

H1. Attitude will mediate the relationship between the antecedents (independent) factors and intention to use M-banking.

H1-1. Perceived usefulness will have a positive relationship, mediated by attitude toward M-banking, with intention to use M-banking.

H1-2. Perceived ease of use will have a positive relationship, mediated by attitude toward M-banking, with intention to use M-banking.

H1-3. The need for interaction with employees will have a negative relationship, mediated by attitude toward M-banking, with intention to use M-banking.

H1-4. The perceived risk of using M-banking will have a negative relationship, mediated by attitude toward M-banking, with intention to use M-banking.

H1-5. Perceived cost will have a negative relationship, mediated by attitude toward M-banking, with intention to use M-banking.

H1-6. The compatibility of M-banking with users' lifestyle and current needs will have a positive effect, mediated by attitude toward M-banking, on intention to use M-banking.

Figure 1. M-banking acceptance model
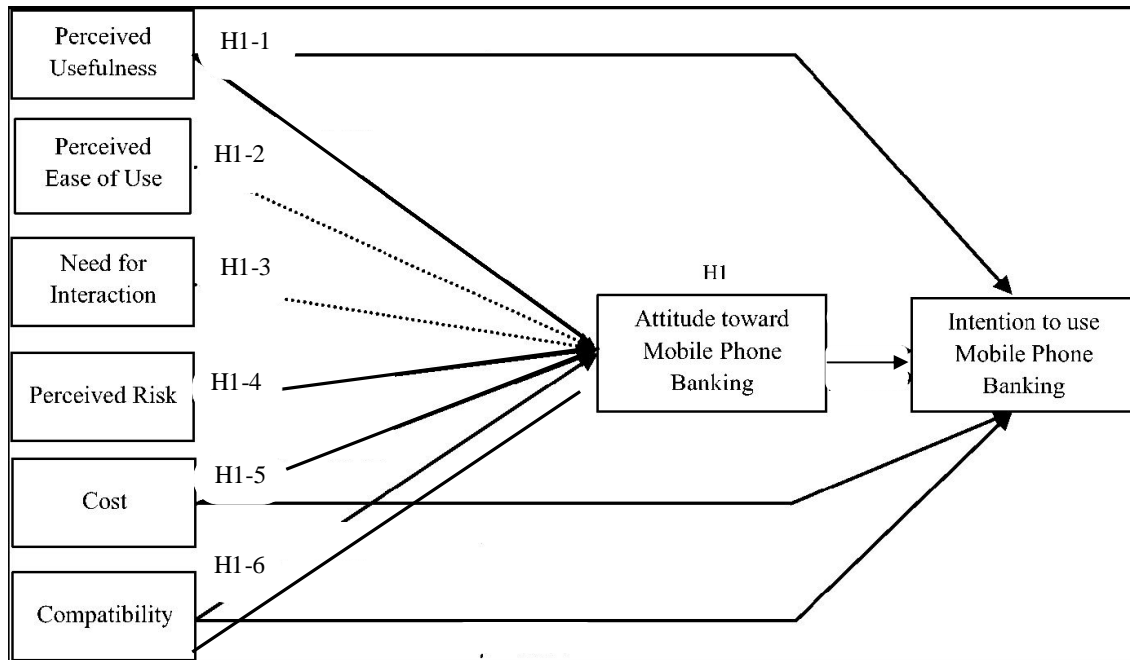
MATERIALS AND METHODS

Research Methodology: In terms of its goal, this research is applied-descriptive and regarding the nature and data collection method, it is a survey.

Instrument: Analyzed data from questionnaires, both descriptive analysis and inferential analysis was conducted. Descriptive level of analysis included descriptive analysis of demographic data (gender, age, marital status, education level, employment status and income) and descriptive analysis of specific data of this research (frequency, frequency percentage, mean and standard deviation).

From the 666 members of the community which received the questionnaire, 350 questionnaires were completed by users and 316 questionnaires by Non-users.

