

A STUDY ON ADOPTION OF MOBILE BANKING IN PUNE CITY

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Abstract

In today's dynamic banking environment, use of information technology has become an integral part. Banks today attempt to use new strategies that help facilitate online transactions and sharing of information. In order to link the banking business to the mobile devices like cell phones and I-pads, use of mobile apps is one such strategy.

Through mobile banking it is easy for customers to get interactive banking services at their convenient time and locations, which initiates great value for them (Mallat et al., 2004). Moreover, mobile banking adoption significantly impacts reduction of costs and facilitates change in retail banking. There are limitations which need to be encountered like the lack of infrastructure and poor internet connectivity. Bandopadhyay (2010), state that developing countries have also adopted mobile banking services.

OBJECTIVE OF THE STUDY

To examine the factors influencing mobile banking adoption among mobile users in Pune. More specifically this study helps in investigating the role of technology acceptance model (TAM) and theory of planned behavior (TPB) in predicting the adoption of mobile banking.

RESEARCH METHODOLOGY

Data for this study was collected through a self-administered questionnaire. This questionnaire was designed using google form and this link was conveniently distributed to the respondents using social media platforms. More than 250 links were distributed, out of which response was received from 130 respondents. After the responses were reviewed only 89 responses were found to be complete. Hence the sample size for this study is 89 respondents in Pune city.

RESEARCH FINDINGS:

From the above research findings it has been observed that research hypotheses are partially supported though the overall explanatory power of the research model is high (adjusted R squared = 0.736) for mobile banking adoption.

As compared to the other factors attitude arises as the most powerful predictor of adoption of mobile banking ($\beta = 0.35$, $p = 0.009$). This points out at the importance of development of an attitude towards successful implementation of services of mobile banking.

CONCLUSIONS AND FURTHER RESEARCH

The aim of this study is extending our understanding with reference to mobile banking adoption through integration of TPB and TAM. Analyzing the data of 89 respondents has generated results that support the hypotheses only partially. Though this study has been conducted keeping in mind the generally accepted research guideline, there are some limitations that need to be considered.

First and foremost care should be taken while generalizing the results. There could be a problem of selection bias as about 85% of the respondents are from the age group of 20-30 years. Therefore future studies can be conducted considering respondents of different backgrounds. This will help in understanding adoption of mobile banking in a better manner.

The above research findings are based on a data of 89 respondents, which may reduce the ability of reflecting the changes in the research constructs, specifically when there is an increase in mobile banking services and experiences. Therefore qualitative approaches may be considered in future research.

In Summary, this study proposes a model that helps in conceptualizing adoption of mobile banking by integrating TAM and TPB. The findings of this study have significant implications for the bankers in today's dynamic environment as well as the researchers.

Keywords: *Mobile Banking, E-commerce, Theory of Planned Behavior, Technology Acceptance Model, Banks, Technology Adoption*

INTRODUCTION:

In today's dynamic banking environment, use of information technology has become an integral part. Banks today attempt to use new strategies that help facilitate online transactions and sharing of information. In order to link the banking business to the mobile devices like cell phones and I-pads, use of mobile apps is one such strategy.

Mobile banking refers to use of a mobile device to provide financial information to customers and communicate with them. It also provides transactions to customers such as checking account balance, transfer of funds and access other banking products from anywhere anytime (Ensor, et al., 2012; ITU, 2012). While mobile is a popular access point, many benefits of mobile banking have emerged for banks as well as customers. Mobile banking includes services like sending and receiving instructions and messages and access to a mobile service. When an M banking application is installed on the user's SIM, it facilitates deposits, withdrawal and transfer of money between two parties (Hernandez, 2011).

Through mobile banking it is easy for customers to get interactive banking services at their convenient time and locations, which initiates great value for them (Mallat et al., 2004). Moreover, mobile banking adoption significantly impacts reduction of costs and facilitates change in retail banking. According to Cruz et al. (2010) mobile banking has abundant potential in providing reliable services to people who live in remote areas which has limited internet facility. As per an article by Boris Shiklo (2017), the adoption and usage of mobile banking is increasing not only worldwide but also in India.

Advancements in technology and communication have made adoption of mobile banking possible in many countries. However there are limitations which need to be encountered like the lack of infrastructure and poor internet connectivity. Bandopadhyay (2010), state that developing countries have also adopted mobile banking services.

Hence there is also a need to understand the adoption of mobile banking by investigating the factors that influence the intention of the user to use mobile banking. Therefore objective of this study is to examine the factors influencing mobile banking adoption among mobile users in Pune. More specifically this study helps in investigating the role of technology acceptance model (TAM) and theory of planned behavior (TPB) in predicting the adoption of mobile banking.

