A Study on Development of Dual Phase Mobile Banking Adoption Model

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Abstract

The paper focused on development of mobile banking adoption model depicting two phases of mobile banking adoption vis-à-vis reducing the resistance to adopt mobile banking and inducing the adoption of mobile banking. The paper has used integrated Technology Acceptance Model (TAM) as proposed by Gu et al. (2009), along with two other factors namely Trust and Relative Advantage to study mobile banking adoption behaviour and Resistance Model as proposed by Laukkanen & Kiviniemi (2010) adding relative disadvantage (negative relative advantage) as one more factor, to study the mobile banking resistance behaviour. The data has been collected using online as well as offline questionnaire from 633 respondents in India. The model of dual phase mobile banking adoption will raise an opportunity for increased use of mobile banking in India.

Key Words: *Adoption Behaviour, India, Mobile Banking, Resistance Behavior.*

INTRODUCTION

The diversity of schemes introduced by Government of India, viz., Jan Dhan Accounts, Adhaar seeding and linking Mobile number with the bank account, have opened the doors for banks to get maximum advantage by introducing alternate delivery channels for banking services and mobile banking is the first priority of the banks among available alternative channels. Table 1 and Figure 1 depicted below have indicated the trends of wireless connections in India since 2012. As mentioned in Table 1 and Figure 1, there is 30% increase in subscribers from 864.72 million in 2012 to 1127.37 million in 2016.

Table 1 Number of Wireless Subscribers.

Year	No. of wireless subscribers (Millions)
2012	864.72
2013	886.30
2014	943.97
2015	1010.89
2016	1127.37

Source: TRAI Press Release No. 08/2013; 09/2014; 11/2015; 15/2016; 12/2017

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The above depicted increasing trend of mobile or cell phone usage in India since 2012 clearly indicates the opportunity for promoting mobile banking, but before talking about promotion we must have a look at the trends of Mobile Banking in India in the next section.

MOBILE BANKING TRENDS IN INDIA

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As discussed above, the increasing number of wireless connections and relative low score of financial inclusion in India attracting the attention towards that segment of potential Mobile Banking users who are having mobiles but not mobile banking. As mobile banking can also cover those nooks of the country as were not covered by the manual or branch banking. Even the exhaustive range of financial services available through Mobile banking will also convert major portion of partially included population to financially include. RBI data reveals the tremendous increase in value and volume of mobile banking transactions during the last half-decade in India. The table and corresponding figure below has been depicting the trends of Mobile Banking transactions in India since 2012.

Table 2: Trends of Mobile Banking Transactions Since 2012

Year	Volume of Mobile Banking Transactions (Million)	Value of Mobile Banking Transactions (Billion Rupees)
2012	5.22	5.98
2013	8.89	22.61
2014	16.78	113.23
2015	39.49	490.29
2016	110.64	1498.18

Source: RBI statistics on Mobile Banking Transactions

Matching both the dimensions of our discussion namely need of Mobile Banking and increasing number of mobile users in India necessitated the research work in the field of Mobile Banking. Now question arises what specifically about Mobile Banking should be the subject matter of current research.

IDENTIFICATION OF RESEARCH PROBLEM

With 30% increase in wireless/ Mobile subscribers since 2012, (TRAI Press release No. 08/2013; 09/2014; 11/2015; 15/2016; 12/2017), India have clear opportunity of promoting Mobile Banking. But India is still not able to promote mobile banking as compared to other developing countries. Hence the need of the hour is to understand the Mobile Banking Adoption and Resistance

behaviour. There are various factors influencing adoption and resistance behaviour in relation to mobile Banking, all cannot be blindly search for, so to find out the perfect model representing both dimensions of Mobile Banking Behaviour the seminal literature has been searched in the next section.

REVIEW OF LITERATURE

Any research to start with must explore the seminal studies conducted by the researchers in past on the related issues. This helps the researcher to find out the direction for study. Likewise the current study review the existing literature on all related keywords including Adoption of New Technology, Mobile Banking, Mobile Banking Acceptance, Mobile Banking Resistance etc. The literature review emphasizing the introduction of technology in banking sector to reach the people far from the manual bank branches (Sharma, 2009, Handoo, 2010, Fatima and Sukanya, 2014). So the researcher further reviewed the literature on Internet Banking (Aderonke and Charles, 2010, Jain et al., 2011, Ahmad and Al-Zu'bi, 2011, Vyas, 2012, Jain, 2011 and Dash & Tech, 2014) and its new and most compatible version, Mobile Banking (Bamoriya & Singh, 2013, Hanafizadeh et al., 2014, Yu et al., 2015, Afshan & Sharif, 2016, Bhuvana & Vasantha, 2017, Mehrad & Mohammadi, 2017). But the reports (RBI Statistics of Mobile Banking Transaction, 2015-16) on use of Mobile Banking in India forced the exploration of reasons for non acceptance or minimal acceptance of Mobile Banking by Indians. The studies on Internet Banking acceptance and Mobile Banking acceptance discussed the Resistance behaviour (Bamoriya & Singh, 2013, Yu et al., 2015) and/or adoption behaviour (Adholiya at al., 2012, Baptista & Oliveira, 2015, Chaouali et al., 2017) towards acceptance of new technology (Chemingui & lallouna, 2013, Mohammadi, 2015, Yuan et al., 2016).

