

Bankers' Perception of Technology – Enabled Financial Inclusion

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Abstract

Financial inclusion is gaining attention of policy makers and bank service providers worldwide. Technology can prove to be instrumental to outreach the masses at the bottom of the pyramid. This paper seeks to develop understanding on the perception of bankers' about the role of technology in financial inclusion. Descriptive statistics and factor analysis were applied using SPSS. The results were presented using frequency distribution, graphs, and pie-charts. The sample covers 103 bankers from 3 major public sector banks from Ambala district of Haryana, namely State Bank of India, Punjab National Bank, Oriental Bank of Commerce. The data was collected through structured questionnaire covering various aspects of technology-enabled financial services and bankers' attitude. The results of the present study provide evidences that efforts towards financial literacy, collaboration of commercial banks with post offices, MFIs and telecom companies, effective training to banking staff before introducing a technological change in financial services can help to access the underserved masses in practical terms. The study draws attention to the importance of technology as it has the ability to provide the services at less cost but bankers' positive attitude and willingness is essential to make its optimum use to outreach the underserved masses.

Key Words

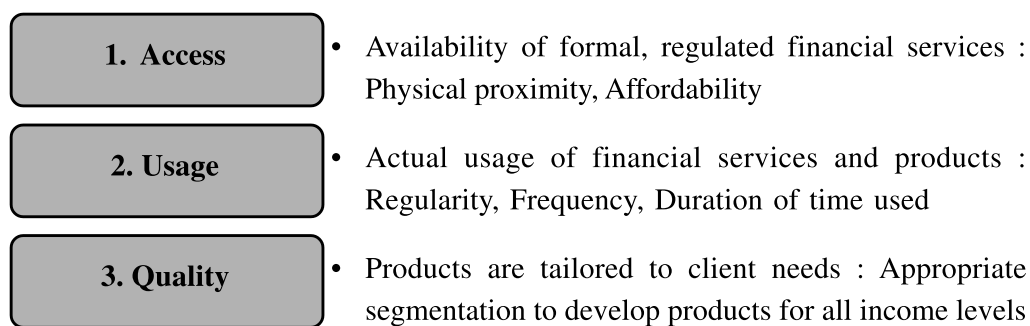
Financial Literacy, Inclusion, Financial Services

INTRODUCTION

The economic development of the country is directly related with the level of financial inclusion in the country. If the cost of financial services provided by

the financial institutions is less and these services are easily accessible to masses, then the economy of that nation will show a tremendous growth. But the biggest challenge before the financial institutions in developing countries is to reduce the cost of these financial services and to make these services affordable. The policy makers are working in this area to provide possible solution for this problem. The best solution suggested is to take the help online banking (Lichtenstein & Williamson, 2006).

Figure 1 : Dimensions of Financial Inclusion



Source : Adapted from Alliance for Financial Inclusion Data Working Group (2011)

The present study concentrates on accessibility aspect of financial services, which is feasible through recent advancements in information technology. Information technology can reach the underserved masses easily. Banks are also coming forward with the innovative IT based financial products (Consoli, 2005). The transaction cost can tremendously be reduced with information and communication technology (Nath *et al.*, 2001). Even mobile network operators are also getting involved in providing these financial services at the door-step of the customers.

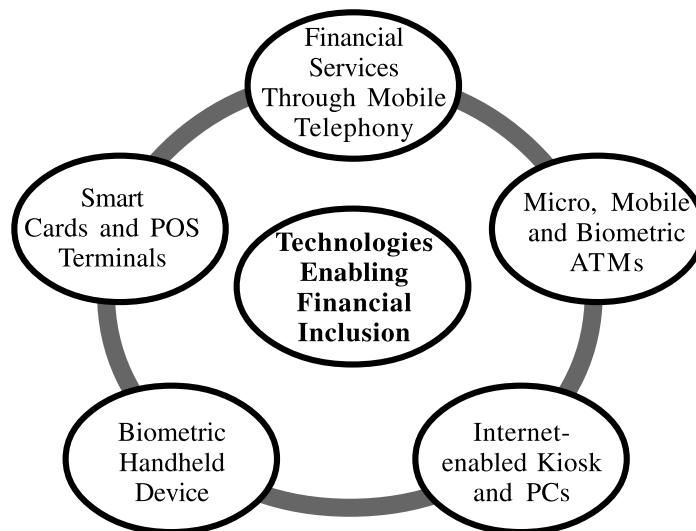
The basic idea here is to make the financial services a click away from the reach of the masses through the innovative technology. But the main hurdle is lack of knowledge and lack of technological infrastructure in the country. In India, telecommunication industry has shown tremendous growth since last decade. Banks and financial institutions are taking help of the mobile companies to contact the unbanked and remote population away from the financial services. These days the collaborations between the mobile manufacturing companies and the banks can also be seen. Here under this idea mobile manufacturing companies provide inbuilt application of the bank or financial institution in all its handsets (Gautam & Garg, 2014). With the use of this application customers can get their bank accounts opened and can perform financial transactions like making payments, transferring amount etc. the latest example is of Union Bank of India and Nokia (leading mobile manufacturing company in India).

