

Exploring Intention to Adopt Mobile Banking Amongst Indian Youth

Renu Aggarwal

YMCA, Faridabad, India

Monica Bhardwaj

*Fortune Institute of International Business,
New Delhi, India*

Abstract

The purpose of the present study is to investigate the major factors that influence the intention to adopt mobile banking. It explores the adoption factors using technology acceptance (TAM) and diffusion of innovation (DIT) theory. Major focus of the study is on the young consumer group that is more likely to adopt mobile banking. Analysis of the study is based on responses from college students in the national capital territory (NCT) of Delhi. Data is analysed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Results indicate that constructs viz., perceived usefulness (PU), perceived ease of use (PEOU), compatibility; trust and attitude are significant factors to be considered for determination of intention to adoption mobile banking. The study includes implications for researchers and practitioners in terms of identifying the key indicators of adoption of emerging technologies pertaining to mobile banking. It forms a base for future research to predict technology adoption in the context of developing countries.

Keywords: *Banking, Mobile Banking, Adoption, India, Youth*

INTRODUCTION

Mobile banking is an advanced form of internet banking (Akturan and Tezcan, 2012) that employs mobile phones to provide financial services to consumers electronically. It is articulated as an innovative marketing and customer relationship management (CRM) tool for financial firms. Mobile banking fabricates stronger associations between financial institutions and the customers (Riquelme and Rios, 2010). Mobile phones with progressively advance features have been embraced by people globally at an incredible pace in the last decade (Cruz et al., 2010). Total wireless subscriber base in India has grown at an observed monthly rate of 0.65 percent from October 2013 (875.48 million) to November 2013 (881.13 million) (Telecom Regulatory Authority of India, 2014). Reserve bank of India (RBI) data cited by Business Today (2013) depicts that mobile transactions worth 3.7 crores took place in 2012 (from February and November) growing up to approximately 1.7 times in volumes, which is almost a three-fold increase in its value (Business Today, 2013). The credit of money going straight into the user's account and money transfer online have increased from 14 percent in 2009 to 22 per cent

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in 2013 (IBEF.org, 2013). As the banking sector has evolved considerably from traditional brick and mortar banking model, banking activity is comprehended by self-service modes like automated teller machines (ATMs), internet banking, banking through short messaging service (SMS), etc. Mobile banking is the most recent of these innovative technologies. It is synonymous to convenience, efficiency, self-sufficiency, time and place independence and overall an enhanced experience. A branchless banking experience is augmented by mobile banking by eliminating both temporal and spatial constraints. In typical use situation like unanticipated requirement for a payment, time constraint, and running out of cash mobile banking has immense benefits and value to offer (Mallat et al., 2006). Using mobile banking customers can check account balances, carry out money transfer, pay bills, carry out shopping and other type of financial transactions.

In India, a large number of people reside in rural areas and 54.4 percent of them avail banking facilities as per census of 2011 (RBI, 2014). In terms of mobile services out of 873.4 million mobile connections (as on Jun 30th 2013), 350 million are from rural regions. Usage of Internet through the wireless phones is done by 143 million users. A big chunk of households (41.3 percent) is still unbanked and resides in the villages (RBI, 2014). This represents a broad segment of society that is still unbanked or under banked. Mobile banking is the finest alternate that could harness this potential of mobile reach ability and bank the unbanked population electronically (RBI, 2014) thereby contributing to economic development of the country. Technology is beneficial when utilized appropriately and acceptances of technologies as in case of mobile banking by individuals need to be understood using specific factors. Consumers in India are conservative in nature and tend to conduct banking transactions by traditional methods of banking. New technologies like mobile banking do offer ubiquity, flexibility, convenience yet it is perceived with mixed emotions. People prefer to visit the bank branch, stand in queues and wait to get the services delivered by someone they could see and communicate with then to conduct transactions electronically that appears elusive. Such technologies are observed as risky and people shun associating themselves with its intangible components involving monetary transactions. Lack of physical elements in communication between the bank and the consumer creates situation of insecurity that withholds bigger challenges (Mukherjee and Nath, 2003). Despite being the vital tool for financial inclusion the growth and adoption of mobile banking is observed significantly less than it was anticipated in India according to the concerns expressed by RBI (The Economic Times, 2014). The RBI technical committee identified that out of 870 million mobile connections and roughly 450 million bank accounts there were only 22 million active users

of mobile banking (RBI, 2014).

