CU Global Management Review
Vol.13 | Issue 2 | July - December 2024, pp. 131-154

A Study on Fin Tech Vis-A-Vis Mobile Banking Technology Usage in Rural Market

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Abstract

Mobile banking technology is a mode of executing the financial transactions by using mobile communication devices. The growth of mobile banking usage in India has increased after launching Digital India by the Government in the year 2015. But the growth of this service is minimal in the rural market compared with urban market due to various reasons. This study aimed at finding out the factors influencing the non-usage of mobile banking technology service in rural market. Data is collected by using non-random sampling technique from 303 rural non-users of mobile banking from the villages. The collected data is analyzed by using exploratory factor analysis in SPSS. This study found five significant factors; the first major or the highest significant factor is perceived cost, second one is perceived usefulness, third one is perceived ease of use, fourth one is risk and the fifth one is trust.

Keywords: Mobile banking, rural customers, Technology, Usage

1. Introduction

The banking sector plays crucial role in the development of national economy. It is acting as a backbone of Indian economy which supports during boom as well as in recession. In India, the banking sector is categorized into public sector, private sector, foreign banks, cooperative banks and regional rural banks. So, there is a stiff competition among the players of this sector. In India, the banking sector has introduced several modernized services to their customers. This sector growth depends upon the diversified innovative services provided to their customers. The banks introduced innovative services when the boom of digitalization in India is started. Some of the innovative services introduced by the banking sector in India are online banking, RTGS, NEFT, debit cards, credit cards, ATM, mobile banking so on. These services are digitalized and taking lesser time to complete the transactions. The banking customer has moved from long standing queues to shun visiting banks for the transactions such as money transfer, balance enquiry, bill payments. With these services the customers can save their time and can do lot of transactions very easily. To provide the above said services to the customer the banking sector has introduced mobile banking service.

Mobile banking is the mode of performing financial services with mobile communications technology (Pousttchi and Schurig, 2004). It is a service provided by the banks to their customers for easing their access to the financial transactions. This is one of the tools using to achieve the objectives of financial inclusion (Chandrabai. T. 2017). Mobile banking has high potentiality and it follows the success of internet banking (Brown et al., 2003). This service is an evolution of internet banking and a better-quality digital service to the traditional banking channels such as ATMs and physical branches (Julio Puschel, Mazzon J A, Hernandez J M C, 2010). The customers can do their financial transactions related to their bank account through this service by using mobile phone (smart phone) and tablet. It uses software usually called an app provided by the banks and this service is available on 24 hour basis. Banks are offering mobile apps to their customers for carrying out common banking transactions as well as different banking services. Some of the common and different transactions takes place with mobile banking are balance enquiry, fund transfer, bill and credit card payment, loan statements, e-Passbook.

Technology plays a very important role in the operations of the banking sector. This technology became vital element in the competitive landscape of the financial service sector (Mari Suoranta & Minna Mattila 2004). Banking sector explored an opportunity of technology enabled services for providing better customer service and convenience. In this information era mobile phone became a common usage technology device for every individual. Even most of the rural people also started using the mobile phones (smart phones). They are using the mobile phones not only for common operations as making calls and sending messages they are also doing online transactions. Mobile phones are using as a channel which provides enormous potential in banking (Sindhu Singh, Vivek Srivastava & R.K.Srivastava.,2010). Today, a mobile phone became an essential part of customers' lives and an increasing number of these devices are also geared up with internet connection (Laukkanen and Lauronen, 2005). This mobile phone is the common device for the usage of mobile banking service. Mobile banking technologies are categorized into two major types. One is server side technology and the other one is client side technology. Examples of Server side technologies are Wireless Access Protocol (WAP), Short Messaging Service (SMS), Interactive Voice Response (IVR) and Unstructured Supplementary Service Data (USSD). Client Side Technology consists of applications, solutions and services offerings built or embedded on a Mobile handset.

Mobile banking is viewed as one of the most worth included and vital mobile commerce applications presently available (Lee et al., 2003; Varshney and Veter, 2002). M-banking (Mobile banking) is the service provided by the banks to their customers for doing the banking transactions easily and conveniently by saving their time without visiting the banks. Mobile banking is referred as cell phone banking and it uses mobile terminals to carry out transactions such as balance enquiry, bill payment and transference at anytime from anywhere (Dahlberg et