The studies relating to the new technology acceptance has used Adoption Models like Technology Acceptance Model (Davis, 1989, Bhuvana & Vasantha, 2017), Diffusion of Innovation (Sulaiman et al., 2006, Shambare, 2011), Unified Theory (Carlsson et al., 2006, Yu, 2012, Baptista & Oliveira, 2015), Trust based Models (Masrek et al., 2014, Sun et al., 2017) and many more new integrated (Ha at al., 2012, Chen, 2013, Muñoz-Leiva et al., 2017) and newly developed adoption Model (Laukkanen, 2007, Zhou, 2012, Coster & McEwen, 2013, Chaouali et al., 2017). Consumer Resistance Theory has mostly been used in previous research work integrating with some new resistance factors to

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study the resistance behaviour in relation to Mobile Banking (Laukkanen et al., 2007, Laukkanen & Kiviniemi, 2010, Yu et al., 2015). Some of seminal studies integrated the factors relating to both resistance and adoption and developed integrated model studying resistance towards and adoption of new technology (Chemingui & lallouna, 2013, Mohammadi, 2015, Yuan et al., 2016). The introduction of new technologies like Internet Banking and Mobile Banking, in banking sector, as a solution to reach the unbanked to provide basic banking facilities has also been highlighted in the previous research work (Rani, 2006, Donovan, 2012, Siddik, 2014, Mutsune, 2015).

In India research work on Mobile banking has picked up during last decade. Studies either discussed Adoption behaviour for adoption of Mobile Banking (Laukkanen, 2007, Zhou, 2012, Coster & McEwen, 2013, Chaouali et al., 2017) or the Resistance behaviour towards Mobile Banking (Laukkanen & Kiviniemi, 2010, Yu et al., 2015). The new model integrating both Adoption and Resistance behaviour has been used very rear (Chemingui & lallouna, 2013, Mohammadi, 2015).

Going more deep in literature, various factors comes out from the seminal research work on Mobile Banking related behaviour and new technology adoption and resistance behaviour. The list of factors has been large enough including (DOI) relative advantages, compatibility, observability, perceived risk, trialability, perceived complexity (Sulaiman et al., 2006, Shambare, 2011) , (TAM) perceived ease of use, perceived usefulness (Kleijnen et al., 2004, Dasgupta et al., 2011, Kazi & Mannan, 2013), (UTAUT) performance expectancy, effort expectancy and social influence, accessibility, costs, trust, security concern, convenience, service quality, system quality, self efficacy, facilitating conditions, perceived credibility, result demonstration, visibility, personal innovativeness etc ((Carlsson et al., 2006, Yu, 2012, Baptista & Oliveira, 2015, Al-Jabri & Sohail, 2012). relating to adoption of Mobile Banking and for resistance behaviour highlighted factors' list include (CRT) image barrier, value barrier, tradition barrier, usage barrier, risk barrier (Laukkanen & Kiviniemi, 2010, Laukkanen et al., 2007,Yu et al., 2015), security concern, network problem, insufficient operating guidance, visibility, reluctance to change, result demonstration etc. (Cruz et al., 2010, Bamoriya & Singh, 2013).

The (CRT) consumer resistance theory (Ram & Sheth, 1989) in context of Mobile Banking highlighted five resistance barriers namely, Value Barriers, Usage Barriers, Risk Barriers, Tradition Barriers and Image barriers (Yu et al., 2015, Laukkanen & Kiviniemi, 2010, Barati & Mohammadi, 2009). Whereas adopting new integrated Resistance Models, Bamoriya & Singh, 2013, discuss about security concerns, network problems and insufficient operating

guidance, and Cruz et al., 2010, verified Cost, Unsuitable Device, Perceived Risk and Complexity as barriers to resist adoption of Mobile Banking in India.

Some previous studies on adoption behaviour of Mobile Banking employed the Diffusion of Innovation (DOI) theory (Dash & Tech, 2014, Kharim et al., 2011, Mattila, 2003 and Al-Jabri & Sohail, 2012) to find out the factors influencing adoption behaviour. Accordingly the relative advantages, compatibility and observability, perceived risk (Mattila, 2003 and Al-Jabri & Sohail, 2012), Self Efficacy (Brown et al., 2003 and Khraim et al., 2011) and mimetic forces (Dash & Tech, 2014) comes out as some of significant factors to influence the adoption of Mobile Banking. Same way in seminal studies additional factors like Ease of Use, Result Demonstrability (Moore & Benbasat, 1991), Perceived Image, Brand Awareness, Perceived Risk, Experience of using Cell phone (Chen, 2013), Banking Needs, Facilitating Conditions (Brown et al., 2003) etc., has been studied integrating with DOI to study Innovation Adoption behaviour. The Models used by previous studies employing Diffusion of Innovation Model as Adoption Model.

Some researchers employed unified theory of acceptance and use of technology (UTAUT) (Venkatesh & Zhang, 2010 and Yu, 2012) and listed performance expectancy, effort expectancy, social influence as indirect and behaviour and intentions as direct determinants for acceptance of Mobile Banking. Adding Hedonic Motivation, Habit, Uncertainty avoidance, Duration, Power Distance (Baptista & Oliveira, 2015), Price Value, Facilitating Conditions, Social Influence (Alawan et al., 2017) Structural assurance, users' familiarity with bank, Facilitating Conditions (Afshan & Sharif, 2016) like factors to Unified theory's base model past studies used the integrated models to verify the factors influencing Adoption of Innovation.

Further prior research used Technology Acceptance Model (TAM) of Davis, 1989 stressing upon two key determinants, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) influencing adoption of Mobile Banking. Ravindran, 2012, integrated MIAC (model of innovation adoption and continuance) with TAM to study the service quality perceptions and continuance innovation in Mobile Banking in Indian context. Gu et al., 2009 and Lee et al., 2007, conducted research in Korea applying Trust extended TAM. Gu et al., 2009, has studied Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) with trust whereas Lee et al., 2007 considered only Perceived Usefulness (PU) along with trust and Perceived Risk (PR). Both the studies emphasized the significance of Perceived Usefulness and trust. Lee et al., 2007, concluded that the Perceived Risk indirectly influences the adoption behaviour by affecting trust. Gu et al., 2009, concluded that Self Efficacy has been strong antecedent of Perceived Ease of Use and Structural Assurance