For inclusive growth of nation, financial inclusion is essential. Financial inclusion is not only opening more and more bank accounts which remain inoperative thereafter but its scope is much wider (Ranjani & Bapat, 2015). The ultimate motive is to involve more and more people of the country with financial services, so that they can take the benefit out of it and financial markets of the country can grow with wider opportunities and scope.

As information technology of the country is very much flourished in India, it can contribute tremendously to achieve the goal of financial inclusion by spreading awareness among remote and unbanked people. But the concern-point here is that ICT industry in India is not playing the role expected from it. The need is to find out the reasons for this limited contribution, so as to find out the possible solution for improving the IT infrastructure in the country and connecting masses with IT so that maximum benefit can be taken from it. Various studies conducted earlier show that it is very much difficult in India to bring the underserved people to the banks due to the high illiteracy rate people have a fear and hesitation while using financial services.

RBI, with the help of various public and private banks, is taking strong steps to spread awareness among masses. Banks are directed by RBI to open their financial literacy centres in remote locations where people lack the knowledge about it. The initiatives undertaken by government and RBI to outreach the unbanked masses will work out only with the support of bankers who can contact the underserved rural population with the use of technology.

Figure 2 : Key Distribution Technologies for Financial Inclusion



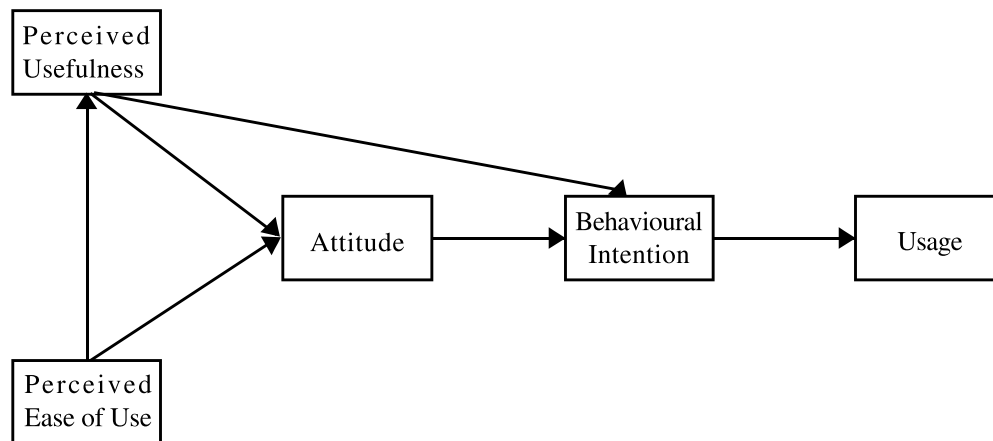
Source : Workshop on role of ICT in financial inclusion by United Nations Development Programme (UNDP) and NABARD, 2011; IMaCs Research

Technologies which can be used for financial inclusion basically can be Mobile Telephony or Micro, Mobile and Biometric ATMs, Internet enabled Kiosks and PCs, Biometric handheld device, Smart Cards and POs Terminals. The basic problem in introducing these technologies is the lack of knowledge and awareness among people of the country.

TECHNOLOGY ACCEPTANCE

Various studies conducted by researchers in different developing countries propounded that the acceptance on the part of users in very influencing factors determine the success of technological initiatives undertaken in that country. TAM i.e. Technology Acceptance Model was introduced by Davis (1989) to depict the impact of perception, behaviour and attitude of user in adoption of technological advancements. If the user perceives the usefulness of the technology and ease of use, only then it will have positive impact on attitude and behaviour of the users which leads to the usage of technology. Further, a number of studies have been conducted by various researchers to examine the validity of TAM in different situations. Ajzen (1991) introduced Theory of Planned Behaviour (TPB) to understand the user's perception of the system.

Figure 3 : The Technology Acceptance Model



Source : Davis (1989)

TAB explains that an individual's behaviour is influenced by his or her behavioural intention. Perceived behavioural control plays a significant role in TAB which is defined as perceive ease or difficulty to implement the particular behaviour. Lee (2009) propounded an integrated model of TAM and TPB reflecting strong explanatory power in predicting an individual's intention to use internet banking services. Ramayah *et al.* (2003) made an effort to identify an individual's

intention to adopt technology rather than actual usage through TAM. It supports the notion that perceived ease of use has a significant indirect impact on the adoption of the technology.