LITERATURE REVIEW

Focus of researchers in the past decade has been on internet and online banking; however it is observed that insufficient research has been conducted on mobile banking and it has not received much attention (Puschel et al. 2010; Suoranta and Mattila, 2004).

According to Laforet and Li (2005), who conducted a study to investigate, the barriers to online banking adoption with reference to Chinese consumers' state that the most important factor which motivates adoption is security. The study also indicated that lack of awareness, technological skills, perception of risks and the traditional cash and carry banking culture of China were the key barriers to adoption.

Suoranta and Mattila (2004), in Finland, demographics, the perceived risks and attributes relating to diffusion of innovation like complexity and relative advantage affected the mobile banking adoption.

Within internet banking, the effects of self-service technology on customer value were studied by Ho et al. (2008). The determinants of intention for using mobile banking were validated by Gu et.al (2009) and Zhou (2011) through the TAM model which is based on trust. According to Zhou (2011), structural assurance and quality of information are the key factors that affect trust, which in turn affects the perceived usefulness. Both these factors help in predicting the intention of using mobile banking.

In a study which examined factors for determining intention for using mobile banking, by Amin et al. (2008), it was revealed that perceived usefulness (PU), perceived ease of use (PEOU), perceived credibility, amount of information available on mobile banking and normative pressure significantly explain mobile banking acceptance. This study was conducted among customers of BIM Bank. Similarly, Koenig-Lewis et al. (2010) on the same lines pointed out that for adopting mobile banking services, compatibility, perceived usefulness (PU) and risk are significant indicators.

According to Riquelme and Rios (2010), the factors which influenced the intention for adopting mobile banking services are usefulness, social norms, and social risk. Social norms and ease of use had a stronger influence on females as compared to male respondents. Also relative advantage had a stronger effect on the perception of usefulness on the male respondents.

A study by Palani and Yasodha (2012) reveals that education, gender and income play a significant role in shaping the perceptions of customers' about the mobile banking services that are offered by Indian Overseas Bank.

FRAMEWORK FOR RESEARCH AND HYPOTHESES

Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) are widely accepted and gained attention. They have been confirmed in the wide range of areas and applications to understand the intention of the user to use new technology (Armitage and Conner, 2001; Venkatesh and Davis, 2000). Even though TPB and TAM have known to be widely applied to study adoption and acceptance of IT, it has been observed that neither TPB nor TAM has been able to give consistent superior explanations or predictions of behavior (Chen et al., 2007; Taylor and Todd, 1995; Venkatesh et al., 2003). This may be due to factors which influence adoption of technology, type of technology and users and the environment (Chen et.al, (2007). Therefore researchers have been focusing on the integration of TAM and TPB to study technology adoption as the two models are known to be complimentary have an explanatory power together (Aboelmaged, 2010; Lu et al., 2009; Chen et al., 2007; Hung et al., 2006; Wu and Chen, 2005; Chau and Hu, 2002).

As this study focuses on adoption of mobile banking, integrating TPB and TAM constructs for this research can provide a strong empirical support for adoption of mobile banking research and also account for technological and social factors that influence the intentions to use mobile banking.

Both these models are an extension of Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA). TRA is regarded to be a general structure that explains almost all human behavior and is based on the importance of the beliefs of an individual for the predicting his/her behavior (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). According to TRA the behavioral intention of an individual to perform a particular behavior is formed based on the attitude of the individual towards the behavior and on the perceived subjective norm. The individual's attitude towards behavior reflects his/her belief's that the behavior may lead to certain results and the person's evaluation of those results, either favorable or unfavorable. If the attitude of an individual is positive towards the behavior, the behavioral intention is strong and hence the probability of the intended behavior is higher. Hence attitude is a key determinant of intention which generates the actual usage behavior. The underlying foundation is that individuals make rational and systematic decisions based on the information available to them (Ajzen, 1991).

In the context of e-business many studies have revealed that an attitude of an individual has a direct and significant influence on the behavioral intention of an individual to use a particular application for e-business (Gribbins et al., 2003; Moon and Kim, 2001). Hence the following hypothesis is proposed:

H1: Attitude has a positive influence on adoption of mobile banking.