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has been strong antecedent of Trust but Perceived Ease of Use indirectly influences the behaviour through Perceived Usefulness. Same way Bhuvana & Vasantha, 2017, also studied Trust and Perceived Risk adding to base TAM model (Perceived Ease of Use and Perceived Usefulness) to inculcate adoption of Mobile Banking. Dahlberg et al., 2003, also conducted research using Trust enhanced TAM and found that trust has been the most significant construct of the model in explaining the adoption behaviour. Phan & Daim, 2011, prioritize technology, social factors and habit along with original TAM factors to explore the technology acceptance for Mobile Banking services and found that the Perceived Ease of Use and Perceived Usefulness has been top two factors that influence the adoption of mobile services. The various integrated models in combination with original TAM also add many other factors too like perception of Cost, Service Quality, Risk, Social Influence, (Kleijnen et al., 2004, Kazi & Mannan, 2013), Perceived Compatibility (Ha et al., 2012), Simplicity, Speed, Habits, Contents, Mobility, Enjoyment, Time efficiency, Enjoyment (Phan & Daim, 2011), Perceived Image, Self Efficacy, Tradition (Dasgupta et al., 2011), Word of Mouth, Social Norms (Mehrad & Mohammadi, 2017) in studies related to the adoption of Innovation.

Some of past studies merged two well known models of Diffusion of Innovation and Technology Acceptance Models of the Innovation Adoption like studies by Pushel et al., 2010, Koenig-Lewis et al., 2010, Munoz-Leiva et al., 2017. Koenig-Lewis et al., 2010, has found that Compatibility affected Perceived Ease of Use, Compatibility and Perceived Usefulness on one side and Trust and Credibility inversely affect the Perceived Risk on other side to inculcate the Adoption attitude, but Munoz-Leiva et al., 2017, oppose any impact of Risk and Perceived Usefulness on Adoption Attitude.

Trust as a significant factor was also studied in past research (Mukherjee & Nath, 2003 and Luo et al., 2010). Mukherjee & Nath, 2003, observed that shared value has been most critical to developing trust as well as relationship commitment. Communication has a moderate influence on trust, while opportunistic behaviour has significant negative effect. Also finds higher perceived trust to enhance significantly customers' commitment in online banking transaction. Vyas, 2012, defined trustworthiness of an innovation as degree to which the consumers have confidence in its marketer's reliability and integrity. Trust in one's bank depends on the reliability in correcting erroneous transaction, to compensate for losses due to security infringements and response to different queries in context of e banking study. The role of trust encompasses the exchange and interactions of a retail bank with its customers on various dimensions of online banking (Sohail & Shanmugham, 2003). In previous studies on trust based TAM, different views came out regarding the

relationship of Trust, PEOU and PU. Gu et al., 2009, hypotheses that PEOU develop trust and trust influence the degree of PU to influence behaviour intention and further stated that Trust develops in Mobile Banking due to one's familiarity with bank situational normality and structural assurance (most important) along with PEOU. Luo et al., 2010, conjointly examine multi-dimensional trust and multi-faceted risk perceptions in the initial adoption stage of the wireless platform and concluded that structural assurance significantly influences behaviour intention through adjusting people's risk perception. Kim et al., 2009, reveals that structural assurance personal propensity to trust and relative benefits significantly in the same order of significance help in developing initial trust in Mobile Banking. Dahlberg et al., 2003, included in trust extended TAM, perceived trust and disposition of trust as trust better explain the customer adoption of mobile payment solution. An innovation like Mobile Banking has been perceived useful if trust is developed by the adopters (Zhou, 2011 and Mehrad & Mohammadi, 2017), even the user having trust in Mobile Banking perceive it easy to use (Munoz-Leiva et al., 2017). Koenig-Lewis et al., 2010, proved that trust has been playing crucial role in reducing the risk perception of the users and a study by Afshan & Sharif, 2016, talks of Structural Assurance (Zhou, 2011) and familiarity with bank as role players to create initial trust in Mobile Banking, which effects the users' experience with Mobile Banking and creates further trust and continuance of usage (Sun et al., 2017). The Trust in innovation, particularly Mobile Banking creates positives background for its first usage and further creates the trust in Mobile Banking and inculcates the Adoption of Mobile Banking (Sun et al., 2017). Masrek et al., 2014, conduct a study to establish relation between the trust in technology and satisfaction from Mobile Banking. He discussed about three forms of trust, trust in Mobile Network, Trust in Bank's Website and Trust in cell phone device and found that all has been equally important for increasing satisfaction from the use of Mobile Banking.

Emphasizing the significance of Trust Dehlberg et al., 2003, Lee et al., 2007 and Gu et al., 2009 apply Trust extended Technology Acceptance Model in their study. Gu et al., 2009, studied Perceived Ease of Use and Perceived Usefulness with trust whereas Lee et al., 2007, considered only PU along with trust and Perceived Risk (PR). Both the studies reveal the significance of PU and trust. Lee et al., 2007, conclude that the PR indirectly influences the adoption behaviour by affecting trust. Gu et al., 2009, concluded that Self Efficacy is strong antecedent of Perceived Ease of Use and Structural Assurance is strong antecedent of Trust but Perceived Ease of Use indirectly influences the behaviour through Perceived Usefulness. Dahlberg et al., 2003, also conducted research using Trust enhanced TAM and found that trust is

most significant construct of the model in explaining the adoption behaviour. Phan & Daim (2011) prioritize technology, social factors and habit along with original TAM factors to explore the technology acceptance for Mobile Banking services and found that the Perceived Ease of Use and Perceived Usefulness are top two factors that influence the adoption of mobile services.