al., 2008; Tao Zhou, Yaobin Lu & Bin Wang 2010; Barnes and Corbitt, 2003; Scornavacca and Barnes, 2004). Mobile phones have given an opportunity to the financial institutions for providing innovative services to their customers. Technological advancement in mobile technology encourages banks to introduce the innovative services (Amin 2008). Some of the definitions of mobile banking are presented here: Tiwari and Buse defined as, "mobile banking refers to provision and an a ailment of banking and financial services with the help of mobile telecommunication devices. The offered services may include facilities to carry out banking and stock market transactions, to manage accounts and to access modified information". As per Reserve Bank of India guidelines u/s 18 of payments and settlements system Act, 2007; RBI defines 'mobile banking' as – "Undertaking banking transactions using mobile phones by bank customers that involve credit/debit to their accounts". Mobile banking concept was started in the year 2002 by the way of SMS banking in India. Before 2010 the mobile banking service was performed through SMS and after 2010 new mobile banking apps were developed with diversified services. M-banking allows customers to access their bank accounts by using mobile devices to check their account balance or to carryout financial transactions (Nicole Koenig-Lewis, Adrian Palmer and Alexander Moll, 2010) (Mohamed Gamal Aboelmaged and Tarek R. Gebba, 2013). In India, this service was first started by Union bank of India and the Reserve Bank of India (RBI) issued the first set of guidelines on mobile banking in October 2008 .

1.1. Mobile banking in India

The total population in India is 137.9 crores, out of which the urban population is 48.3 crores and the remaining is rural population . Both the urban and rural population in India is using the smart phones and internet. Earlier to the current statistics the number of users of mobile phones and internet was less in rural India compared to urban India. But the trend of using internet and smart phones in rural India has increased compared to urban India. As per the latest reports of Internet and Mobile Association of India (as of November 2019) there were 227 million active internet users in rural India and 205 active internet users in urban India . Smart phones and internet is required to use the mobile banking service.

The growth of the mobile banking usage is based on the customers' acceptance. The customers' recognition of the usage of M-banking (mobile banking) service relies upon many motivating factors or variables such as pursuance or compatibility, speed of transaction, communication, ease of use and assurance (Alsamyda.et.al, 2014). This service provides convenience to users and frees them from temporal limitations. It enables the users to perform ubiquitous payment. On the other side, the users may perceive great uncertainty and risk if they possess lack of previous experience or adopt mobile banking first time (Tao Zhou, 2011). So, users need to develop confidence to adopt and usage of mobile banking

According to data released by the RBI, the top five banks related to more than 92% of the total worth of mobile banking transactions in India are SBI (State Bank of India) leads with 36% market share, ICICI bank with 21.5% share, HDFC with 17.8% share, Axis bank with 12.8% share and Kotak bank with 4.7% share .

In today's market, mobile banking service is having tough competition from mobile wallets and UPI. Many companies introduced mobile wallet apps with diversified features. Like mobile banking, mobile wallets and UPI are also used for the services such as money transfer, bill payments, online purchases so on. So, mobile banking should provide adequate and secured service to the customer to face the competition from mobile wallets. The success of the mobile banking service depends upon security of the payment transactions. Cost, convenience, usability, security and privacy are the main important factors for the success of mobile banking (Herzberg, 2003).

2. Literature Review

Customer acceptance of mobile banking is influences by key drivers. This enables banks to know the key drivers influencing mobile banking usage intention (Sindhu Singh, Vivek Srivastava & R.K.Srivastava.,2010). F. Liebana-Cabanillas et al. (2017) found the variables which impel the loyalty of mobile banking users. Rakhi Thakur (2014) studies the effect of usability, service, trust on customer satisfaction and loyalty of customers using mobile banking service. Mohamed Asmy Bin Mohd Thas Thaker et al.(2019) identified how usability and customer service effects customer satisfaction and loyalty of Islamic mobile banking customers. Laukkanen T (2007) compared the customer value perceptions on internet and mobile banking. The acceptance of service depends upon its quality. So, the banks also provide good quality of mobile banking service. Many authors examined the service quality of mobile banking (Arcand M et al 2017; Jun M & Palacios S 2016; Nabila Nisha 2016)

. https://economictimes.indiatimes.com/industry/banking/finance/banking/top-5-banks-generate-92-of-mobile-banking-value/articleshow/51508193.cms?from=mdr

2.1 Studies on mobile banking usage barriers

There were many studies on adoption and barriers to the acceptance of mobile banking (Lee et al., 2003; Sulaiman et al., 2007; Brown et al., 2003; Laukkanen et al., 2008; Abhishek Behl and Abhinav Pal 2016). Laukkanen T et al (2008) explored the reasons for resisting mobile banking service by the bank customers. Laukkanen T & Kiviniemi V(2010) explored the influence of information and guidance on the barriers to adopt mobile banking especially on usage, risk, value, image and tradition. Laukkanen T (2016) explored the adoption barriers of mobile banking such as usage, risk, value, tradition and image in relation to demographic variables such as gender, age and income. Laukkanen T & Cruz P (2009) compared the consumer resistance to mobile banking of two European countries i.e. Portugal and Finland. Yang A. S. (2009) explored the factors associated with adoption and resisting mobile banking technology. Zhou T(2011) examined the influence of initial trust on taking up of mobile banking service.

