

AN ANALYSIS OF ANTECEDENTS OF MOBILE BANKING ADOPTION IN INDIA

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Abstract

Banking has been transformed with the advent of newer channels of delivery. Landscaping from the brick and mortar model, financial services are now available in more convenient, cost effective and secure mode. Mobile banking is the new and most popular delivery medium that has huge potential to give financial access. Also it is the most effective solution to the imminent issues relating to financial inclusion across the globe prominently in India. However the adoption of this new channel of delivery has its own inhibitions and it varies across cultures and context. The present study explores adoption factors of mobile banking in Indian context. Building on technology acceptance model (TAM) the present study extends it to elucidate the factors that impact the attitude to adopt mobile banking. Social influences have the highest impact on establishment of positive attitude towards mobile banking adoption. In addition trust and compatibility are significant factors in Indian context. The theoretical and practical implications of the study are discussed.

Keywords: Mobile Banking, Adoption, Social Influence, Trust, Compatibility, TAM, India

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1. Introduction

Banking services are recognized as deeply information intensive services that depend strongly on information technology in order to assimilate, process, and distribute required information to the intended users. So information technology is not only the facilitator of information processing but also enables banks to provide differentiated offerings to its customers. Amidst highly competitive environment banks recognize the need to continuously reinvent them and remain updated to offer services that are convenient and reliable to achieve customer satisfaction and retention (Tan & Teo, 2000). As indicated by Rayport and Sviokla (1994) businesses in future would be competing not only in the physical markets, but also in the virtual markets. Gikandi and Bloor (2010) study revealed that competitive forces are drivers of electronic banking adoption. Substantial innovations in information technology have vastly influenced the financial services industry (Lee et al, 2011). The internet is attributed as most economical distribution channel to offer uniform and standardized bank services like account services or transfer of funds (Polasik et al, 2009).

Mobile banking is accessing the banking services through wireless application protocol (WAP) via mobile devices like cell phones, smart phones, personal digital etc. It is also called as cell phone banking. Using mobile banking, users gain access to bank services such as account management, information inquiry, money transfer, and bill payment (Luarn & Lin, 2005). Aspirations of cost reductions in terms of operational and administrative costs motivated the banks to capture this electronic medium (Gikandi and Bloor, 2010). With the growing proliferation of mobile devices, the markets across the globe have saturated in terms of sales of mobile devices. Still the propensity of use of banking through these devices has not gained enough momentum. Launched as early as 2009, it has been many years since its introduction yet internet banking still succeeds in electronic medium. With newer and smarter mobile devices in the market that are designed to enhance the customer reach including unbanked and under banked populations, retain customers, increase performance and operational efficiency, grow market share, and offer diverse form of employ abilities (Shaikh, 2013). Nevertheless the use of these devices is not as pervasive as expected (Luarn and Lin, 2005; Shih et al., 2010).

2. Conceptualization

Mobile banking is primarily an individual activity and such activities of solitary nature have limited prevalence in collectivistic cultures like India (Zhou, Dai and Zhang, 2007). Indian collectivistic culture signifies the unit of society which comprises of not a single person but the entire family indicating collectivism (Van Slyke et al, 2005). A person in such society is defined and represented by kind of relationships he has and that extends beyond the family ties (Swierczek, 1991). With the newness of technology, the potential users might not possess sufficient awareness to build their perceptions towards this technology (Sawang et al, 2014). The individual's behavioural intentions hence are significantly shaped by opinion of people in his reference groups including friends, family and relatives (Zhou et al, 2010; Sawang et al, 2014; (Thompson, Higgins, & Howell, 1994). To the extent an individual perceives people in his reference groups are of belief that he must use the technology is termed as social influence (Venkatesh, Morris, Davis, & Davis, 2003). From the extant research on technology adoption, social norms to a very great extent are capable of explaining adoption of a new technology (Webster & Trevino, 1995; Al-Somali et al (2009). Social influences are analogous to subjective norm construct in theory of reasoned action (TRA) by Venkatesh et al. (2003) and display the impact of external environment factors like views, beliefs, opinion of significant others on individual's behaviour (Lopez-Nicolas, Molina-Castillo, & Bouwman, 2008). Their opinion influences the adoption and use of mobile banking (Hong, Thong, Moon, & Tam, 2008) Zhou et al (2010). The external factors and social influences contribute significantly to intention to adopt and are highly prominent in understanding of adoption behaviour of technology (Pedersen and Ling, 2002; Riquelme & Rios (2010). Additionally, the customers might hold positive or negative perceptions towards mobile banking adoption due to influence of family, friends or significant other's opinions. Likewise in certain situations individuals may adopt a technology to conform to others feelings instead of following their own preferences and belief (Davis et al., 1989; Al-Somali et al, 2009).