Consumer's acceptance of technology-enabled banking services is influenced by compatibility with a person's value and previous experience with computers (Jo Black *et al.*, 2001). Payments, information gathering and electronic fund transfer (EFT) are the most frequently used services by the consumers through internet-banking. At the same time, they are more concerned about security, reliability and privacy issues (Akinci *et al.*, 2003). Internet based banking has the potential to satisfy the consumers with lower fees and improved service quality (Howcroft *et al.*, 2002). Internet banking users are more loyal but the loyalty factor is affected by various variables namely web site quality, e-satisfaction, perceived security, corporate infrastructure, e-trust (Raitani & Vyas, 2000). Technology acceptance and adoption by consumers is essential to provide the financial services at cheap, easy and fast way. Various studies (Lee, 2009; Koenig-Lewis *et al.*, 2010; Ramayah *et al.*, 2003) reports perceived usefulness, perceived ease of use as influential factors for the adoption of technology. Technology acceptance can be used as criteria for segmenting the market and framing the marketing policies according to the needs of the consumers (Akinci *et al.*, 2003). There is need to reduce the level of cyber risk and ensuring more security while conducting transactions through internet. Technology contributes to reduce the operational cost, but, on the flip side, has negative effect on the bank's profitability due to network competition effects (Ho and Mallick, 2010). It is evident that the market share of the banks has expanded but has no significant impact on the profitability.

LITERATURE REVIEW

Financial inclusion is gaining attention of research scholars and policy makers worldwide. Various developed as well as developing countries are undertaking a number of actions to improve the level of financial inclusion through information and communication technology. To ensure substantial economic growth and development the inclusive growth is essential. Various policies being framed by the government can work out effectively if these are not implemented at country level. Social and economic exclusion of rural masses is a very complex problem, requires immediate solution. According to Dasgupta (2008), extent of financial exclusion in India is very high. Approximately 73% of Indians are not availing the benefits of financial service. In the study he suggested that there should be immediate legislation of Micro Finance Bill. He also suggests that the role of the government should be limited to framing and development of policies.

Anandarajan *et al.* (2000) reviewed the factors influencing the technology acceptance in banking industry with special reference to Nigeria. The study supports the notion that generalizability of TAM in different cultures is doubtful. The author opined that technology acceptance in banking industry is most strongly driven by social pressure and perceived ease of use. The data was collected from Nigerian bankers regarding the usage of microcomputers. The results depict national culture as the main construct in adoption of technology-enabled services in banking sector in less developed countries.

The paper by Nath *et al.* (2001) sheds lights on bankers' views about technology-enabled financial services. The study draws the attention to the issues like strategy formulation for internet banking and its impact on customer- bank relationship, customer's experience while availing the web based banking services. The study found that internet banking offers better customer services at least possible cost. The transaction cost through internet banking is far less than ATM or personal banking transactions.

Nitsure (2004) conducted a study on E-Banking challenges and opportunities in Indian context. The study focused on technology-enabled financial services, the benefits of the services to Indian customers and its contribution in economic development of the nation as a whole. The study incorporates that there is risk of arising digital divide in the country with the acceptance of technology-enabled financial services as most of the Indians are away from internet connections. It will be a challenge for Indian banks to get them connected with internet and so as with financial services. There is a great need to change the work culture in PSBs that is more focused on achieving organisational goals. The young experts should be employed by PSBs to implement the required changes in the system.

The paper by Canato and Corrocher (2004) discusses the relationship between the technological changes and the structural change in Italian banks. The output of the study reflects that physical branches are increasing rapidly in uncovered areas. The different channels are getting integrated with each other to extend the financial services at large scale with the help of ICT. The major problem faced during the period was the lack of technological infrastructure and skills in banks to use the technology effectively.

Ghosh (n.d.) propounded that micro finance institutions can work very effectively in rural untouched area. The help of Post Office bank accounts can also be taken in the areas where MFIs are not operating. Public sector banks are taking initiatives by establishing Biometric ATMs in rural areas with the purpose to connect illiterate rural masses with financial services.

Jones (2008) examines the role of credit unions in UK to eradicate the

poverty through financial inclusion. The study provides strong evidence that credit unions with the support of government can assist to address the needs of underserved masses. Credit unions are meant to provide financial assistance to salaried people in UK and have the potential to include the financially excluded people with the mainstream banking system. Credit unions help people to inculcate the saving habits and desist them from taking expensive home loans.

The paper by Kamath (2007) throws light on the difference between the financial inclusion and social banking. The study explored that the social banking activities used a decade before to connect and provide loans to rural masses were just focused on cheap interest rates but the loan policies of the banks were defective. Financial inclusion with the strategy of providing demand-based loans not the scheme-based loans is the need of the country. Financial inclusion should not be limited to providing loans to the poor at affordable rates but related financial services in the form of financial counselling, insurance and savings should also be a part of it, only then it can be a complete success in the country.