2.2 Studies on factors influencing the adoption of mobile banking

Tashmia Ismail and Khumbula Masinge(2012) examined the factors influencing the adoption of mobile banking with a special focus on trust, cost and risk. Adoption and non adoption of mobile banking services by the customer depends upon several features and factors. The banker should identify the factors to design mobile services which are suitable to the bank customers. Ibrahim M. Al-Jabri & M. Sadiq Sohail (2012) examined different factors affecting the adoption of mobile banking using diffusion of innovation theory. Laforet & Li(2005) examined the demographic, attitudinal and behavioral characteristics of mobile banking users at China. Peter Tobbin (2012) determined the factors that will affect the acceptance of mobile banking by the rural unbanked in Ghana. He verified the factors such as perceived usefulness, perceived ease of use, economic factors and trust influence the rural unbanked people intention to adopt and use of mobile banking services. Indrani Medhi, Aishwarya Ratan, and Kentaro Toyama (2009) examined the variations in adoption and usage of mobile banking services in the selected countries by low literate and low income level individuals. They studied five existing mobile banking services across India, Kenya, the Philippines and South Africa. Gimun Kim, BongSik Shin & Ho Geun Lee (2009) identified the relationship between people trust and usage intension of mobile banking. Namho Chung and Soon Jae Kwon (2009) examined the effect of customer's mobile experience and technical support on mobile banking usage. Hsiu-Fen Lin (2011) explored the effect of innovation aspects (such as advantage, ease of use and compatibility) and knowledge based trust(such as competence, benevolence and integrity) on behavior of the customer to adopt mobile banking. Riquelme H. E. & Rios R. E. (2010) examined the adoption of mobile banking with the identification of the factors such as usefulness, social norms, risk and ease of use in relation to gender.

2.3 Acceptance Models used in Mobile Banking Adoption

Different theoretical outlooks have been developed to study the adoption of mobile banking: the

Technology Acceptance Model (TAM) model (Davis, 1989) and its extensions, innovation diffusion theory (IDT) (Rogers, 1995), unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003), Task technology fit (TTF) model proposed by Goodhue & Thompson (1995) and Initial trust model (ITM) suggested by Gefen et al (2003). The adoption of mobile banking was investigated with TAM model by Nicole et al. 2010; Crabbe et al. 2009; Cheah et al. 2011; Chitungo & Munongo 2013; Norzaidi Mohd Daud et al. 2011; Akturan U & Tezcan N 2012). Luarn P & Lin H. H. (2005) used TAM model with an extension of trust based and resource based constructs to understand the behavioral intension of the customers in using the mobile banking. SaharAfshan & ArshianSharif(2016) used the integrated frameworks of UTAUT, TTF & ITM to examine the role of technological and environmental variables in predicting behavioral intention of individuals to adopt mobile banking. Zhou T, Lu Y,Wang B (2010) used the integrated framework of TTF & UTAUT to explain the adoption of mobile banking. Baabdullah A. M. et.al (2019) used the integrated model of UTAUT2 and D&M IS success model to determine the factors that predict the use of mobile banking thereby it leads to customer satisfaction and loyalty. Goncalo Baptista and Tiago Oliveira (2017) applied gamification (use of game mechanics and game design techniques) with UTAUT model to identify the potential impact of gamification in the acceptance of mobile banking services. An integrated model of role of trust with TAM for customer acceptance of mobile banking was presented by R.K.Srivastava, Sindhu Singh &Vivek Srivastava (2013). Samaneh Barati & Shahriar Mohammadi (2009) explored a new model to improve customer acceptance of mobile banking. This model is integrated with Technology acceptance model (TAM) and innovation resistance theory. This model also included social and cultural factors, usage time, familiarity of mobile device, technology skills etc. Usage of the mobile banking service by the customer depends upon motivating and impeding factors. Alsamyda.et.al, 2014, developed a model to identify and examine the impeding and motivating factors for the usage of mobile banking service. They took the motivating factors as ease of use, assurances, speed of transactions, pursuance, communication, and impeding factors as personal desire, experience, and resistance to innovations, habit, and knowledge. They also took other dimensions as perceived usefulness, attitude towards mobile banking service, intention towards mobile banking service, and usage of mobile banking service.