There has been debate on technology adoption factors, where technology acceptance model (TAM) by Davis et al (1989) have invariably been used to explore the influence of instrumental beliefs viz., perceived ease of use and perceived usefulness as determinants of adoption and use intention with system characteristics as strong external stimulus. While the behavioural sciences and social psychology theories, on the other hand have emphasized on social influences as major predictor of adoption intention. In recent past TAM2 (an extension of TAM model) integrated subjective norms to increase the predictive power of the

model (Venkatesh and Davis, 2000)(Lu et al, 2005).Based on the technology factors given by TAM perceived usefulness (pu) and perceived ease of use (peou) influence attitude for mobile banking adoption. PU and Peou are most important predictors of the TAM model (Davis et al. 1989)..If the system is free from effort it is termed as perceived ease of use (Davis et al. 1989). The degrees to which the system enhances user performance ie termed as perceived usefulness ((Davis et al. 1989).Based on past research if a system is perceived easy to use it has greater probability of influencing user's attitudes

H1- PU positively and directly influences the attitude to adopt

H2- PEOU positively and directly influences the attitude to adopt

SOCIAL INFLUENCES

Social norms have strong influence on individual behaviour in collectivistic society. Indians being collectivistic put major emphasis on group and authority to target the objectives of the group and comply with group norms to achieve the best fit and form an image in the group they belong to. Indians tend to strike a balance and harmony within the group and evade the separation and detachment from the group.A new technology generates uncertainty regarding the likely consequences for prospective users. Such uncertainties create scenario of discomfort and motivates individuals to reach out to their social groups to seek their advice and consultations. When potential user's have perceptions of less control on the new technology the high support and assistance from social influences caters to information and assurance needs to enhance the individual's intention to adopt. Also being collectivist individuals the tendency is to seek greater approvals or reduce disapproval from the referent group.So higher levels of control on the new technology can be achieved by seeking higher levels of approval from the significant others(Sawang et al,2014; Lu et al, 2005).So in context of culture, collectivistic people assign high precedence to 'in group' associations and aim at maintaining and nurturing these associations with propensity to follow and be part of the group norms (Franke, Hofstede, & Bond, 1991; Sawang et al 2014).

H3- Social influences positively and directly influences the attitude to adopt

COMPATIBILITY

India is more of cash carry culture and people do not have much experience transacting using newer smarter means like credit cards. Moreover experience with virtual transactions particularly using mobile device may not be identified compatible with Indians transacting preferences. The innovation

should be compatible with the individual's and group's values or beliefs Polatoglu&Ekin(2001). Compatibility is the degree to which a given technology is consistent with individual's needs, values, beliefs and experiences. Indian consumers prefer face to face interactions where personal relationships and interactions are of vital importance Individuals perceive mobile banking compatible if it fits the way they manage their finances. Technological innovation in services is different from products since it needs a different behavioural aspect. The scenarios where individual is not visiting the bank branch to conduct transactions or document management like getting e- statements and not the printed ones (Kolodinsky et al, 2004). If individual identifies himself with the new technology and it is in harmony with his lifestyle he would be more likely have positive attitude to adopt it. More is the fear of using new technology more would be the reluctance to adopt it. In other words higher is the compatibility for new technology higher would be tendency to adopt it (Jaruwachirathanakul& Fink, 2005).