Laukkanen (2007) conducted a study to make a comparison between internet and mobile banking in context of customer value perception. Mean-end approach was used to measure the customer's perception towards mobile and internet banking. The study found that efficiency, convenience and safety are the silent attributes in determining the difference between perception regarding mobile and internet banking.

CGAP (2008) presented a report in which they suggested that branchless banking plays an important role in transmitting the transactions at a very less cost. This is possible with the help of technology. Technological advancements have made it possible to accomplish the transactions by simply clicking an option. Mobile phone-based as well as card-based services are being provided by the financial service providers. The basic problem faced while connecting with people is lack of knowledge about Information and Communication Technology (ICT).

Servon and Kaestner (2008) found that financial literacy programs can help to improve the accessibility of financial services. It is essential to motivate the banks to introduce financial literacy programmes. The study reflects a strong connection between technological literacy and financial literacy. ICT training and e-banking helps to promote financial literacy but these efforts are limited to literate and high income segment only. There is a need to develop some innovative ways of promoting financial literacy among rural and unbanked sections.

AFI for Financial Inclusion (2010) in their report suggests that a country-specific approach based on demand and supply-side barriers should be adopted.

Technological solutions and PPP (Public Private Partnership) can be used as an effective instrument to ensure the inclusive growth of the country. According to the report, there is a need to conduct a careful analysis of risk arises due to the use of innovative technology.

Van Winden (2010) conducted a study to measure the level of social exclusion in European countries and the role played by ICT in addressing the problem. The study found that the government of Netherland & U.K is taking keen interest in spreading awareness about information and communication skills among underserved masses. Government is taking active participation by setting up e-literacy centres namely "IT for all". The purpose is to educate people about how to use technology.

Arora (2012) conducted a study on Financial Inclusion and Human Capital to know the relationship status between the financial development level and education level. The study found that all financial inclusion initiatives undertaken by the government are supply-focused which is the hurdle in the way of solving the issue. There is a need to set policies in this regard and there is a need to get the positive outcome out of these policies. The study establishes the relationship between the level of financial development and human capital development. The study emphasises on increase in demand of bank branches network to improve degree of financial access among underserved masses in rural areas.

Arora and Meenu (2012) examined the bankers' perception towards microfinance interventions in Punjab state. The study found that there is great need to spread awareness about financial services among rural masses. Rural underserved people are cut off from the financial system and services. The initiatives undertaken by government are meant for underdeveloped people and if they will be unaware about it, then the purpose can't be solved. The study suggests that there is need to start awareness campaign in the village areas. Banks should take active participation to make the campaign successful. Rural women entrepreneurs can be connected with financial services through NGOs operating in that area. Financial institutions can collaborate with NGOs to start a literacy campaign to aware the women entrepreneurs regarding loan policies and other e-financial services of the banks.

Diniz *et al.* (2012) presented a case study on ICT-based branchless banking in Amazon country. The study reflects the significance of ICT-based banking in rural and unbanked areas which leads to socio-economic growth of the country. Information and communication technology has sorted out the problem of parsimonious bank branches in Brazil. Brazilian correspondent model through modern delivery models has shown tremendous growth in the country. The study supports

the notion that these efforts must be accompanied by inclusive mechanism like financial literacy to make the campaign more successful.

The study conducted on Mobile banking in Mexico as a mechanism for financial inclusion by Alonso *et al.* (2013) reflects that Mobile banking can prove to be instrumental in financial inclusion. The study found that the number of accounts possessed by male customers is much higher than female. This gap can easily be filled by mobile phones. Mobile banking has the potential to outreach the underserved people and is also cost effective.

The paper by Anson *et al.* (2013) examines the role of post offices in addressing the problem of financial exclusion. The study makes use of Global Findex data to documents that post offices are more likely to provide accounts to low income and disadvantaged sections of rural area. The outreach of post offices depends upon the size of post office network; the wider it is the more probability of having large number of accounts with it in comparison to the traditional financial institutions.

The paper by Nath *et al.* (2013) supports the notion that Information technology acceptance by bank employees is strongly affected by social influence, computer self- efficacy and technology facility. The study highlights that social influence increases perceived usefulness at the same time computer self-efficacy and technology facility enhances perceived ease of use which in turn has an impact on perceived usefulness.

The paper by Wentzel *et al.* (2013) reflects the impact of technology-enabled financial services in expanding financial inclusion in South Africa. Various technology-enabled financial services were imparted in different areas of South Africa to connect people at the bottom of the pyramid with the financial system. The study propounded an extended technology acceptance model focuses on attitude of people about the financial services, lack of education, trust of people on technology-enabled financial services. The study found that attitude of the people is most important factor, influencing the behaviour of masses which adopting technology-enabled financial services.