2.4 Other studies on mobile banking:

Laxmi Mohan and Devendra Potnis(2015) evaluated the innovative mobile banking services of three companies are FINO, ZERO & ESE. The service provided by these three companies does not require mobile phone and need not to be known how to operate. These three companies employed human agents equipped with mobile technologies like Near Field Communication (NFC) and smart cards. Reeves and Sabharwal(2013) told that a successful association is required between a microfinance organization and the mobile network operator to help the poor for accessing the platforms used in mobile banking. Isaac Oluwatayo (2013) look at the extent that

cell phones have supported financial services among farming rural households in southwest Nigeria. Robert E. Hinson (2010) proposed a Mobile Banking Model named as Open Federated Brick and Click model that focuses on the key ways that the poor can access the banking services with increased pathways by using mobile phone technology. AB Singh(2012) examined a feasible model of mobile banking based money order by integrating India Post with banking sector. VK Gupta, R Bangoria & N Bangoria (2013) investigated the factors that influence customers decision to use specific form (SMS based) of mobile banking in India. Jonathan Donnera and Camilo Andres Tellez (2008) explored a new theory of m-banking/m-payments, i.e., technology use in the service of economic and social development (ICTD). This study introduced three cross-cutting ideas such as Extension/change, capacity of a communication technology to intensify existing relational and social structures and trust. Vishal Mishra & Shailendra Singh Bisht (2013) focused on the approach of designing mobile banking service which would be suitable to the poor customers.

The research on mobile banking service is done in different countries by using models such as TAM, UTAUT, TTF so on. Country wise (some countries) research work on this service in the world is presented below in Table-1.

Table-1

Author /s	Study Type	Hypothesis	Population Surveyed	Sample Size	Data Collection	Country
Sindhu Singh, R.K Srivastava (2018)	Empirical	Yes	Bank Customers	855	Online Survey using Questionnaire	India
Sumeet Gupta et. al(2017)	Explorator y	Yes	General Population in Metropolitan and urban places	176 Metropolitan, 70; urban, 106	Online Survey through mail	India
SaharAfshan & ArshianSharif (2016)	Empirical	Yes	Students from higher education and private Universities	198	Online Survey	Karachi, Pakistan
Alsamydai et al.(2014)	Empirical	Yes	Bank customers	56	Structured Questionnaire	Jordan
Payam Hanafizadeh et al. (2014)	Empirical	Yes	Bank customers (students from university and industry, faculty)	361	Questionnaire	Iran
Chitungo, S. K., & Munongo, S. (2013).	Empirical	Yes	Selected rural population	275	Paper & Pencil survey	Zimbabwe
Nicole Koenig - Lewis, Adrian Palmer and Alexander Moll 2010	Empirical	Yes	General Population	263	Online Survey	Germany
Isaac Oluwatayo (2013)	Descriptiv e	Yes	Farming households	360	Structured Questionnaire	Nigeria
Norzaidi Mohd Daud et al.(2011)	Empirical	Yes	Bank customers	300	Survey	Malaysia
Julio Puschel, Mazzon J A, Hernandez J M C (2010)	Empirical	Yes	Bank customers	666 333 -mobile banking users, 333 - mobile banking non - users	Structured Questionnaire	Brazil
Ja-Chul Gu, Sang -Chul Lee & Yung -Ho Suh (2009)	Empirical	Yes	Bank Customers	910	Web based survey	Korea.
Laforet &Li(2005)	Empirical	Yes	Online/mobile banking users and non users	300	Interview	China

The above literature is focused on acceptance models for adoption of mobile banking service. Majorly it covered the Metropolitan and urban customers. Also in India, mostly this study covered the urban and metropolitan customers. And there were very less number of studies on mobile banking usage in rural area of other countries. The purpose of this study is to find out the factors determining the non-usage of mobile banking service by the rural area bank customers. Before conducting this study, a pilot was conducted to identify the ratio of users to non-users of mobile banking in rural areas. The pilot study has shown that the number of non-users of mobile banking is more than the users in rural areas because most of the rural customers are depending upon other similar services. This pilot study has taken place in the form of open discussion with the bank employees and rural customers and taken the answers to few questions related to non-usage of mobile banking service. So, this study would like to find the factors influencing the non-usage of mobile banking service. This study would like to find the highest influencing and least influencing factors of this service. This paper is organized into different sections: section one is focused on introduction and mobile banking in India. Section two is focused on literature review. Section three presents research methodology which is further categorized into data source, scale and dimensions, sampling, and analyzing method, section four presents analysis followed by discussion & results, section five reports conclusion and section six presents' implications and future direction.