In addition to above literatures review the recent research related to Mobile Banking by Ragaventhar (2017) described that the fear factor in the mind of users of Mobile banking resists them from using Mobile Banking and same can be reduced by increasing knowledge. Tseng et al. (2017) says that there is always a trade-off between the use of mobile banking for convince and security in terms of privacy of information in today's mobile age and the privacy plays a significant role in influencing the adoption of Mobile Banking. Mehta, (2017) talks of challenges and operational risk faced by payment banks introduced by RBI in August 2015 and concluded that there is no 'Standard' or 'one size fit all' approach to tackle the challenges for Payment Banks and these banks should come out with their own operation risk management systems. Shaikh, Hanafizadeh & Karjaluoto,(2017), conceptualized the Mobile Banking and payment Systems (MBPS), and suggested new collaboration of banking, fintech and telecoms to provide value added services under MBPS. Bataev, (2017), study the comparative analysis of the virtual banks with classical financial institutions is carried out to assess the virtual financial institutions development in the Russian banking system and found that the use of the modern achievements of science and technology led to the creation of knowledge based economy.

As the literature review of the study pointed out that there were very few studies conducted in the past on both the dimension of behaviour. But the truth can't be ignored that before creating adoption of any technology innovation it must be first tried by the user and that first trial has always been affected by the resistance among the users. That's why various past studies included both resistance factors and adoption factors (Bharati & Mohammadi, 2009, Medhi et al. 2009, Yang, 2009, Chemingui & Lallouna, 2013, Thakur & Srivastva, 2013 and Mohammadi, 2015). Conducting study in Tunisia, Chemingui & Lallouna, 2013, examine the effect of five resistance barriers given by Consumer Resistance Theory and integrated Diffusion model with System Quality, Trust and Feeling of Joy. Same way using CRT for resistance, Bharati & Mohammadi, 2009, developed a model integrating TAM with Social & Cultural Factors and Facilitating conditions for adoption of Mobile Banking. Thakur & Srivastva, 2013, also used TAM integrated model as developed by Bharti & Mohammadi, 2009, but for resistance study they explained two types

of risks relating to Security and Privacy in context of use of Mobile Banking in India. In most simple form Mohammadi, 2015 included resistance as one of the factors to the model, in context of Iran.

Finally the review of seminal literature has been concluded with the facts that in India the research on Mobile Banking has been initiated late in comparison to other countries. Even the studies mainly focused on Adoption of Mobile Banking only and some of studies even focused on Resistance towards Mobile Banking only. Very rear, the studies in India considered both Adoption and Resistance behaviour for Mobile Banking. Accordingly the current study will focus on dual phase Mobile Banking Adoption Model of Resistance towards and Adoption of Mobile Banking in India.

THE PROPOSED MODEL

Most of researchers have used DOI, UTAUT, TAM and Trust extended TAM to found the factors significantly influencing the adoption behaviour for Mobile Banking, whereas some researchers developed their own models integrating the significant factors from prior studies and introducing some new factors in context of the attributes of their samples or culture or mind set of people belonging to the country in which they are conducting the study. The present study has concentrate on Technology Acceptance Model integrating the two important factors of Trust and Relative Advantage in context of India.

For Adoption side model the study used the existing model of Trust enhanced TAM used by Gu, Lee and Suh, 2009**,** who discussed about three basic factor influencing Adoption of Mobile Banking those has been Perceived Ease of Use, Perceived Usefulness and Trust. The author added one factor Relative Advantage to their existing model and introduced integrated Trust enhanced TAM model as above. The explanation of the factors has been discussed below.

PEOU refers to ease of performing banking transactions and navigation of bank's website in context of E-Banking in India (Sohail & Shanmugham, 2003). Perceived Usefulness (PU) refers to the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). Relative Advantage (RA) refers to the degree to which an innovation is seen as being superior to its predecessor (Vyas, 2012). The relative advantage of Mobile Banking over other methods of banking like e-banking and branch banking would really effect the adoption of Mobile Banking. Being location free (perceived convenience) and system free is very important relative advantage of Mobile Banking as other features of anywhere, anytime, one touch, convenience and time saving etc. (Püschel et al., 2010). The major trigger of Mobile Banking services are accessibility, anytime and anywhere

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availability, saving time and efforts (Mattila, 2003). An innovation is relatively advantageous if providing more benefits than its predecessors (Moore & Benbasat, 1991). Relative advantage of Mobile Banking significantly affects the Mobile Banking adoption (Moore & Benbasat, 1991, Püschel et al., 2010 and Kharim, 2011). About **TRUST**, Vyas, 2012, defined trustworthiness of an innovation as degree to which the consumers have confidence in its marketer's reliability and integrity. Trust in one's bank depends on the reliability in correcting erroneous transaction, to compensate for losses due to security infringements and response to different queries in context of e banking study. The role of trust encompasses the exchange and interactions of a retail bank with its customers on various dimensions of online banking (Sohail & Shanmugham, 2003). The shared value is most critical in developing trust while opportunistic behaviour has significant negative impact. The higher perceived trust to enhance customer's commitment significantly affect in online banking transactions (Mukherjee & Nath, 2003). In previous studies on trust based TAM, different views came out regarding the relationship of Trust, PEOU and PU. Gu et al., 2009, hypotheses that PEOU develop trust and trust influence the degree of PU to influence behaviour intention and further stated that Trust develops in Mobile Banking due to one's familiarity with bank situational normality and structural assurance (most important) along with PEOU. Same way Luo et al., 2010, concluded that structural assurance significantly influences behaviour intention through adjusting people's risk perception. Kim et al., 2009, reveals that structural assurance personal propensity to trust and relative benefits significantly in the same order of significance help in developing initial trust in Mobile Banking. Dahlberg et al., 2003, included in trust extended TAM, perceived trust and disposition of trust as trust better explain the customer adoption of mobile payment solution. Relative advantage as a factor influencing Adoption of Mobile Banking defined by Vyas, 2012, is comparative advantage of new innovation or technology as against its predecessor. The predecessor of Mobile Banking has been Internet Banking which offered anytime anywhere banking using personal computers with a lease line internet connection. The cost was high with limited mobility, as to carry Personal computer or laptop like a mobile phone mark the difference. In context of Mobile Banking in India the author verified the relative advantage based on three pillars- Telecommunication and or Internet Network, Availability of Internet connection on phone, Compatibility of cell phone device for Mobile Banking in terms of operating system, old device/smart phones which in real terms presents the competitive advantage of Mobile Banking over Internet Banking and/or Manual Banking.