H4-Compatibility positively and directly influences attitude for mobile banking

TRUST

The extant literature supports existence of trust issues in electronic transactions as they contain sensitive information involving financial transaction with files and information shared through the Internet (Suh and Han, 2002). There is need for the financial providers, banks etc to understand the development of customer trust to eliminate this trust gap that hampers the individuals to adopt mobile banking and hence enable them to generate more profitability (Gan et al., 2006; Yap et al, 2010). When trust is generated it eliminates fear of uncertainty and risk and enhances more positive attitude for intention to adopt(Vatanasombut et al., 2008). Trust builds increased customer commitment based on trust-commitment theory (Morgan and Hunt, 1994). Thereby retaining the customers and achieving customer loyalty. Loyal customers are the most profitable for the business (Mukherjee and Nath, 2003).

The uncertainty and risk in mobile banking exist due to virtual aspect of the transactions. The transactions are conducted in environment where there is lack of physical interaction between the buyers and the sellers that leads to greater degree of risk in electronic banking than in traditional form of banking (Suh and Han, 2002; Lee et al, 2011)). The customers may never see the sellers they are engaged in transactions with and cannot guarantee that they

would not become opportunistic on customer cost or change their identity (Mukherjee and Nath, 2003). Moreover mobile network is susceptible security attacks by hackers. The mobile terminals may be prone to attacks from viruses and trojan horses. Such issues increase user's risk and fear and may decrease their trust in mobile banking (Zhou, 2012)

Also mobile banking being relatively a new phenomenon in India individuals tends to possess higher apprehensions towards indulging with mobile transactions (Van Slyke et al, 2005). Trust, therefore is a strong factor in determining consumers' intent to use virtual transactions (Jarvenpaa et al, 1999; Van Slyke et al., 2004; VanSlyke et al, 2005)

H5-Trust positively and directly influences attitude for mobile banking

3. Research method

3.1. Instrument

The research model consists of six constructs which were measured on multiple measurement items. The measurement items were sourced from past literature for preserving the content validity and adapted for current study (Straub, Boudreau, & Gefen, 2004). The major factors were extracted from the elaborated review of relevant literature on mobile banking. Using exploratory factor analysis (EFA) scale was refined and tested for its validity. Then data was collected confirmatory factor analysis (CFA) was run to check the reliabilities and validities. Measurement items were measured using a seven point Likert scale, where range of choices were from "strongly disagree" (1) to "strongly agree" (7).

3.2. Procedures

Data were collected from universities and shopping malls in Delhi and nearby region. This sample was used since it consisted of large number of mobile phone banking users. The sample also targeted students for the current study since they represent the one of largest group of mobile Internet users in India. Data collection was done from colleges from students in graduate and postgraduate studies and shopping mall in Delhi NCT region which is an area having diverse mix of population from across the country and have more mature mobile banking users. A total of 700 questionnaires were circulated. After proper scrutiny of questionnaires 252 valid responses were received and response rate was 36 %.

4. Results

Table 1

Constructs	Items	Standardized Regression Weights	CR	AVE	α
P	PEoU1	0.724	0.876	0.505	.880
	PEoU2	0.61			
	PEoU4	0.701			
	PEoU5	0.692			
	PEoU6	0.818			
	PEoU7	0.737			
	PU3	0.673			
Compatibility	Comp1	0.786	0.864	0.680	.860
	Comp2	0.894			
	Comp3	0.789			
Trust	Trust1	0.789	0.843	0.641	.834
	Trust2	0.819			
	Trust3	0.794			
Social Influence	Soc11	0.849	0.838	0.722	.838
	Soc12	0.85			
Attitude	Att1	0.827	0.896	0.741	.893
	Att2	0.858			
	Att3	0.896			

Based on the two-step approach recommended by Anderson and Gerbing (1988), the measurement model was first analyzed to test reliabilities and validities of the scale followed by analysis of the structural model for testing of the research hypotheses. First, CFA was done to investigate the reliability and validity that included face validity, convergent validity and discriminant validity. Face validity was achieved through in-depth literature review.