3. Research Methodology

3.1 Data Source

Various sources or strategies are available to collect the data. Researchers will use different strategies to get the data and to increase the accuracy level of the collected data. They use various strategies to collect the data as experiments, surveys using structured questionnaire, depth interviews, books, periodicals so on. These strategies are classified into primary source of data and secondary source of data. Primary data is the new data which is collected for a specific research problem (Hox J J & Boeije H R 2005). This study collected the data from primary and secondary sources. Previous research is studied to define this study research questions, which is the secondary source.

There are various modes to be used for primary data collection. But, an optimal data collection method is required to execute the given research question/s. The primary source used to collect the data for this study is survey method. Survey method helps the study in finding out the sample opinion and behavior. The modes using in present survey method is different from traditional method. The present survey modes are computer assisted and also depending on internet and web. In present surveys the researchers are opting mixed modes to reduce the coverage bias and minimize the cost and save the time (Edith D. de Leeuw 2005). This Study used the traditional survey of paper and pen mode, and it selected convenience sampling technique and questionnaires were issued to them.

3.2 The scale and dimensions

Survey is conducted by using structured questionnaire and it is issued to the selected sample in the villages at Warangal Urban district of Telengana State. The questionnaire is issued to the samples that are having the bank accounts. The questionnaire consists of two parts, the first part is covered the demographic variables of the sample and the second part is focused on the factors for non-usage of mobile banking service. It is designed by using Likert five point scale that included from strongly agree with five points to strongly disagree with one point. This five point scale was first introduced by Rensis Likert in the year 1930 with the wording as strongly approve; over the time the word approve has changed to agree (Chyung S Y et al 2017).

3.3 Sampling

A convenience sampling technique is used to collect the data from the rural customers and this study tried to cover the maximum number of villages in the selected mandals of Warangal Urban district. The selected sample is having bank accounts in both public and private sector banks but they are not using mobile banking service. The greater part of the rural population having bank accounts in Government banks than the private banks. Total 303 usable responses were collected and the sample age is attributed between 20 to 40 years. Guilford (1954) suggested a minimum sample size of 200 for reliable factor recovery. Cattell (1978) suggested a good sample size would be aimed at 500, however, it could be acceptable at 250 or 200 in the context of most problems.

3.4 Analyzing Method

Statistical techniques such as Cronbach's alpa, KMO AND BARTLETT'S Test, descriptive analysis, Pearson correlation coefficient and factor analysis is used to analyze the collected data. Factor analysis is done by using the software tool called statistical package for social sciences (SPSS) to identify the factors determining the usage of mobile banking by the rural customers.

4. Discussion & Results

There are several barriers for non-usage of mobile banking by the customer. Laukkanen et al 2008, explored five barriers as usage barrier, risk barrier, value barrier, image barrier and tradition barrier. Most of the research studies in this area are centered on the factors like perceived risk, perceived usefulness, perceived ease of use, perceived cost and trust(Payam Hanafizadeh et al. 2014;). The variables which are used for this study along with symbols are included in Table-3.

Table-3: Variables categorized in the study

S.No.	Variable	Symbol used
1	It would cost a lot to use mobile banking (e.g. buy a new mobile phone)	Q1
2	Not interested in using this service because small amount of transfers are not possible.	Q2
3	Internet cost of access for using mobile phone banking would be high	Q3
4	Security of financial transactions, being executed from some remote locations is less from mobile banking service	Q4
5	Not convenient to do the transactions such as payments and money transfer	Q5
6	The risk of getting fake SMS and scams are more.	Q6
7	Risks in loss of a mobile device may leads the criminals can gain access your mobile banking PIN and other sensitive information.	Q7
8	Operating mobile banking service is more difficult compared to mobile wallet	Q8
9	Not useful due to the risk with virus and malware attack your account information	Q9
10	Not a convenient service compared to debit card/credit card	Q10
11	Not aware of using the services from mobile banking and it would require lot of effort	Q11
12	Not possible to use this service easily because the network signaling system is poor at your village.	Q12
13	Overall, mobile banking service is not useful	Q13
14	I am concerned that the mobile banking will not provide the level of benefits that I would be expecting	Q14
15	When using mobile banking, I am afraid that I will lose money due to careless mistakes	Q15

Perceived ease of use: It refers that the user is willing to use the service without keeping any effort or without any difficulty (Davis et al 1989). That is the user or customer can use the service conveniently without any complexity. So, the banker should provide a simple and uncomplicated service to the customer for acceptance (Chitungo & Munongo, 2013; Mortimer et al., 2015; Koksal, 2016).