The (CRT) consumer resistance theory (Ram & Sheth, 1989) in context of Mobile Banking highlighted five resistance barriers namely, Value Barriers, Usage Barriers, Risk Barriers, Tradition Barriers and Image barriers (Yu et al., 2015, Laukkanen & Kiviniemi, 2010, Barati & Mohammadi, 2009). Whereas adopting new integrated Resistance Models, Bamoriya & Singh, 2013, discuss about security concerns, network problems and insufficient operating guidance, and Cruz et al., 2010, verified Cost, Unsuitable Device, Perceived Risk and Complexity as barriers to resist adoption of Mobile Banking in India. The proposed study has also adopted the Consumer Resistance Theory as adopted by Laukkanen & Kiviniemi, 2010, while studying the role of information in Mobile Banking Resistance, but the present study has integrated one additional factor named Relative Disadvantage (The negative side of Relative Advantage).

First talking about functional barriers, When an innovation doesn't perform as per its monetary value, say cost-benefit analysis force the users to remain stick to existing substitutes of technology (Ram and Sheth, 1989). They resist to switching over to new innovation due to **Value Barrier**. In Mobile Banking the monetary values has involved, loss/theft of pin and mobile device (Al-Jabri & Sohail, 2012), security fraud, theft of Trojan causing their bank accounts leaked, easy attack on phone security (Huili & Zhong, 2011), unauthorized use, transaction errors, lack of transaction records and documentation, vagueness of transaction privacy, device and mobile network reliability (Dahlberg et al., 2003) has been the different facets of risks verified by seminal studies. Lee and Chung, 2009 and Laukkanen & Kiviniemi, 2010, explained the difficulty in using Mobile Banking in terms of visibility and demonstration due small screen size and tiny keys compared to personal computer's screen and keyboard. The way they perform their Banking transactions has been totally transformed by Mobile Banking. Limited timings shifted to anytime banking, personal visits shifted to anywhere banking, paper forms shifted to soft forms, shifting to totally new digital banking as compared to old manual banking has raised the Usage Barrier resisting adoption of Mobile Banking. In country like India, visiting the bank, maintaining personal relationships with bank staff and talk while having a cup of tea or coffee, amuse the banking customer and helps a lot in creating trust between the two. This tradition works a long way in maintaining long lasting relationship with the bank and resists the adoption of Mobile Banking. The pre existing negative image in the mind of users adversely affects the image for new innovation and users resists adopting the new innovation. Particularly for Mobile Banking, adverse image of Mobile telecommunication technology, telecommunication network, cell phones, bank etc. resists the users from adopting Mobile Banking. Addition of Rela-

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tive Disadvantage by the author particularly in context of Mobile Banking in India indicating the non availability of Mobile Banking on the Mobile device, owned by customer, due incompatible operating system and/or on old keyboard mobiles, network failure for telecommunication and/or internet network and cell phones without internet connection can perform limited USSD code related Mobile Banking.

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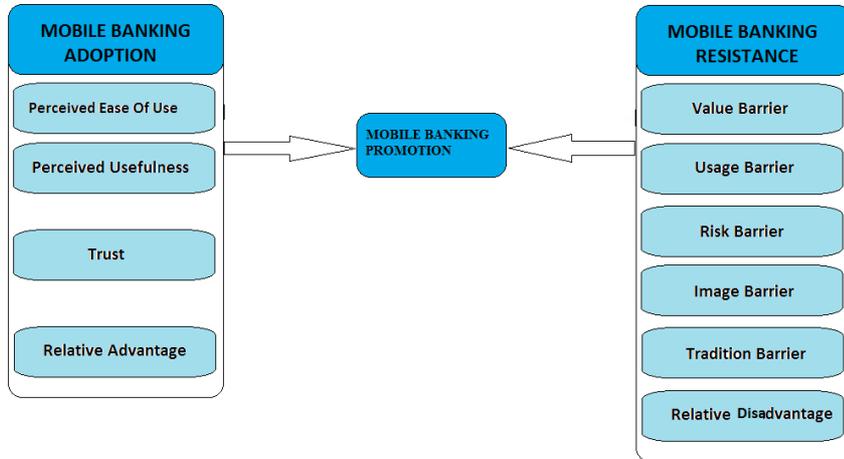Hence the model for proposed study has to be two phases as given below:

Figure 1: The Proposed Dual Phase Mobile Banking Adoption Model

Source: Gu et al., 2009, Laukkanen & Kiviniemi, 2010 and Author's contribution

RESEARCH METHODOLOGY

The current research is based on primary data collected using both online as well as offline methods. The questionnaire is designed using the constructs used in prior Trust extended TAM by Gu et al. (2009) and consumer resistance model by Laukkanen & Kiviniemi (2010). Divided into four sections the questionnaire focused on subject's Demographics in first section, Mobile Banking knowledge and usage, in second section, Mobile Banking Adoption Factors in third and Mobile Banking Resistance Factors in last section. The third and forth section is about how the respondent perceive each variable in proposed model and through a five point Likert scale the respondent is asked to mark his or her level of agreement or disagreement to each item.

SAMPLING DESIGN AND SAMPLE SIZE

The data used is collected from 633 potential and existing customers of banks in India using both online and offline questionnaires by personally contacting the visitors in the banks in three states or UTs of Punjab, Haryana and Chandigarh.

DATA ANALYSIS TOOLS

The statistical tool of Cronbach's Alpha to check the content reliability and validity and Factor Analysis for dimension reduction has been used by the study under consideration.

RESULTS OF DATA ANALYSIS

Section 1 : Demographic profile

The data about respondents demographics was collected under five parameters namely gender, age, occupation, education and area. The summary of demographic profile is given in the table below.