Convergent validity indicates the correlations of the measurement items with their construct (Gefen, Straub, & Boudreau, 2000). Table 1 lists the values of standardized regression weights, their average

variance extracted (AVE), composite reliability (CR), and CronbachAlpha. It's clear from the table that most item loadings were highre than 0.7 and significant at .001. All AVEs, CRs, and Alphas exceeded the recommended threshold values of 0.5, 0.7, and 0.7, respectively (Bagozzi& Yi, 1988; Gefen et al., 2000; Nunnally, 1978). This exhibits that model has good convergent validity and reliability.

Discriminant validity is exists in case (1) measurement items load heavily on their respective factors ratherthan the other constructs in a CFA; and, (2) the square root of the average variance extracted (AVE) of each construct is higher than its correlations with the other constructs. In other words in signifies whether two factors are statistically different (Gefen et al., 2000). As visile from the Table 2, for each construct, the square root of AVE is higher than its correlation coefficients with other constructs.Thus the scale exhibits good discriminant validity (Boudreau, Gefen, & Straub, 2001; Fornell&Larcker, 1981).

Table 2

Square root of AVEs and factor correlation coefficients					
	SI	P	C	T	A
SI	0.850				
P	0.418	0.710			
C	0.520	0.694	0.825		
T	0.441	0.571	0.509	0.801	
A	0.610	0.624	0.658	0.574	0.861

Next step is to perform path analysis and test the model hypotheses. As suggested by Gefen et al. (2000), there should at least be 100–150 respondents forconducting the structural equation model (SEM) the present study has252 respondents, so the sample size is appropriate for SEM. SEM is done using Amos 16. The Fig. 1 shows the actual and recommended values of model fit indices are listed in Table 4. The values of fit indices are significantly good and below the recommended values. This confirmed a good model fit between the model and the data (Gefen et al., 2000).

Recommended and actual values of fit indices					
	CMIN	RMR	CFI	GFI	RMSEA
Actual values	1.675	0.047	0.967	0.916	0.052
Recommended Values	<3	<.05	>0.9	<0.90	>0.8
CMIN is ratio between chi square and degrees of freedom; RMR is Root mean squared residual GFI is goodness of fit index; CFI is Comparative fit index; RMSEA is Root mean square of estimation					

Figure1

Path Coefficients and their significance					
Hypothesis	Path			P	Label
H1	A	<---	P	0.013	Supported
H3	A	<---	SI	***	Supported
H4	A	<---	C	0.003	Supported
H5	A	<---	T	0.008	Supported

5. Discussions

In present study technology acceptance model was tested using survey questionnaire to explore the attitude of individuals towards mobile banking adoption. The results of the study show that the entire hypothesis is supported by the data. All constructs perceived ease of use, perceived usefulness, social influence, trust and compatibility strongly affect the attitude towards mobile banking adoption. This supports the previous researches. So if the bank promotes the mobile banking services to customers they must take into considerations the user's lifestyle and belief system, the impact of their social groups on their decision making, the nature of trust concerns an individual might have and aspects of usability and easiness to use their services.

For instance mobile banking services might be more beneficial to people who are either travelling or have full day engagements in their family, work or career. People who are travelling can avail these ubiquitous banking services free of time and place constraints. Likewise students who are busy in education and career building might like to invest their time wisely. They might not be financially sound but technology aspects are better understood and implemented by this user group. Also they could be instrumental in promoting these services to their friends and significant others in their reference groups if they are properly satisfied with the current services. Similarly working professionals would like to devote their time to their job instead of taking time off to visit banks to conduct transactions while standing in queues. The banks should assign proper focus to segment the target market and analyze the need and requirements of these distinct user groups. Also study emphasized the importance of people's opinion that represents traditional Indian culture. Taking forst lead in adopting a new technology enhances person's image and face value in social groups, peers creating increase in their social status.