The case study on Initiatives towards IT-enabled financial inclusion conducted by Gautam and Garg (2014) on Union Bank found that the major concern for banks in the task of inclusion is operating cost and other charges. The study pointed out the importance of technology in facing the major problem of financial exclusion and suggested the use of technology in solving this problem specifically in rural areas. Micro ATM and Mobile banking are the initiatives undertaken by Union Bank in rural areas as a vehicle to outreach the excluded section of society. Camara *et al.* (2015) examined the factors that matter for financial inclusion in

Peru. The author opines that lack of money and high cost of financial services are the major causes of financial exclusion. This problem of financial exclusion can be addressed by inculcating financial education among individuals but more strongly in case of enterprises. Financial exclusion is more prone among informal enterprises and financial education can play pivotal role to eradicate this problem.

The paper by Ranjani and Bapat (2015) seeks to draw attention of bankers and policymakers to meet out the credit needs of bottom of pyramid masses. The paper highlights the reluctance of low income borrowers to the banks. More efforts are required on the part of bankers to increase the usage of bank accounts by providing more user friendly products. As a part of financial inclusion campaign, unbanked masses are approached but still the accounts are inoperative. The results of the study document that with easy documentation and less loan processing time borrowers can approach the banks without fear and hesitation.

OBJECTIVES OF THE STUDY

The primary objective of the present study is to get the deep insight on the role of information technology in financial inclusion. The main objectives of the study are as follows :

- To know the probable reasons for the financial exclusion and limited success of financial inclusion practices in Indian scenario.
- To trace out the opinion of bankers' about the role of information and communication technology in expanding financial inclusion.
- To provide some useful and practical suggestions for expanding financial inclusion through information technology.

RESEARCH GAP

Financial inclusion is gaining attention of policy makers and bank service providers worldwide. Technology can prove to be instrumental to outreach the uncovered masses. The present study is an attempt to investigate the perception of bankers about the role of technology in financial inclusion. In banking industry the regulators and government is introducing various policy measures and strategies to ensure the inclusive economic growth of the nation with the least consideration of the perception and attitude of bankers. Ultimately bankers have to implement these technological advancements and a few studies have been conducted to measure the attitude and perception of bankers towards these technological interventions.

THE DATA

In order to gain the fuller insight on the future prospectus of IT as an enabler to provider financial services to underserved people, the survey was conducted on the employees of three major public sector banks; namely State Bank of India, Punjab National Bank, Oriental Bank of Commerce. Data was collected with the help of the self-administered questionnaire that was specially designed, based on extensive review of literature, to achieve the objectives of the study. The total 150 questionnaires were distributed, out of which 103 were received duly filled by bank officials. A sample of 42 bank branches, both from rural and urban areas of Ambala district, was selected. These three leading public sector commercial banks were selected based upon the financial inclusion initiatives and practices undertaken by them. The details of branches covered are as follows :

Table 1
Sample Design and Target Population

| S. No. | Name of Bank | Urbanvisited Branches | Rural Branches Visited | No. of Respondents |
|--------|---------------------------|-----------------------|------------------------|--------------------|
| 1. | State Bank of India | 10 | 6 | 43 |
| 2. | Punjab National Bank | 6 | 9 | 32 |
| 3. | Oriental Bank of Commerce | 6 | 5 | 28 |
| | Total | 22 | 20 | 103 |

METHODOLOGY

The present study aims at analysing the perception of bankers about the role of technology in financial inclusion. To study the attitude main statistical technique used in the paper is factor analysis along with averages, frequencies, ranking of the variables and factors. The study is descriptive in nature. A sample of 103 bank employees from three public sector banks has been taken for the study purpose. The commercial sector banks covered in the study are State Bank of India, Punjab National Bank, and Oriental Bank of Commerce. The data for the study was collected through a survey conducted in September, 2015. The analysis of data has been done through factor analysis using SPSS.

Table 2**Technological Initiatives Undertaken by Banks**

| S.No. | Technological Initiatives | Frequency Distribution |
|-------|---------------------------|------------------------|
| 1. | Biometric Cards | 88 |
| 2. | Mobile Banking | 92 |
| 3. | Smart Card | 76 |
| 4. | Mobile ATM | 83 |
| 5. | Biometric ATM | 95 |

Figure 4 : Technological Initiatives

Mobile banking is one of the most often used methods of covering and providing the financial services to rural and urban underserved people by formal banking through the use of technology.