Perceived usefulness: It is the functionality of the service and how best fruitful service will be given to the customer. Davis et al. (1989) defined perceived usefulness (PU) as the ''subjective probability that make use of a specific technology will amplify the individual's performance''. This is a vital factor in determining the acceptance and adoption of new technology (Tan & Teo, 2000). Many authors said as Usefulness is an influential factor and it affects positively in taking up mobile banking service (Nysveen et al., 2005; Chiu et al., 2005)

Perceived Risk: It is one of the imperative factor the affects the customer behavior in decision making. The definition of this risk has changed in the current scenario. Earlier, risk meant for fraud, but today it is classified into physical, financial (monetary), social and psychological risks take place in online transactions (Im et al., 2008). The risk factor in this service is considered as very important because mobility of transactions may increase the threat to security.

Perceived cost: This factor will become a barrier for the usage of service when the cost of using the service will be more especially in rural areas. It includes cost of mobile phone, internet and transaction cost. In general, low costs will encourage the customers in usage of the service. (Wessels, L., Drennan, J, 2010) proved that there was a negative correlation between perceived cost and usage of the service.

Trust: This factor will retain the customers in the future with the banks. For this sake the banker should understand the perceived risks of the customers to identify the barriers in usage of mobile banking service. Kim et al. 2009 proved that this service is perceived as higher risk compared to conventional service, but primary trust is very important for the individual for utilizing this service.

4.1 Preliminary analysis

Descriptive statistics measures the central tendency and spread. It helps to describe & summarize the data in a meaningful way thereby to identify the patterns emerge from the data. Descriptive statistics of the select sample are shown in Table-4. Highest mean score is observed with Va4 (it is security of financial transactions will be less), and least mean score is observed with Va1 (it is disclose the personal information to others). Similarly, high standard deviation is observed with Va1 and low standard deviation is observed with Va8.

Table-4: Descriptive statistics of the select sample

Variable	Mean	Std. Deviation	Analysis N
Va1	2.68	1.366	303
Va2	3.16	1.243	303
Va3	3.20	1.137	303
Va4	3.63	.984	303
Va5	3.45	1.021	303
Va6	3.58	1.147	303
Va7	3.61	.956	303
Va8	3.43	.917	303
Va9	3.67	.988	303
Va10	3.11	1.178	303
Va11	3.10	1.149	303
Va12	3.33	1.246	303
Va13.	2.89	1.054	303

Source: Primary data

The validity or consistency of the data is measured with reliability. Reliable data will give the unique answer when it is tested several times in the research. Reliability is the portrayal of the total population accurately to get consistent or steady results over time and results can be reproduced under a related methodology. The popular indices of reliability are internal reliability and inter-rater reliability. Internal reliability or consistency is measured by Cronbach's alpha (Cronbach 1951) which is widely used measures of reliability in the social sciences (Bonett D G & Wright T A 2015). Cronbach's alpha value ranges between 0 and 1, but a negative alpha value will be observed when the variables are negatively correlated (Vaske J J et al. 2016). Many authors suggested the acceptable range for alpha, and the adequate range for alpha suggested between 0.65 and 0.80 for a scale applied in human dimension research (Green et al, 1977). However this alpha is not a gauge of unidimesnsionality (Ten Berge & Socan, 2004), unidimensionality is established with conducting principal component analysis (Tate, 2003). This study observed the cronbach's alpha value as 0.830 (Table-5) which is above the adequate range. This shows that the internal consistency of the data and the selected scale is satisfactory.

Table-5: Reliability Statistics

CRONBACH 'S ALPHA	N OF ITEMS
.830	**13**

In Factor analysis there is a need to find the correlation between the variables. The selected study variables are to be inter-correlated but should not possess high significant correlation. The high correlation among the variables shows the extreme multicollinearity which would cause complexity in finding the variables contribution in a factor (Field, 2000). The inter-correlation among the variables can be checked with SPSS by using Bartlett's test of spherity. It will test the null hypothesis and will be significant when the correlation matrix is an identity matrix. This shows that there is no correlation between the variables. Multicollinearity is checked with the determinant value of the correlation or R-matrix. SPSS output generates a correlation matrix consist of two parts, the top portion of the table contains Pearson correlation coefficients and the bottom portion of the table contains one tailed significance values. When correlation test is applied to the fifteen variables two variables (Va14 and Va15) got insignificant values. So, these two variables were removed and again applied the correlation test on thirteen variables. The correlation coefficient values for the thirteen variables are observed below 0.9 and significance values are less than 0.05. The determinant of correlation matrix is 0.002 which is above the acceptable value (0.00001). This found that there is no multicollinearity problem and all the factors are totally independent.