Validity and Reliability: For ensuring of the questionnaire's validity, it was edited by some of academic experts in strategic management and Bank managers. Their suggestions were considered in the final edition.

Cronbach correlation was used for evaluation of questionnaire's reliability. The correlation was 0.75.

Table 2: reliability

.			Cronbach
1		compatibility	
2		usefulness	-
3	Mobile Characteristics	ease of use	.724
4		need for interaction	.717
5		risk	-
6		cost	.728

Statistical Population: Since customers of Bank Saderat include both groups of Users and Non-Users of mobile banking and infinite number of statistical population, this study used a multi-stage sampling method for collecting data. Therefore Tehran has divided to 5 separate clusters of North, South, East, West and Center. Then we selected 5 branches from each district randomly and questionnaires distributed between users and Non-Users of mobile banking services separately.

Due to the infinite number of statistical population (100,000 users) and in order to determine the sample size, the Table of Krejcie & Morgan has been used. The sample size in this table will increase a little, while the volume is over 100000. On this basis the sample size of this research was 384. For returning this, a total of 500 questionnaires distributed between users of Mobile Banking and the same amount between Non-users in selected branches.

Data Analyzing Procedure: To test hypotheses of this research, independent samples t-test (test of comparing the two communities Average) is used. Collected data using appropriate statistical methods and the analysis was SPSS and Excel software

Table 3: samples t-test

variable	Factor	User/Nonuser	Quantity	Average	Deviation
Mobile Characteristics	compatibility	User	350	2.37	.75
		Nonuser	316	3.70	.78
	usefulness	User	344	3.39	.77
		Nonuser	316	3.51	.74
	ease of use	User	350	3.50	1.04
		Nonuser	316	3.39	.93
	need for interaction	User	350	3.54	1.21
		Nonuser	316	3.80	.96
	risk	User	347	2.85	.89
		Nonuser	315	2.75	.97
	cost	User	348	2.86	1.13
		Nonuser	316	3.22	1.17
Mobile Characteristics		User	341	3.08	.49
		Nonuser	315	3.39	.46

RESULT AND DISCUSSION

As a result and after the statistical test of hypothesis, the major hypothesis of study has been approved. And from the 6 sub-hypotheses, 3 of them were rejected.

Table 4: result of hypothesis

No.	Hypothesis (Relation With Intention to Use M-Banking, Meditating by attitude toward M-banking)	Result
H1	The positive relationship Of Perceived usefulness	Approved
H1-1	The positive relationship Of Perceived usefulness	Approved
H1-2	The positive relationship Of Perceived ease of use	Approved

H1-3	The Negative relationship Of The need for interaction	Not Approved
H1-4	The Negative relationship Of The perceived risk of using	Not Approved
H1-5	The Negative relationship Of Perceived cost	Not Approved
H1-6	The Positive relationship Of The compatibility of M-banking	Approved

Based on the findings of this study, most users of mobile banking services are in the youth age group (25 to 35 years) are and most of the Non-Users are in the 55 years age group. Considering this, the marketing managers of Bank Saderat should develope the youth segment of their customers and arrange some plans for persuading the 55 years age group to use Mobile banking services.

One important factor in determining comparative advantage is using a new innovation. Bank marketing managers also need more attention to the needs of its customers to bank on mobile technology. Given the usefulness of research results using one of the factors affecting the bank's   mobile   services.

Discuss the cost of using mobile banking services is another factor in using these services. According to the findings, the costs of purchasing and costs of time is an important factor to persuading the Non-users. For solving this, providing a 24 hours services and with perfect quality will be a good response.

Ease of Use is minimizing the problems of customers in using technology. since Customer perception of ease of use of technology is influenced by the experience of using it. Therefore the first experience has the most important role in framing this perception although more experience will affect this also.