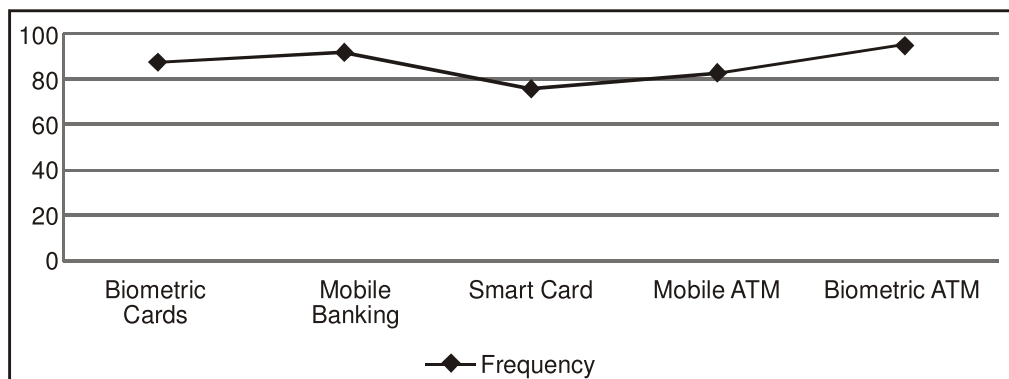


Table 3 reflects that apart from that Biometric ATM, Smart cards are also used at a very large scale particularly in rural areas as a technology enabler tool to serve the underserved masses. The study propounds that Mobile ATM is also becoming a promising technological initiative by commercial banks in remote areas. On an average almost all the innovative technologically advanced tools are used by banks. Banks are not relying on a single tool but are using bunch of such instruments to make the financial services accessible for all in urban as well as in rural zones.

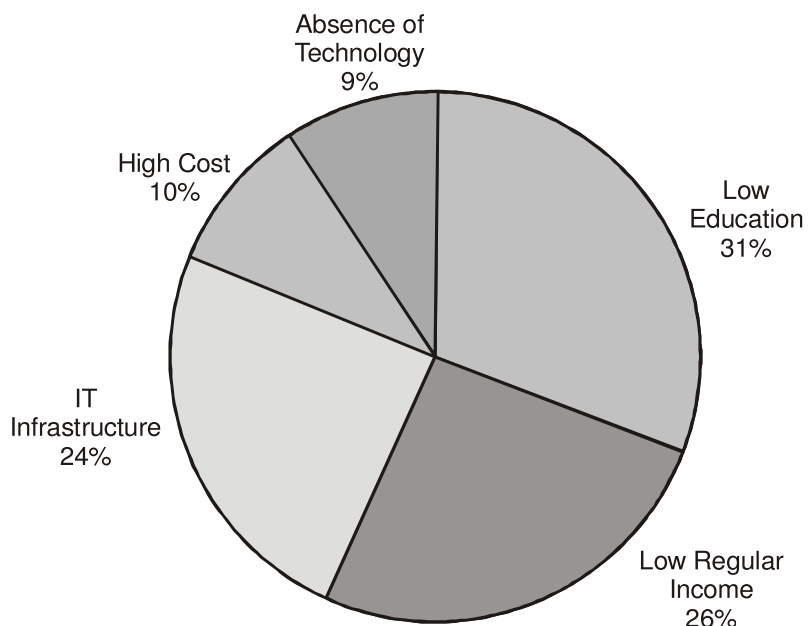
Table 4

Reasons / Causes of Financial Exclusion in India

| S.No. | Reasons of Exclusion | Bankers Identified the Cause (%) |
|-------|--|----------------------------------|
| 1. | Low Education | 98% |
| 2. | Low Regular Income | 81% |
| 3. | Under Developed IT Infrastructure in Rural Areas | 76% |
| 4. | High Cost | 31% |
| 5. | Absence of Feasible Technology | 29% |

The study throws light on the fact that bankers reckon lack of education and low regular income as the ultimate cause of financial exclusion in the country. It also propounds that efforts should be done to improve the literacy rate and providing basic knowledge about banking and financial services so that the root cause of financial exclusion can be eradicated from the country. Information technology industry has flourished in India, its optimum use should be made to bring a change in present scenario.

Figure 5 : Reasons of Financial Exclusion



But on the basis of study, it can be said that bankers reckon that lack of IT infrastructure is also the main cause of limited success of technologically - backed initiatives in rural areas of the country. Apart from that, high cost and

absence of feasible technology contribute to the financial exclusion. Bankers think that this high cost of financial services can cut down tremendously with the use of technologically-backed instruments like ATM, Mobile Banking, Biometric Cards and Interactive Voice Response Services (IVRS).

EMPIRICAL FINDINGS

I. Perception of Bankers Towards Role of Technology in Financial Inclusion

In present study, factor analysis technique is used to measure the perception of bankers towards the role of technology in financial inclusion. For this purpose, a list of 12 statements was provided to the bank officials to rank on a five point scale ranging from 'strongly agree' to 'strongly disagree'.