The present study explores the factors that influence youth for the acceptance of mobile banking in Indian context. India is a high context country and based on past studies the behavioural intentions vary significantly across cultures. Past studies have reported that demographics play a significant role in creating attitude towards adoption of innovative technologies (Crabbe et al., 2009). Age has been identified as significant indicator of attitude towards the acceptance of new technologies. India is a youthful economy. More than 50% of India's current population is below the age of 25 and over 65 percent are below the age of 35 (Indiaonlinepages.com, 2014). At present, every third person in an Indian city is a youth (The Hindu, 2013). Perception and tendency to experiment with new technologies is high among the youth and considering the vastness of youth population in India there exists immense growth potential for mobile banking (KPMG, 2011). Therefore, the following research questions are considered for the present study.

Research Question

Which factors predict the intention of Indian youth to adopt mobile banking?

The paper is organized in the following manner. First, the literature is reviewed and adoption models are discussed briefly and the integrated framework of adoption intention is proposed. Further description of major constructs in the proposed framework is provided. After this section, the discussion on the methods used to test the framework is presented followed by the analysis. Finally, the conclusions, managerial and theoretical implications of the study, limitations and future directions are presented.

LITERATURE REVIEW

The mobile banking is an emerging concept and there is a growing interest to understand the factors that influence its adoption. However, research in this area is still in its formative stage. Studies in past have suggested various theories to understand the acceptance of information systems but there are gaps indicating a proper standardized approach to understand the adoption behavior in context of mobile banking.

Crabbe et al (2009) used TAM to study the adoption of mobile banking in Ghana. Gu et al (2009) used TAM and extended it with trust to examine users' adoption intention for mobile banking. Akturan and Tezcan (2012) extended TAM to examine mobile banking adoption of the youth market in turkey. Chen (2013) study examined mobile banking services in Taiwan using diffusion of innovation model. Riquelme and Rios (2010) used TAM (Venkatesh and Davis, 1996) and theory of innovation diffusion (Rogers, 2003) to test the

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factors that can influence adoption of mobile banking among existing users of internet banking. Lin (2011) used innovation diffusion theory and knowledge-based trust literature to investigate mobile banking adoption. Owing to limited research and different types of models used in previous studies, it is clearly indicated that there exists a need for deeper research and an integrated framework to explain the adoption behavior in an improved way.

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The proposed integrated framework is based on TAM (Davis et al., 1989) and its revised version TAM 2 (Venkatesh and Davis, 2000) and includes elements of diffusion of innovation theory (DIT) with an additional dimension of 'trust'. TAM model is used due to its parsimonious nature, predictive power and its application in large number of empirical studies (Luarn and Lin, 2005, Mathieson, 1991, King and He, 2006). TAM provides clear understanding of the relationship between its constructs (Amin, 2007). Most importantly it established the constructs 'Perceived ease of use' (PEOU) and 'Perceived usefulness' (PU) that predict the acceptance of information system and information technology systems (Amin, 2007). Legris et al (2003) acknowledged TAM as a useful model, however, the need for integration into a broader model, which includes variables related to both human and social change processes and also variables related to the adoption of the innovation model. Apart from the TAM constructs, the present study incorporates compatibility drawn from DIT theory (Rogers, 2003). DIT theory assists in developing clear understanding and investigating the diffusion process across a country or region. An additional construct of 'Trust' is integrated to broaden the understanding of adoption of mobile banking among the youth and extend the predictive power of TAM. Besides perceived ease of use (PEOU) and perceived usefulness (PU), trust and compatibility constructs are believed to have significant influence on mobile banking adoption. Both constructs are created by social factors in which compatibility signifies belief and value system and trust upon banks while their infrastructure is influenced by social elements (Crabbe et al., 2009)

Constructs

PU and PEOU

If a user finds the given technology as enabler for performing in his/her job in a better way than this phenomenon is called (PU). If he/she finds the given technology useful, it is called as (PEOU). Davis (1989) defined PU as "the degree to which a person believes that using a particular system would enhance his or her job performance", and PEOU, in contrast, refers to "the degree to which a person believes that using a particular system would be free of effort." PU is associated with productivity whereas PEOU is associated with efforts

(Venkatesh, 1999). Gu et al (2009) validated the significance of PU and PEOU in intention to adopt mobile banking in Korea. Chiu et al (2009) studied 360 online shopping customers in Taiwan re-affirmed the significance of PEOU, PU on repurchase intentions in online shopping along with other constructs namely trust and enjoyment. Van der Heijden (2004) suggested that TAM constructs along with trust influence intentions to buy low-touch low-risk items through e-vendor. Hsu and Lu (2004) studied 233 users in the context of online games in Taiwan and suggested PU as an antecedent of acceptance, and confirmed that easy to use interface is vital in influencing its usefulness and flow experience. Luarn and Lin (2005) concluded that PU and ease of use significantly influenced mobile banking intention along with credibility, self-efficacy and financial costs.