6. Theoretical and practical implications

Mobile banking is a promising technology and has huge market scope. But the adoption rates are still very low. In order to broaden the mobile banking literature this study examined empirically the attitude towards adoption intention of mobile banking. This study extends the technology acceptance

model to explain the adoption intention. From a theoretical point of view, this research widens the knowledge on the factors that influence attitude towards mobile banking adoption from the. The most important theoretical contribution of present study is the Integration of social influences, compatibility and trust to explain the attitude of user's towards mobile banking adoption. It was determined that along with technology social influence, compatibility and trust also significantly influences user's attitude towards mobile banking adoption. It can be contemplated as when investigating the factors influencing user's attitude for mobile banking adoption, the focus should not only be limited with technology characteristics based on TAM, IDT, and UTAUT but also relevant focus must be given on behavioural aspects as well. Also in Indian context individuals perceive ease of use and usefulness as similar features The perceptions of usefulness overlap the easiness aspect of mobile banking giving a new dimension to the research model.

In terms of practical perspective, this research proved that social influence, compatibility and trust have significant influence on user attitude for adoption of mobile banking. Thus service providers need to improve the way these services are offered. The marketers could identify different segments of users with unique lifestyles and provide differentiated services to niche users. For instance, student group of users would be more concerned with the expenses involved in usage and different functional features however working professionals would prefer usefulness of such services and ease of their use.

As there are users with different psychographs where some are innovative, impulsive and risk takers innovate where others are variety seekers that may not be infrequent mobile bankers. Also demarcations are there on basis of socio demographic characteristics, different ways of living, spending differential time and money. Further the differences in inherent characteristics involving buying motives and needs, interests, values, and opinions. Hence a proper segregation of groups might help marketers in catering to the needs of different user groups and enable them in harnessing effectiveness of this technology in best possible means.

Indians perceive the ease of use synonymous to usefulness regarding mobile banking. So banks should promote their services highlighting on the one solution for both features. They should emphasize of creating awareness of diverse applications mobile banking can be used and educate the customers on features that may appear high tech but are only device specific. Since growing number of people own mobile devices these days so handling the device may not be a bigger concern but the fear of operating this application via mobile device might appear as a challenge. So banks specify on standardization of features and effortless usability by consumers.

Also the positioning of technology should be done in a way that helps individuals in having good enhanced experiences. As social reference strongly influences attitude to adopt mobile banking and these positive experiences would be the best promotion for any organization that comes straight from individuals in person's circle of trust. Hence the impact of opinions of friends, word of mouth promotion can influence individuals in their adoption decisions and they may follow others to adopt such innovations. These findings are in accordance with Suoranta and Mattila(2004) study but contradict study of Laforet and Li(2005). To sum up the banks and financial providers should make use of social media for promotion of mobile banking. As interpersonal communications exert strong influences that makes social media extremely powerful and popular medium. Advertising on Facebook, Twitter, Blog etc and focussing on word of mouth could help practitioners in increasing the awareness and adoption of this technology at greater length. Moreover trust is again a significant deterrent in mobile banking adoption. Therefore the banks and financial service providers must authenticate themselves by adopting legal and technological configuration such as third-party certifications to ensure payment security. Also proper communication with the customers strengthens trust. Greater is the degree of communication greater is levels of consumer trust and closeness feelings (Morgan and Hunt). So complete and comprehensive information about its products, transaction guidance, order delivery increases the consumer confidence. The banks must also use its reputation to instill consumer trust as firm's credibility is frequently related with the idea of brand equity. So to build and maintain trust, firms should clearly state security and privacy policies and regulations offer delivery and payment services via planned associations with active distribution mechanisms.

4. Conclusion

This study reveals the perceptions of current mobile banking users and university students in an emerging economy. It proposes that major antecedents of mobile banking adoption are social influence, compatibility and trust that influences user's attitude towards mobile banking adoption particularly in context of India. It also emphasizes that mobile banking is the most promising technology and can aid in country's development is leveraged appropriately. Further research should extend this model to test non users of this technology. Also in order to have generalized outcomes, similar studies can be undertaken in developed countries.

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