CONCLUSION

The findings of this study support the feasibility of using this model to assist professionals in developing programs, communicating with, and attracting a sufficient number of customers to justify the costs of implementing an M-banking system. This is important since providing innovative value-added services is one of the traits that characterise successful commercial banks (Kaynak and Whiteley, 1999). The results indicate that banks should use marketing communications to develop a positive attitude toward M-banking in order to foster consumer acceptance and intention to use M-banking. In order to accomplish this, marketers must focus on addressing the key motivators and inhibitors of positive attitude formation identified by this study.

Perceived usefulness and compatibility were both found to have a strong positive influence on attitude and intention to use M-banking, with perceived usefulness being the most significant motivator. Marketers should take advantage of the value adding characteristics of M-banking in promoting perceived usefulness and compatibility with consumers' lifestyle. That is, consumers need to be shown how M-banking fits in with their lifestyle and needs and how useful the channel can be within that lifestyle. For instance, the mobile value (Anckar and D'Incau, 2002) of M-banking, including convenience, ubiquity, and flexibility (Lee and Benbasat, 2003; Venkatesh et al., 2003), can be emphasised within the mobile value settings identified by Anckar and D'Incau (2002):

- critical needs and arrangements (e.g. forgotten bill payment);
- spontaneous needs and decisions (e.g. impulse purchase of an item that requires the transfer of funds);
- efficiency needs and ambitions (e.g. increase productivity during "dead times"
- like commuting); and
- Mobility-related needs (e.g. no access to computer/laptop).

Furthermore, findings suggest that perceived risk and cost have a significant negative Effect on consumers' attitude and usage intentions toward M-banking. Consequently, a focus on risk

reduction and trust creation is imperative for the successful establishment of M-banking systems. Companies need to invest in systems that assure reliable and secure data transmission, prohibiting bad system performance as well as misuse/abuse of personal information. However, they also need to communicate their efforts to consumers in order for this strategy to be effective. It has been found that the provision of a sense of control over an SST reduces consumers' perceived risk, heightens perceived value and increases adoption intention (Lee and Allaway, 2002).

Thus, the sense of control afforded to customers by all the information necessary to effectively use M-banking, including instructions and security information, can reduce perceptions of risk. An alternative strategy to increase customers' sense of control may be to provide them with customizable security settings.

Moreover, given that cost has a negative effect on intention to use M-banking, marketers need to pay particular attention to the costs of M-banking to the consumer. If the service provider does not charge a service fee for M-banking, this could be used as a potential point of difference from competitors. Another way in which marketers can address this inhibitor could be to create an impression of low costs by emphasizing the desirable benefits of M-banking. In this way, cost perceptions will be lowered as customers place a higher value on M-banking (Lovelock et al., 2004). Thus, by addressing the primary concerns of and benefits sought by consumers, marketers can create a positive attitude toward M-banking, leading to increased consumer acceptance of M-banking.

In terms of future research, a larger scale study with a more representative sample could be conducted to validate the model of this study and to enhance the generalisability of the research conclusions. In addition, this study only examined the effect of the motivators and inhibitors on behavioral intentions, and as such, interrelationships between variables could be investigated. Furthermore, the model is cross-sectional, in that it measures perceptions and intentions at a single point in time. However, perceptions change over time as individuals gain experience. This change has implications for researchers and practitioners interested in predicting M-banking usage over time and may warrant a longitudinal study.

In summary, this research has served to enhance the understanding of the factors influencing new technology adoption within a service paradigm and from a consumer perspective. It has demonstrated that there are multiple factors at work throughout the diffusion process and that some are more influential than others under given circumstances. The knowledge gained by this research into the motivators and inhibitors of M-Banking is useful for practitioners who aim to maximize consumer adoption of this self-service banking technology. In conclusion, this study furthers the understanding of the adoption of one of the innovative technologies that is driving service and technology convergence as an emerging service paradigm: M-banking (Kim et al., 2007). Importantly, this research also provides a model for examining future mobile digital technology developments in the financial services sector as "customers Move out of the bank queue and into the electronic age"

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