Compatibility

Compatibility is defined as the degree to which the given technological innovation is perceived consistent to the values, experiences and needs of the potential users (Rogers, 2003). The more an innovation conforms to the prospective user's value system, norms and way of life more likely becomes its adoption (Greenhalgh et al., 2004). Perception of user's compatibility of mobile banking with their experiences, value and belief emerges as a specific predictor of attitude (Chen, 2013, Lin, 2011). Compatibility significantly influences behavioural intention to adopt mobile banking (Lin, 2011, Koenig-Lewis et al., 2010). Therefore, compatibility integrates well with the TAM. In case of technological innovations where the provider has virtual presence like online or mobile shopping, payments and transactions the degree of intangibility is higher. Since the service provider does not have a physical presence, there exists fear and uncertainty in the minds of user. If the potential adopter perceives mobile banking in harmony with pre-existing belief system, values, lifestyle and earlier experiences, their likelihood of usage of such kind of services increases (Koenig-Lewis et al., 2010). Youth are expected to recognize mobile banking as a service, which is easy to use, useful and having credibility when they hold positive beliefs about its compatibility (Koenig-Lewis et al., 2010). Hence, the present model incorporates compatibility as important construct of extended TAM.

Trust

In any business transaction, trust plays a very significant role. Particularly in e-commerce where buyers and sellers perform transactions in virtual mode, trust becomes more significant. There are transactions, which one might have never seen or interacted. There exists fear if the virtual provider becomes

opportunistic at customer's cost (Luo et al., 2010) or disappears or changes its identity (Gu et al., 2009). Uncertainty prevails whether or not the security system is effective and robust. The fear or risk is sometimes also associated with product or service quality. Hence, the trust factor is essential to build the faith in the system and the provider. Mobile banking similar to other innovations is a new technology where people are gradually getting familiar with it (Luo et al., 2010). Unless they are techno savvy (Luo et al., 2010), there is hesitancy regarding operating procedures besides security and privacy concerns. In such a scenario, adoption behaviour becomes sluggish. The intention of adoption is identified by trust and commitment (Mukherjee and Nath, 2007). Many people who are not willing to involve in online shopping or transactions have highlighted trust as the main deterrent. The open channel of transmission in wireless technology also adds to risk averseness and hampers trust in mobile banking (Luo et al., 2010). Trust is the deciding factor for the intention of adoption or non-adoption (Koenig-Lewis et al., 2010). Trust can be an enabler for adoption by overcoming the fear and minimizing the perception of risk (Luo et al., 2010, Lin, 2011). Hence, the present study incorporates trust to identify user's adoption intention towards mobile banking.

Attitude

Attitude is the positive or negative evaluation of certain behaviour (Ajzen, 1991). The attitude and intention have significant positive relationship in terms of mobile banking services (Chen, 2013). User's attitude predicts the intention to use mobile banking (Chen, 2013). Attitude must form part of m-commerce studies (Chen, 2013).

METHODS

The objective of current study is to explore the factors of mobile banking adoption. Hence, the methodology used is primarily quantitative. The survey instrument used for the study is questionnaire that was developed on basis of the literature review.

Instruments and Measures

The scale items used in the questionnaire are adapted from previous studies and are contextualized for the present study. For investigating online and mobile technology adoption, TAM has previously been validated in a number of researches (Davis, 1989, Luarn and Lin, 2005). All constructs used in the study were measured using multiple items on a seven point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). PEOU and PU scale items were adapted from the original TAM presented by Davis (1989). Compatibility scale items were drawn from Moore and Benbasat (1991) and scale items for trust

were culled from Liang et al (2011). Attitude and behavioural intention scale items were adapted from Taylor and Todd (1995).

Data collection

Data was collected from the users of mobile banking using self-administered questionnaires from 500 respondents from which 200 usable responses were drawn. Data was collected using both online and offline modes. For offline mode, mall intercept method and personal survey in educational institutes located in Delhi and nearby region were conducted. The respondents in mall intercept method were mainly the working professionals. Respondents from the educational institutes were the students from undergraduate and graduate streams in management area. Youth population in present study comprised of the individuals aged between 18 and 36. This age group was particularly chosen since previous researches have confirmed that young individuals are more techno-savvy and innovative. They are believed to be the early adopters of the latest technologies. Young customers are more likely to be accustomed to new technologies (Crabbe et al., 2009). There is strong positive relationship of age with technology acceptance (Mattila et al., 2002). Users of online banking in Finland were relatively young (Karjaluo et al., 2002). Main adopters of mobile banking in study by Sulaiman et al (2007) were mostly aged between 21 to 30 years. Around 40 per cent of population of India was aged between 13 to 35 years (which are defined as youth in the National Youth Policy (International Labour Organization (ILO, 2012). Hence, India is a perfect choice, as it comprises innovative and techno-savvy consumers, and more than 60 per cent of population representing largest youth population between age group of 18-36.