The strength of association between the variables is assessed by Bartlett's test of Sphericity

(Bartlett, 1954). This is used to assess the multivariate normality of distribution (Noor UI Hadi et.al 2016). Table-6 shows the KMO statistic which varies between 0 and 1. A value of '0' indicates that applying factor analysis is possible to be inappropriate and '1' indicates that the study will yield reliable factors. The KMO statistic value above 0.5 is acceptable, between 0.5 and 0.7 is mediocre, between 0.7 and 0.8 is good (Field 2005). The observed KMO statistic value is 0.678(Table-6) which is placed between 0.5 and 0.7. Bartlett's test significance value is less than 0.05 (Table-6) shows that there is some relationship among the variables. So, this study suggested applying the factor analysis to find the factors determining the usage of mobile banking technology.

Table-6: KMO AND BARTLETT'S TEST

KAISER-MEYER-OLKIN MEASURE OF SAMPLING ADEQUACY.		.678
BARTLETT'S TEST OF SPHERICITY	APPROX. CHI-SQUARE	1912.559
	DF	78
	SIG.	.000

4.1 Factor extraction

Eigen values are linked with each component or factor before extraction and after extraction. Before extraction SPSS identified thirteen linear components. The components with Eigen value greater than 1 are retained (Table-7). SPSS also exhibits the Eigen values in terms of % of variance. The first five components explained fairly large amounts of variance and the remaining components explained the small amounts of variance (Table-7). Total five factors are extracted with the attainment of total variance of 77.539%. The first component's Eigen value is 4.488 and shows 34.524% of total variance, second component explains 14.312% of total variance and the fifth component explains 7.762% of total variance. There is no change in the component's Eigen values and variances extracted in two categories: one is initial Eigen values category and the other one is 'extraction sums of squared loadings' (second part of Table-7)'. These two categories of values will be observed before rotation. The third part of Table-7 shows the Eigen values and variances of the components extracted after rotation of the components. The first component after rotation extracted the Eigen value as 2.544 and variance as 19.572% of total variance. This value before rotation is 4.488 (Eigen value) and 34.524 %(variance). This shows that there is a difference in value extraction before and after rotating the factors because rotation results in optimizing the factor structure.

Table-7: Total Variance Explained

Sr . No.	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.488	34.524	34.524	4.488	34.524	34.524	2.544	19.572	19.572
2	1.861	14.312	48.836	1.861	14.312	48.836	2.246	17.273	36.845
3	1.501	11.549	60.386	1.501	11.549	60.386	1.955	15.041	51.886
4	1.221	9.391	69.777	1.221	9.391	69.777	1.720	13.228	65.114
5	1.009	7.762	77.539	1.009	7.762	77.539	1.615	12.425	77.539
Extraction Method: Principal Component Analysis.									

Table-8 shows the communalities which show that to what extent the component correlates with other components. It is the part of common variance within a component or variable and its value is 1 before extraction. High communalities contributes to high factor recovery and its range is 0.6 to 0.8 (MacCallum et al. 1999). The first component got the communality value of 0.785; it means 78.5% portion of the variability is explained by this component. Similarly the other components also extracted the communality value of above 0.6. Chart-3 shows the scree plot slopes downward and shows the Eigen values from largest to smallest. It shows the factors extracted using Eigen values in exploratory factor analysis. There is a big drop between component one and component two and the other components varied slightly. Scree plots are subjective and arbitrary to interpret large sample, so, it is probably safe to assume Kaiser's criteria (Field, 2005).

Table-8: Communalities

	Initial	Extraction
Va1	1.000	.785
Va2	1.000	.854
Va3	1.000	.778
Va4	1.000	.796
Va5	1.000	.791
Va6	1.000	.738
Va7	1.000	.746
Va8	1.000	.768
Va9	1.000	.761
Va10	1.000	.758
Va11	1.000	.839
Va13	1.000	.691
Va12	1.000	.776
Extraction Method: Principal Component Analysis.		