Table 3: Demographic Statistics

DEMOGRAPHICS PROFILE MASTER		
	Frequency	**Percent**
GENDER		
Male	431	68
Female	202	32
Total	633	100
AGE		
Up to 20	61	10
21-40	444	70
41-60	115	18
61-80	13	2
Total	633	100
OCCUPATION		
Service	402	64
Business	114	18
Housewife/ Unemployed	114	18
Other	3	0
	633	100
EDUCATION		
Up to Metric	39	6
Senior Secondary	67	11
Graduate	323	51
Post Graduate and above	204	32
Total	633	100

AREA		
Urban	347	55
Semi-Urban	141	22
Rural	145	23
Total	633	100

Source: Calculations done by Author

Section 2: Mobile Connection status and Mobile Banking Profile of Mobile User

Mobile Connection status

The table below evident that 94% respondents holds and uses Mobile Devices. Again, indicating the need to promote the mobile banking adoption.

Table 4: MOBILE CONNECTION status of respondents

	Frequency	**Percent**
Having Mobile Connection	592	94
Not having Mobile Connection	41	6
Total	633	100

Source: Calculations done by Author

MOBILE BANKING STATUS

The table below presents the number of mobile banking users and non users. Out of total sample of 633, only 372 respondents have been using mobile banking. The ratio of mobile banking users (59%), compared to the ratio of mobile users (94%), raise the importance of mobile banking promotion.

Table 5: MOBILE BANKING status of respondents

	Frequency	**Percent**
Mobile Banking Users	372	59
Mobile Banking Non-Users	261	41
Total	633	100

Source: Calculations done by Author

MODE OF MOBILE BANKING USAGE

Asking the respondent about the mode of using Mobile Banking, actually clarify the difference between Mobile Banking and Internet Banking. Those

who are using Mobile device to open website of bank to do banking tasks is not Mobile Banking but Internet Banking and there has been 11% such cases depicted in table below.

Table 6: MOBILE BANKING mode used by respondents

	Frequency	Percent
Website	42	11
Mobile Apps	152	41
Both	178	48
Total	372	100

Source: Calculations done by Author

Awareness about various Mobile Banking Services

The various Mobile Banking Services as listed by author has been given below.

1. Fund Transfer Services (NEFT/RTGS/Inter Bank/ Intra Bank/ Instant Money Transfer)
2. Remittances (Utility Bill / Shopping/Credit Card Bill/ Insurance Premium etc.)
3. Trading (Shares/MFs/Maintenance of DMAT Account/other investment Market Schemes)
4. Inquiry Services (Account Balance/ Mini Statement)
5. Information Services(Alerts of Account Activities like Cheque Book/ ATM Request status/Clearing Cheque Status/ATM/Online transactions)
6. Support Services (Cheque Book Request/ Opening FD or RD Account/ ATM Request/ Internet Banking request)

Table 7: AWARENESS of different MOBILE BANKING SERVICES

	Frequency	Percent
Fund Transfer	472	75
Remittances	388	61
Trading	144	23
Inquiry	335	53
Information	294	46
Support	224	35

Source: Calculations done by Author

Asking the respondent to select the service available under Mobile Banking, the respondent have knowledge about, the responses collected has been presented

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by the author with the help of table above. According to the table above, 75% respondents know about Fund Transfer Facilities, 53% respondents know about Inquiry related services, 61% respondents know about Remmitances services, 46% respondents know about Information related services, 35% respondents know about various Support services and very less i.e. 23% respondents know about trading related services, available on their Mobile Phones.

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Usage of various Mobile Banking Services for the Mobile Banking Users

This question particularly asked the Mobile Banking users, which of Mobile banking services they has been using given the same list as has been used for knowledge about Mobile Banking service. Accordingly the table below presents the information about the percentage of users out of total respondents, using different Mobile Banking Services.

Table 8: USAGE of different MOBILE BANKING SERVICES

	Frequency	**Percent**
Fund Transfer	319	50
Remittances	246	39
Trading	115	18
Inquiry	267	42
Information	216	34
Support	158	25

Source: Calculations done by Author

As clear from the table the majority of respondents use the fund transfer facility i.e. 50% and least used facility of Mobile Banking has been trading i.e. 18%.

Section 3: Factors affecting Mobile Banking Adoption Behaviour

The TAM model adding two factors of Trust and Relative Advantage is used under the research to study the mobile banking adoption behaviour, further divided into variables, presented by number of statements. PU and PEOU is determined by self-efficacy, system quality, social influence and facilitating conditions, likewise trust is determined by familiarity with bank, calculative-based trust, structural assurances and situational normality. Finally there are 28 statements representing 12 variables of mobile banking adoption behaviour.

Section 4: Factors affecting Mobile banking Resistance Behaviour

The resistance model of five barriers namely Usage, Value, Risk, Tradition and Image integrated with relative disadvantage represented by 22 items was taken to study the mobile banking resistance behaviour.

Reliability and Validity Testing

To remove the errors at early stage of research and to increase the efficiency of the research by ensuring that the questionnaire will collect the data relevant to the research objective, the validity and reliability testing of data collection instrument is vital for any research based of Primary Data Collection (Bolarinwa, 2015).

Reliability Testing

The reliability test measures the consistency in findings, based on data collected from the same respondents, over different time zones (Hair et al., 2006). Reliability ensure that the items of the measurement scale used by the study are error free and accurate (Zikmund, 2000). To study applied Cronbach's Alpha for testing the consistency between the items within the independent variables. Statistically the value of **Cronbach's Alpha** above 0.7 indicates that the variables of measurement scale are reliable (Nunnally, 1978). The author use SPSS version 23.0 to calculate the reliability statistics of mobile banking adoption scale and mobile banking resistance scale. The table below depicts the reliability statistics summary for two scales used in the study namely, 'Mobile Banking Adoption' and 'Mobile Banking Resistance'.