Before applying factor analysis technique on the whole set of data, Kaiser-Meyer-Olkin Test (KMO) is applied to check the adequacy of the sample. The value of test statistic comes out to be 0.521. Since the value of KMO is above 0.50, it indicates that sample is adequate (Kaiser, 1974). Bartlett's Test is significant ($P < 0.05$), which implies that there is significant correlation between the variables. These outputs clearly indicate that factor analysis is an adequate technique to apply on the collected data.

Statements Measuring the Attitude of Bankers Towards the Role of Technology in Financial Inclusion :

1. Financial inclusion contributes tremendously to the economic development of the country.
2. Initiatives undertaken by the bank are satisfactory.
3. No banker worth his salt can succeed without financial inclusion.
4. IT industry can help financial institutions to spread awareness and financial literacy.
5. FIs with the use of technology providers have the ability to offer low cost banking solutions to the underserved population of the country.
6. It is viable and safe on the part of banks to use technology as a mean of solving the problem of financial exclusion.
7. Customers of financial institutions value technology-enabled banking products.
8. Mobile banking initiatives undertaken by banks will help to increase the awareness level among underserved people.
9. Collaborations of banks with MFIs with mobile manufacturing companies can be an effective way of connecting to the underserved people in rural areas.

10. Aadhar number for financial transactions by using Aadhar- enabled payment mode system is an effective mode of reaching underserved population.
11. RBI with the support of FIs should create centralised infrastructure to provide financial assistance to MFIs and Post Offices.
12. NGOs and social organisations can contribute to provide financial literacy through innovative technology.

Table 5

Eigen Values, Variance and Cumulative Variance

| Variables | Eigen Values | % Variance | Cumulative % Variance |
|-----------|--------------|------------|-----------------------|
| 1. | 2.258 | 18.820 | 18.820 |
| 2. | 1.644 | 13.701 | 32.521 |
| 3. | 1.240 | 10.334 | 42.855 |
| 4. | 1.123 | 9.359 | 52.213 |
| 5. | 1.037 | 8.645 | 60.858 |
| 6. | 1.022 | 8.519 | 69.377 |
| 7. | .951 | 7.926 | 77.303 |
| 8. | .748 | 6.236 | 83.539 |
| 9. | .644 | 5.370 | 88.909 |
| 10. | .527 | 4.388 | 93.298 |
| 11. | .429 | 3.578 | 96.876 |
| 12. | .375 | 3.124 | 100.000 |

Technology has the ability to serve the objective of inclusive financial growth of the nation. The present study investigates the various variables having an impact on the inclusive growth through the technological interventions. Factor analysis technique is used to bring parsimony in the umpteen numbers of variables. The selection of variables is done on the basis of previous studies conducted at national and international level in the area of financial inclusion like Wambua & Datche 2013; Morgan & Pontines 2014; Kamath 2007; Fost & Sullivan 2009. There is no exaggeration in stating that many factors and variables are there which affect the state of financial inclusion in the country and specifically the technological advancements in banking industry. Some of these factors are included in the present study.

II. Factor Extraction

On the basis of factor analysis 12 variables are reduced to 6 factors as shown in the Table above. The variables having Eigen value greater than 1 are retained and factors are extracted. The total variance explained by these six factors is 69.37%; the rest of variance is explained by other factors. Table 6 shows the output of factor analysis applied on data collected from bankers through the structured questionnaire on a five point scale.

Table 6
Rotated Factor Matrix

| | Component | | | | | |
|----------------------------|-----------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Viability and Safety | .682 | .097 | .111 | -.137 | -.066 | .160 |
| M-Banking and Awareness | .669 | -.290 | .080 | .185 | .159 | -.082 |
| Initiatives by Banks | .207 | .836 | .092 | .091 | -.150 | .030 |
| Economic Development | .280 | -.790 | .055 | -.040 | -.087 | .092 |
| NGOs & Financial Literacy | .042 | -.017 | .873 | .082 | -.053 | .044 |
| Banks & MFIs Collaboration | .442 | .072 | .518 | .122 | .209 | -.179 |
| RBI & FIs Role | -.229 | .086 | .125 | .822 | .057 | -.039 |
| Aadhar-Enabled Services | .388 | .039 | .015 | .718 | -.045 | .129 |
| Bankers Success | -.118 | -.167 | .140 | -.072 | .807 | .201 |
| IT and Financial Literacy | .369 | .140 | -.153 | .143 | .651 | -.220 |
| Technology and Low Cost | .128 | .112 | .416 | -.065 | .104 | -.746 |
| Customer Value | .244 | .047 | .346 | .028 | .198 | .690 |

Extraction Method : Principal Component Analysis

Rotation Method : Varimax with Kaiser Normalization

a. Rotation Converged in 13 Iterations

Rotation of the factors is done with Varimax Rotation Method. The rotated component matrix makes the analysis and interpretation of the results much easier. The Table reflects the values greater than 0.3 as the set criteria. The analysis shows that first two variables i.e. viability & safety and mobile banking awareness are more strongly loaded on component 1 and so on. In the present study 12 variables are loaded on 6 factors.