DATA ANALYSIS

Measurement model was examined by testing its reliability and validity. Reliability was tested using exploratory factor analysis. Further, validity of measurement model was tested using confirmatory factor analysis.

Exploratory Factor Analysis (EFA)

Exploratory factor analysis was conducted in order to develop factors that may explain the adoption intention of mobile banking technology. Factor analysis identifies the validity of the factors in the scale. The result of EFA extracted 4 factors with the Eigen values greater than 1 (Hair et al., 1995). The extraction of factors was done as per guidelines provided by Hair et al (1995). The rotation matrix is provided under **Table 1**. The criteria for

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extraction of factors were principal axis factoring with oblique rotation. Oblique rotation is highly likely to provide simple and easy to interpret results. In order to achieve a high quality of rotation decision oblique rotation is preferred (Conway and Huffcutt, 2003). The total variance explained by the factors was 65.687 percent.

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Table 1

Pattern Matrix ^a					Cronbach α
	Factor				
	1	2	3	4	
PEOU7	.832				.841
PEOU3	-.829				
PEOU6	.828				
PEOU5	.767				
PU2	.765				
PEOU1	.697				
PEOU4	.689				
PU3	.682				
PEOU2	.672				
PU5	.622				
BI3		.861			.880
BI2		.787			
BI1		.621			
Attitude3		.505			
Attitude1		.470			
Trust2			-.913		.867
Trust3			-.878		
Trust1			-.526		
Comp2				.922	.903
Comp1				.773	
Comp3				.728	
Extraction Method: Principal Axis Factoring.					
Rotation Method: Oblimin with Kaiser Normalization.					
a. Rotation converged in 8 iterations.					

Table 2

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.921
Bartlett's Test of Sphericity	Approx. Chi-Square	3175.084
	Df	210
	Sig.	.000

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Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was measured to be (KMO= .921) as shown in Table 2. The 1st factor that was extracted was PEOU, which had PU also overlapping. There were total 10 items consisting of 7 PEOU and 3 PU items with Cronbach $\alpha = 0.841$ (PEOU1, PEOU2, PEOU3, PEOU4, PEOU5, PEOU6, PEOU7, PU2, PU3, PU5). Second factor that was identified contained total 5 items with 3 items of BI (BI1, BI2, BI3, Attitude1 and Attitude3) and two items of Attitude ($\alpha = 0.880$). 3rd factor was trust with three items (T1, T2, T3) ($\alpha = .867$). The fourth factor was compatibility with three items ($\alpha = .903$) (Comp1, Comp2, Comp3). Hence, the internal reliabilities within the extracted factors were found to be high. In addition, the factor analysis was appropriate. The acceptable value of communalities is .50. In addition, the communalities extracted had all values higher than .50.

Confirmatory Factor Analysis (CFA)

CFA examines the validity of the measurement model. The validity comprises of convergent validity and discriminant validity. Convergent validity indicates the correspondence of measurement items to their factors and discriminant validity computes the statistical differences between the factors, if any (Zhou, 2011).

Table 3

Factors	CR	AVE
Trust	0.877	0.706
PEOU and PU	0.905	0.604
Comp	0.904	0.758
Attitude- BI	0.866	0.564

Table 3 shows the average variances extracted (AVE) and composite reliability (CR). The value of AVE measured for all factors is greater than 0.5 and CR values are higher than 0.8. Therefore, the present scale exhibits strong

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convergent validity (Gefen et al., 2000). Discriminant validity is computed by comparing square root of AVE with the correlation coefficient of the factors. As shown in Table 4 the value of square root of AVE for every factor comes out to be higher than its corresponding correlation coefficient with other factors. Hence, it shows strong discriminant validity (Fornell and Larcker, 1981, Gefen et al., 2000).