Table 9: Reliability Statistics Summary

Scale	No. of Cases	No. of Items	Cronbach's Alpha
Mobile Banking Adoption	372	28	.877
Mobile Banking Resistance	633	22	.853

Source: Calculations done by author

The Cronbach's Alpha reliability statistics in above table for mobile banking adoption scale has been .877 for total 28 items divided into 4 constructs and for mobile banking resistance scale has been .853 for total 22 items divided into 6 constructs. The sample size for both the scales has been different, as in the survey instrument the option has been given to mobile banking non users to skip the mobile banking adoption scale and directly switch to mobile banking resistance scale. Therefore there are 372 mobile banking users out of 633 total sample size of survey 1. The statistics indicate that both scales are reliable as the value of Cronbach's Alpha has been greater than 0.7 for both.

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Validity Testing

The validity means to ensure that the study finds what it has been intending to find (Zikmund, 2003). The validity is of three types, content validity, face validity and construct validity. In the present study the content validity of mobile banking adoption scale and mobile banking resistance scale pre exits as the well established questionnaires on mobile banking adoption and mobile banking resistance has been used. The questionnaire used for primary data collection for the study has been designed by merging two well established questionnaires of prior studies. The Section 3, Adoption Side Factors, the questionnaire has been taken from established research conducted by Gu, Le and Suh in 2009 on "Determinants of behavioral intention to mobile banking", cited 446 times and published by Elsevier Limited. Same way The Section 3, Resistance side Factors, the questionnaire has been taken from established research conducted by Laukkanen and Kiviniemi in 2010 on "The role of information in mobile banking resistance", cited 157 times and published by Emrald Group Publishing Limited. Therefore the Face Validity has been ensured by adapting the variables from two well established Models as above. As regards to the Content Validity, the views of ten experts have been considered to make further corrections and modifications in the questionnaire as a whole, like sequencing of questions in Banking Profile, Awareness and Usage of Different Services. These experts include two Research Professors, two Bank Managers, two IT experts of Mobile Banking, two Bank Customers using Mobile Banking, two Bank Customers not using Mobile Banking. The result of factor analysis has been thus discussed next.

Factor Analysis

Also known as factor reduction technique, used to reduce the large number of variables into small number of factors based on set of common score (variance). So it assesses the structure of the relationships between the large number of variables through a common variance, known as factors. Factor analysis, help the researcher by reducing the number large number of variables into small number of factors, thus form the new factors and define the new interrelationships between the items and forms the new constructs accordingly.

The exploratory factor analysis first test the adequacy of data and need of factor analysis through statistics of Kaiser-Meyer-Olkin test and Bartlett's test of sphericity, followed by calculation of the Communalities for each item in the scale, finally the factor loadings are calculated to define the new latent factors. According the author has explained the factor analysis in the same sequence.

Sample Size

The total 633 responses has been usable for exploratory factor analysis. But as explained above the number of respondents for mobile banking adoption scale has been different. Therefore total 633 responses has been available for mobile banking resistance scale and out of these only 372 responses has been usable for mobile banking adoption scale.

Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity

For applying factor analysis, the adequacy of sample is measured by KMO (Kaiser-Meyer-Olkin). Its value ranges from 0 to 1, where the value close to 1 indicates high variations in the observed variables. So the factor analysis would worth applying, for extracting new reshuffled factors (Field, 2009). The KMO above 0.5 is acceptable, but variations are analysed differently as KMO more than 0.9 is considered superb, between 0.8-0.9 as great and between 0.7-0.8 as good (Field, 2009). Likewise, significant (Sig. <0.05) Bartlett's test of sphericity amply that correlation matrix is not identical matrix so it's worth applying factor analysis. The KMO and Barlett's test of sphericity of mobile banking adoption scale and mobile banking resistance scale is presented below.

Table 10: Kaiser-Meyer-Olkin and Bartlett's Test

Statistics		Mobile Banking Adoption	Mobile Banking Resistance
Kaiser-Meyer-Olkin (KMO)		.798	.810
Bartlett's Test of Sphericity	Approx. Chi-Square	7503.451	7503.451
	Df	231	231
	Sig.	.000	.000

Source: Calculations done by author

For both scales, the value of KMO has been approximately 0.8, which has been indicating great opportunity to apply factor analysis, according to Field, (2009). Even significant Barlett's test of Sphericity i.e. Sig. <0.05, indicates that present correlation matrix is not identical matrix so there has been great scope for application of factor analysis.

COMMUNALITIES

The communalities indicate that how well the factorization has been performed for different variables. The values close to one depicts that the new extracted factors has explained most of the variations. The table below presents the value

of communalities for 28 items under 12 dependent and independent variables under mobile banking adoption scale.

Table 11: Communalities of Items under Mobile Banking Adoption scale

Items	Initial	Extraction
PEOU1	1.000	.871
PEOU2	1.000	.872
PU1	1.000	.806
PU2	1.000	.808
PU3	1.000	.777
T1	1.000	.709
T2	1.000	.742
T3	1.000	.710
SE1	1.000	.865
SE2	1.000	.861
SE3	1.000	.800
FC1	1.000	.886
FC2	1.000	.886
SI1	1.000	.871
SI2	1.000	.804
SQ1	1.000	.530
SQ2	1.000	.614
FB1	1.000	.878
FB2	1.000	.891
SA1	1.000	.750
SA2	1.000	.680
SN1	1.000	.732
SN2	1.000	.746
CT1	1.000	.774
CT2	1.000	.761
RA1	1.000	.577
RA2	1.000	.493
RA3	1.000	.576
Extraction Method: Principal Component Analysis.		

Source: Calculations done by author

Table 12: Total Variance Explained for Mobile Banking Adoption Scale

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.972	28.470	28.470	7.972	28.470	28.470	7.813	27.904	27.904
2	6.608	23.600	52.070	6.608	23.600	52.070	6.590	23.534	51.439
3	3.950	14.108	66.178	3.950	14.108	66.178	4.081	14.575	66.014
4	2.740	9.786	75.964	2.740	9.786	75.964	2.786	9.950	75.964
Extraction Method: Principal Component Analysis.									