Chart-3: Scree Plot

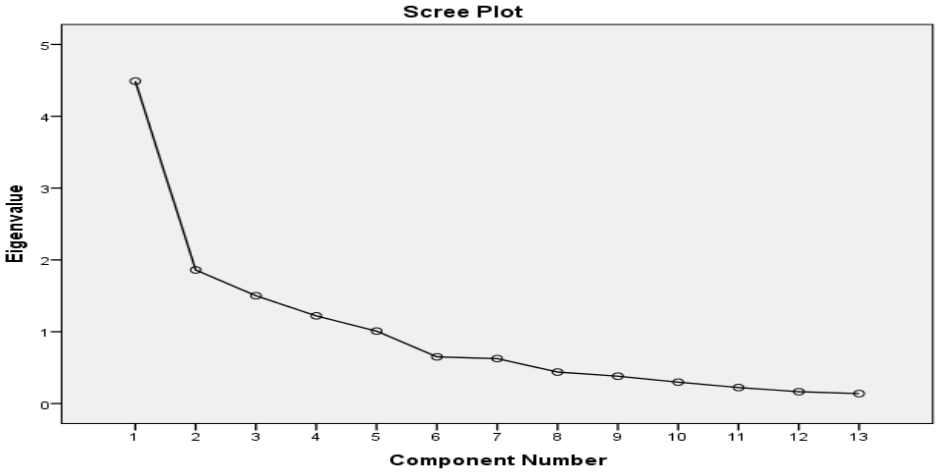


Fig. 1: Scree Plot

4.3 Factor Rotation

Rotation amplifies the loading of each variable under the extracted factor and these variables minimize its loading on the other factors. These rotations are of two types: orthogonal rotations and oblique rotations. This study applied orthogonal rotations with Varimax method. This method is preferable when the study expects the factors to be independent (Field 2005). Orthogonal rotation method is applied when there is no correlation between the loaded factors and oblique rotation is applied when there is some correlation between the factors. The result of component correlation matrix is observed as less than 0.32 after applying oblimin rotation method. This shows that there is no correlation between the extracted factors. So, Varimax method is applied to load the factors.

Table-9 shows the rotated component matrix shows the factor loadings of each variable. The variables in factor loadings with above 0.7 score are contemplated as significant and up to 0.4 score were retained (Wen &Lin, 2016). These values are loaded by suppressing the absolute values to less than 0.5. Minimum value criteria is applied for deleting the variables to be loaded in a factor, its value is greater than 0.5 (Karatepe et al., 2005), cross loadings greater than 0.40 or communalities less than 0.30(Garg et al 2014). The first factor is extracted with the variables Va1, Va2, and Va3, second factor is extracted with the variables Va5, Va9, Va10 and Va13, third factor is extracted with the variables Va11 and Va12, fourth factor is extracted with the variables Va6 and Va7, fifth factor is extracted with the variables Va4 and Va8. The strongly loaded variable Va4 and weakly loaded variable is Va5. The first factor is named as perceived cost, second factor is named as perceived usefulness, third factor is named as ease of use, fourth factor is named as risk and fifth factor is named as trust. All the above five factors are significantly influencing the non-usage of mobile banking service. Based on the Eigen values and variability, this study observed that the highest

influencing factor of non-usage of mobile banking service in rural areas is perceived cost and the least one is trust.

Table-9: Rotated Component Matrix

	Component				
	1	2	3	4	5
Va1	.865				
Va3	.781				
Va2	.764				
Va9		.852			
Va10		.817			
Va13		.625			
Va5		.605			
Va12			.870		
Va11			.853		
Va7				.838	
Va6				.679	
Va4					.866
Va8					.693

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

5. Conclusion

Mobile banking service market potential will be high in rural markets. But it is having a strong competition from mobile wallet services in rural areas. This study focused on identifying the factors influencing the non-usage of mobile banking in rural areas. Both technologies related factors and attitude or behavior of the customers will influence the usage or non-usage of the service. And the attitude of the customer will be affected by perceived risk and benefits. Most of the investigations in this area was identified the most influential factors of using this service were compatibility, trust, and usefulness. These results were observed by investigating the data collected from urban and metropolitan customers.

This study observed five significant factors namely perceived cost, usefulness, ease of use, risk

and trust. The highest or major influencing factor is perceived cost and the least significant influencing factor is trust. The other research studies in this area related to non-rural customers was observed as perceived cost was the least significant factor in usage of mobile banking service. This study observed perceived usefulness as the second uppermost influencing factor, ease of use as the third significant factor, and risk as the fourth significant factor.

6. Implications

This study helps the banker to rely upon increasing the benefits of this service to the customer. The bank managers will focus on building initial trust to accelerate the usage of M-banking service. The banker should encourage the customers in using this service by providing appropriate knowledge for usage of service. They have to educate the rural customers about the different platforms of mobile banking. The bank or financial institution can able to focus on offering monetary benefits to the rural customers for the maximum usage of this service. They have to implement loyalty programs with this service.

7. Future direction s

The future research in this area could focus on carrying out validate theoretical models applied to rural area sample. Future research could focus on impact of different types of perceived risks on non-usage of this service by the rural customers.

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