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Table 4: The square root of AVE (represented diagonally in bold and italicized) and factor correlation coefficients

	Trust	PEOU and PU	Comp	Attitude- BI
Trust	<i>0.841</i>			
PEOU and PU	0.575	<i>0.777</i>		
Comp	0.485	0.672	<i>0.871</i>	
Attitude- BI	0.648	0.668	0.637	<i>0.751</i>

DISCUSSION AND CONCLUSIONS

The aim of present study is to identify the factors that influence behavioural intentions of users towards the adoption of mobile banking. The study utilized constructs from TAM and DIT by reviewing the available literature and also included additional dimensions of trust. The new model proposes that the behavioural intention of the users for the adoption of mobile banking can be derived from PU, PEOU, compatibility, trust and attitude. The model was tested on 200 Indian mobile banking users. Using exploratory factor analysis it was identified that four factors influenced the behaviour intention of users to adopt mobile banking that were trust, compatibility, PEOU and PU were perceived as similar factors by the respondents and attitude and behavioural intention that are again perceived as similar by the Indian youth. Since mobile banking is conducted on wireless architecture and in online mode, the absence of physical presence of the service provider in front of the customer acts as deterrent. The open network may also be prone to security and privacy issues. In addition, product quality cannot be predicted. Therefore, trust is essential to overcome the fear of risk and uncertainty. Trust construct is likely to influence attitude for adoption of mobile banking technology. Also if an individual uses mobile banking it signifies that innovations fit well with the existing belief system, experiences and values of the user. Moreover, if the user finds that the new technology enhances his/her work efficiency and leads to productivity it may form a positive attitude towards its adoption. Likewise, if the new technology requires less efforts and skills to use it, the user is likely

to form a positive attitude towards its adoption. In other words, when the user finds mobile banking easy to use, useful and trustworthy, he is likely to form positive intentions to adopt it.

IMPLICATIONS

Theoretical Implications

The TAM model is a strong predictor of technology acceptance and parsimonious model among other adoption models. On basis of responses from 200 respondents in India, it is empirically substantiated that the variances of customer intentions can be significantly explained by the extended TAM. As discussed, the current TAM model explained 65.687 % of the variance in intention. Hence, this work contributes by indicating the potential validity and generalizability of TAM in the context of mobile banking adoption among Indian youth.

By adding the element of diffusion innovation theory “compatibility” and also “trust” construct, the study observed that PEOU, PU, compatibility and trust were four prominent factors that can predict human intention to adopt mobile banking. Subsequently, another theoretical contribution of present work extends the current theory on mobile banking adoption and emphasizes on the major factors that may influence the intention to adopt mobile banking.

Managerial Implications

Being an emerging technology the adoption of mobile banking is observed to be low as compared to its predecessor internet banking technology, this study strongly supports that PEOU, PU; compatibility and trust as the four potential prominent factors in building positive attitude and predicting consumer intention to adopt mobile banking.

When individuals perceive mobile banking as easy to use, they have increased willingness to employ them in performing their banking transactions. Hence, banks and financial institutions should lay more emphasis on designing mobile banking features that are useful and easy to use. The foremost business implication is indicative to banks that are advised to enhance the usefulness and ease of use feature of banking facility through mobile devices. In other words, banks are suggested to design ways to increase the familiarity of mobile banking and educate the new and potential users about its benefits and impact on their performance and efficiency. The familiarity can be increased through advertisements, press articles, social networking websites, etc. that create awareness about the range of services that could be availed using mobile banking and the indicative productivity that could be enhanced as compared to other banking channels. Furthermore, if the individuals perceive mobile

banking compatible with their values, beliefs and experiences it appears to be a good predictor of attitude towards adoption intention. In other words, individuals who make use of mobile banking services may find these services harmonious with their present lifestyle, preferences and value system. Hence, to attract and retain the customers, financial institutions must never overlook the compatibility of mobile banking services with individual's lifestyles and preferences.

In addition, trust is a predictor of attitude therefore the financial institutions and banks should build consumer trust by assuring them of their strong security mechanisms and establishing faith by forwarding guarantees, and provide their contact points in instances of concern. They should be publicizing the legal actions that can be taken or have been taken in fraudulent transactions. Such practices would further assure customers about the trust issues. In addition, by being aware of the consumer protection rights given by regulators and the firms an increase trust can be achieved.

LIMITATION AND FUTURE RESEARCH

The present study has Indian customers as respondents. The behaviour of respondents may change with different geographic locations hence further studies in other locations could provide more insights in applicability of the proposed model. The respondents in the present study were mainly the present technology users. Further researches could be carried out by targeting and studying the experiences and behavioural intention of non-users of mobile banking.

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Renu Aggarwal, YMCA, Faridabad, Haryana. Email: renu_aggarwal77@yahoo.co.in.

Monica Bhardwaj, Fortune Institute of International Business, New Delhi. Email: monica29rose@hotmail.com.