Subjective norm, the second determinant in TPB explains the person's perceptions of the extent to which his/her social environment has an influence on the behavior to be acceptable and desirable. When this pressure is experienced more strongly, greater is the

intention to perform the behavior. According to the existing research, there is a significant relationship between subjective norm and the behavioral intention in the online context. In a study conducted by Bhattacharjee (2000), it was revealed that subjective norm has a positive impact on the intentions to use electronic brokerage services. Also according to the empirical research conducted, it is suggested that subjective norm has a positive effect on e-payments and adoption of internet banking (Gu et al., 2009; Kleijnen et al., 2004; Lin, et al., 2009; Puschel et al., 2010). Therefore the following hypothesis is proposed:

H2: Perceived subjective norm has a positive influence on adoption of mobile banking.

A new determinant of behavioral intention, Perceived behavioral control was added by Ajzen (1987, 1991) and by Ajzen and Madden (1986) to further develop the TRA to TPB. This is based on the concept of self-efficacy by Bandura. Perceived Behavioral Control evaluates the amount to which the individuals perceive they have control over the behavior to be performed. It has been found that individuals are more like to perform a particular behavior if they feel they have a control over it. Therefore if a person believes himself to be capable to perform a particular behavior, shows an intention to perform that behavior.

Many empirical applications of TPB make an attempt to explain this behavior which is newly introduced (Armitage and Connor, 2001). Similarly, researches conducted previously in online technology suggests that perceived behavioral control is as a good predictor of the intention of usage (Choi and Geistfeld, 2004; George, 2002; Klein and Ford, 2003). Moreover, a study conducted by George (2002), shows that perceived behavioral control directly affects the attitude of the user towards using internet for purchasing online. Puschel et al. (2010) also reveals that behavioral control has a significant effect on the individual's intention to adopt mobile banking. Hence the following hypothesis is proposed:

H3: Perceived behavioral control has a positive influence on adoption of mobile banking.

As mentioned, the next theoretical base for this study is derived from TAM, which has been initially proposed by Davis (1989). This model is an extension of the TRA developed by Ajzen and Fishbein. This model helps in explaining and predicting the behavior of IT usage across a range of technologies and population of users. TAM is known among the researchers and practitioners as a powerful model used to explain and predict the intention of usage and acceptance behavior (Yi and Hwang, 2003). Perceived usefulness is capable of leading to behavioral intention. Perceived usefulness is defined as the amount to which an individual believes that using that system may improve his/her performance (Davis 1989, p. 320). Many studies conducted have presented that perceived usefulness has a direct and significant influence on the behavioral intention for using a particular online system (Chen and Ching, 2002; Chen et al., 2002; Heijden et al., 2003; Guriting and Ndubisi, 2006; Khalifa and Shen, 2008; Liao et al., 2007; Lin and Chang, 2011; Lin and Wang, 2005; Lai and Yang, 2009; Luarn and Lin, 2005; Nysveen et al., 2005; Wei et al., 2009). In the environment of mobile business services, researchers have also established perceived usefulness to be a vital factor to determine the mobile service adoption as the users look at its benefits (Kleijnen et al., 2004; Luarn and Lin, 2005; Wang et al., 2006). Hence the following hypothesis is proposed:

H4: Perceived usefulness has a positive influence on the adoption of mobile banking.

According to Davis (1989) and Igbaria et al., (1996), attitude in TAM is influenced by primarily two main elements that determine technological behavior; perceived ease of use and perceived usefulness. According to Mathieson et al. (2001) argues that TAM has better a ability in explaining attitude toward usage of an information system as compared to TRA and TPB. Many studies that have validated that perceived usefulness affects attitude include (Chen et al., 2002; Cheung and Liao, 2003; Curran and Meuter, 2005; Gribbins et al., 2003; Heijden et al., 2003; Kleijnen et al., 2004; Nysveen et al., 2005; Porter and Donthu, 2006; Robinson et al., 2005). Hence the following hypothesis is proposed:

H5. Perceived usefulness has a positive influence on the attitude of an individual towards adopting mobile banking.

According to Rogers (1995), when a particular system is complex, it can inhibit and discourage adopting an innovation. Davis (1989, p. 320) defines perceived ease of use as the amount to which “a person believes that using the system will be free of mental effort”. As per TAM, a person’s attitude is affected by the perceived ease of use towards the usage of that system. Existing research studies propose that ease of use is a main attribute of e-business applications like e-commerce (Chen et al., 2002; Heijden et al., 2003), m-commerce (Lin and Wang, 2005; Luarn and Lin, 2005) and online banking (Guriting and Ndubisi, 2006). Therefore this research also studies the following hypothesis:

H6: Perceived ease of use has a positive influence on the attitude of an individual towards adopting mobile banking.