Source: Calculations done by author

As evident from the communality statistics, factor analysis performs very well by addressing the variations in most of variables except Relative Advantage and System quality. As only half of the variations have been explained by the model. Thus the model explains the 75.96% variations in the predicted variables. Likewise the following table shows the communality statistics of 22 items under 6 independent constructs contained in mobile banking resistance scale.

Table 13: Communalities of Items under Mobile Banking Resistance scale

	Initial	Extraction
UB1	1.000	.771
UB2	1.000	.672
UB3	1.000	.744
UB4	1.000	.648
UB5	1.000	.740
VB1	1.000	.756
VB2	1.000	.778
VB3	1.000	.805
RB1	1.000	.584
RB2	1.000	.655
RB3	1.000	.715
RB4	1.000	.722
TB1	1.000	.872

TB2	1.000	.845
IB1	1.000	.775
IB2	1.000	.767
IB3	1.000	.771
IB4	1.000	.752
IB5	1.000	.603
RD1	1.000	.726
RD2	1.000	.758
RD3	1.000	.797
Extraction Method: Principal Component Analysis.		

Source: Calculations done by author

Table 14: Total Variance Explained for Mobile Banking Resistance Scale

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.538	25.172	25.172	5.538	25.172	25.172	3.618	16.444	16.444
2	2.956	13.434	38.606	2.956	13.434	38.606	3.561	16.184	32.628
3	2.401	10.914	49.520	2.401	10.914	49.520	2.703	12.285	44.913
4	2.087	9.485	59.005	2.087	9.485	59.005	2.325	10.566	55.479
5	1.766	8.029	67.034	1.766	8.029	67.034	2.291	10.414	65.894
6	1.508	6.857	73.891	1.508	6.857	73.891	1.759	7.997	73.891
Extraction Method: Principal Component Analysis.									

Source: Calculations done by author

Communalities of 22 items on mobile banking resistance scale clearly proves that the factor analysis explained most of variations for all six constructs named-Usage Barrier, Risk Barrier, Tradition Barrier, Image Barrier, Value Barrier and Relative Disadvantage. The table of total variance explained clearly that all six constructs deal with 73.89% variance.

FACTOR LOADINGS

As the main objective of the EFA is to reduce the predicted variables and devise the new model with latent variables using the rule of highly correlated items

within the factors and less or no correlation between the factors. According to the factor loadings calculated for each item of mobile banking adoption scale the new mobile banking adoption scale with 4 components or variables has been calculated by the author with the help of SPSS version 23.

Evident by the factors loadings the new factors under mobile banking adoption scale has been formed by merging the existing items in new arrangement as below. Finally the four factors namely PEOU (Perceived Ease of Use), PU (Perceived Usefulness), T (Trust) and RA (Related Advantage), has been extracted by exploratory factor analysis for mobile banking adoption scale.

Table 15: Rearrangement of 28 items of Mobile Banking Scale according to EFA

Perceived Ease of Use		Perceived Useful-ness		Trust		Related Advantage	
Existing	Re-arranged	Existing	Re-arranged	Existing	Re-arranged	Existing	Re-arranged
PEOU1	PEOU1	PU1	PU1	T1	T1	SQ1	RA1
PEOU2	PEOU2	PU2	PU2	T2	T2	SQ2	RA2
SE1	PEOU3	PU3	PU3	T3	T3	RA1	RA3
SE2	PEOU4	SI1	PU4	SA1	T4	RA2	RA4
SE3	PEOU5	SI2	PU5	SA2	T5	RA3	RA5
FC1	PEOU6			SN1	T6		
FC2	PEOU7			SN2	T7		
FB1	PEOU8			CT1	T8		
FB2	PEOU9			CT2	T9		

Source: Calculation done by author

Same way the factor loadings of 22 items contained in mobile banking resistance scale divided into 6 factors and not any item has been rearranged. No cross loadings in factorization tables of mobile banking adoption and resistance scales, has been good sign of construct validity. Even the high factor loadings (mostly above 0.7) also validate the constructs formed using EFA.

CONCLUSION

The research has the main objective to develop an integrated model to study two phases of behaviour towards Mobile Banking, first the resistance to use Mobile Banking and second the adoption of Mobile Banking, in order to help government and other stake holders in designing policies for increasing financial inclusion in India by promoting Mobile Banking. The research

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resulted into six important resistance factors namely value barrier, risk barrier, image barrier, tradition barrier, usage barrier and relative disadvantage and four adoption factors namely perceived usefulness, perceived ease of use, trust and relative advantage, influencing the adoption of Mobile Banking, moreover the model is developed using prior models used in seminal studies keeping in mind the culture and values of India.

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The paper presents the New Integrated Model for reducing customers' resistance and increasing adoption of Mobile Banking. More research in this field is still needed as Mobile Banking is in its naïve stage, the present research provide the newly developed model, which can be further evaluated by the researchers in future.

LIMITATIONS

Any research that is concerned with people's behavior and attitudes is bound to have some limitations. Those limitations need to be taken into consideration while interpretation and application of results. As the study has modeled around some prior studies in other countries, it has to be adapted according to Indian Values, Culture and believes. Such issues have been kept in consideration. The research targets an all India audience, as India is a country with such a big, diverse and unique Diaspora, no sample can be termed as perfect to represent whole India. The subject being more on the technical usage front, a pure random sampling wasn't possible and results need to be considered while generalizing.

IMPLICATIONS AND SIGNIFICANCE

The study will help all the stakeholder of the Banking industry in India, say Banks, Regulators, all existing and potential bank customers, Telecom. The study will help the regulators (RBI and GOI) and Banks to formulate the strategy to use mobile technology for increasing the Mobile Banking of households in the fold of formal banking services by introducing Mobile Banking after thoroughly understanding the factors influencing and resisting the usage of Mobile Banking. Such strategies will further help the existing and potential bank customers to use the Mobile Banking for their basic banking needs.

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