According to TAM ease of use also is supposed to have an influence on the perceived usefulness of technology. If the technology is easier to use, greater benefits are expected from this technology with reference to enhancing the performance. In the context of online technology this relationship has also been validated by Gefen and Straub (2003); Gefen et al. (2003); McCloskey (2006); McKechnie et al. (2006); Moon and Kim (2001); Morosan and Jeong (2008). Hence the following hypothesis is proposed:

H7: Perceived ease of use has a positive influence on perceived usefulness of mobile banking.

RESEARCH METHODOLOGY

Data for this study was collected through a self-administered questionnaire. This questionnaire was designed using google form and this link was conveniently distributed to the respondents using social media platforms. More than 250 links were distributed, out of which response was received from 130 respondents. After the responses were reviewed only 89 responses were found to be complete. Hence the sample size for this study is 89 respondents in Pune city.

The questionnaire had two parts. The first part of the questionnaire collected the demographic information of the respondents and also their experience of using internet and also mobile banking. In the second part of the questionnaire a five point likert scale ranging from strongly disagree (1) to strongly agree (5) was constructed. The constructs

investigated are intention, attitude, and usefulness, ease of use, subjective norm, and perceived behavioral control.

The questionnaire was pre-tested on a sample size of 30 respondents. Cronbach’s alpha was estimated to ensure and check internal consistency within the items included in each of the scales. The results of which are given below:

Table 1: Reliability Analysis Source: Analysis of Primary Data

Construct	Cronbach’s alpha
Behavioral Intention (BI)	0.907
Subjective Norm (SN)	0.887
Perceived Behavioral Control (PBC)	0.922
Perceived Usefulness (PU)	0.924
Perceived Ease of Use (PEOU)	0.956
Attitude (ATT)	0.838
Overall	0.977

DATA ANALYSIS AND RESEARCH FINDINGS: The demographic analysis of the data is represented below:

Table 2: Demographic Profile of Respondents Source: Primary Data

Items		N=89	Percentage (%)
Gender	Male	56	62.921
	Female	33	37.079
Age	< 20	0	0
	20-25	72	80.899
	26-30	8	8.989
	31-35	3	3.371
	>35	6	6.742
Occupation	Salaried	11	12.360
	Self Employed / Business	1	1.124
	Professional	3	3.371
	Homemaker	1	1.124
	Student	73	82.022
Using Internet since	< 5 years	17	19.101
	6-10 ears	50	56.180
	> 10 years	22	24.719
Mobile Banking User	Yes	24	26.966
	No	65	73.034

It has been observed from the above table that about 89% of the respondents are in the age group of 20 – 30 years.

Table 3: Results of Regression Analysis:

Dependent Variable	Independent Variable (Predictor)	Hypothesis	R squared (Adjusted)	t-value	Statistic Test		Results
					Sig	Beta	
Mobile Banking Adoption	Attitude	H1	0.736	2.659	0.009	0.353	Accepted
	Subjective Norm	H2		1.560	0.123	0.162	Fail to Accept
	Per. Beh. Control	H3		3.876	0.000	0.578	Accepted
	Perceived Usefulness	H4		1.328	0.188	0.196	Fail to Accept
Attitude	Perceived Usefulness	H5	0.780	5.855	0.000	0.645	Accepted
	Perceived Ease of Use	H6		2.368	0.020	0.261	Accepted
Perceived Usefulness	Perceived ease of use	H7	0.792	18.308	0.000	0.891	Accepted

The above table shows regression analysis and hypothesis testing. It has been observed that there is a significant positive influence of attitude ($\beta = 0.35, p = 0.009$) and perceived behavioral control ($\beta = 0.57, p = 0.000$) towards adoption of mobile banking. Therefore hypothesis H1 and H3 are accepted. However, surprisingly the effects of subjective norms and perceived usefulness on adoption of mobile banking are not significant. Hence we fail to accept hypothesis H2 and H4.

However from the further regression results it is observed that perceived usefulness impacts the attitude towards mobile banking significantly ($\beta = 0.645, p = 0.000$) and there is also a significant impact of perceived ease of use of adoption of mobile banking ($\beta = 0.261, p = 0.020$). Hence H5 and H6 are accepted. Furthermore H7 is also accepted as it has been observed from the results that perceived ease of use has a significant effect on perceived usefulness ($\beta = 0.891, p = 0.000$).

From the above research findings it has been observed that research hypotheses are partially supported though the overall explanatory power of the research model is high (adjusted R squared = 0.736) for mobile banking adoption.

As compared to the other factors attitude arises as the most powerful predictor of adoption of mobile banking ($\beta = 0.35, p = 0.009$). This points out at the importance of development of an attitude towards successful implementation of services of mobile banking.

CONCLUSIONS AND FURTHER RESEARCH

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