Table 7 below reflects the statements grouped into factors on the basis of output of factor analysis. The extracted factors with relevant statements are as follows :

Table 7
Factors and Grouped Statements

| Factors | Statements |
|----------------------------|--|
| 1. Technological Viability | It is viable and safe on the part of banks to use technology as a mean of solving the problem of financial exclusion. |
| | Mobile banking initiatives undertaken by banks will help to increase the awareness level among underserved people. |
| 2. Improved Performance | Initiatives undertaken by the banks are satisfactory. |
| | Financial inclusion contributes tremendously to the economic development of the country. |
| 3. Collaborative Effort | NGOs and social organisations can contribute to provide financial literacy through innovative technology |
| | Collaboration of banks with MFIs with mobile manufacturing companies can be an effective way of connecting to the underserved people in rural areas. |
| 4. Government Initiatives | RBI with the support of FIs should create centralised infrastructure to provide financial assistance to MFIs and Post offices. |
| | Aadhar number for financial transactions by using Aadhar- enabled payment mode system is an effective mode of reaching underserved population. |
| 5. Financial Awareness | No banker worth his salt can succeed without financial inclusion |
| | IT industry can help financial institutions to spread awareness and financial literacy. |
| 6. Reduced Cost | FIs with the use of technology providers have the ability to offer low cost banking solutions to the underserved population of the country. |
| | Customers of financial institutions value technology-enabled banking products. |

CONCLUSION

In the light of the above discussion, it can be concluded that technological advancements in banking industry are required to ensure the inclusive economic growth. Reaching the unbanked is the need of the hour and technology such as mobile banking, biometric ATM, mobile ATM have the potential to get connected with underserved masses. The focus of government, RBI and banks is on introducing new schemes and strategies for financial inclusion but the opinion and perspective of bankers who are the providers of financial services to the customers are ignored.

The paper traces out the opinion of bankers regarding technological initiatives in financial inclusion and find out that the success of the schemes initiated by government is not satisfactory due to a number of reasons such as lack of financial awareness, lack of technological infrastructure, low regular income. The collaboration among NGOs, FIs and MFIs can bridge the gap between the service providers and unbanked masses. Bankers opine that technology has the ability to provide financial services at less cost and in more convenient way; the need is to enhance the financial literacy and to develop the IT infrastructure in rural areas.

To sum up, a major portion of the population in developing countries is still far away from the range of financial services provided by banks. Technology-based solution, intensive awareness, collaborative efforts from post offices, NGOs, social organisations in rural areas can help create positive impression on rural masses for ensuring financial inclusion. Digital financial inclusion is a powerful instrument in the hands of the policy makers to bring the financial services to the rural unbanked masses.

SUGGESTIONS

In developing countries like India, providing financial services at the bottom of the pyramid is a challenging task which demands some practical suggestions. Inclusive growth of the nation is essential for the overall economic development of the nation. The following are some practical suggestions for expanding financial inclusion through technology.

- Financial literacy initiatives must be started from ground level. At schools, the students should be visited by bankers in rural areas to update them about the technologically-enabled financial services and the use of these services in their regular life.
- Banks can collaborate with post offices having good network in rural

areas. Banks can utilize the sufficient space of post offices to outreach the underserved masses. Biometric ATMs can be installed in post offices and trained guards can help the rural people to operate these ATMs.

- Commercial banks can tie-up with telecom companies to develop a mobile application driven by voice-based commands so as to make it easy for rural masses to operate the application.
- Proper training should be given to the banking staff before introducing a new technology in banking sector. The ideas and suggestions from bankers should be welcomed to ensure the effective implementation of this technological initiative.
- There is a dire need to improve the IT infrastructure in rural areas to make it possible for banks to access the unbanked masses through technology. It requires high speed internet connections in rural areas and network connections, so IT infrastructure should be improved to ensure the success of these initiatives.
- Microfinance institutions (MFIs) and NGOs can help the commercial banks at large scale to get connected with women entrepreneurs and self-employed rural masses. Rural people have a sense of trust and understanding with MFIs and other social groups working in the region, so commercial bank can collaborate with these organisations to provide the financial services to the underserved masses.

References

- Ajzen, I. (1991), The Theory of Planned Behavior, *Organizational Behavior and Human Decision Processes*, 50(2), 179–211, doi : 10.1016/0749-5978(91)90020-t.
- Akinci, S.; Aksoy, S.; and Atilgan, E. (2004), Adoption of Internet Banking Among Sophisticated Consumer Segments in an Advanced Developing Country, *International Journal of Bank Marketing*, 22(3), 212–232, doi : 10.1108/02652320410530322
- Alliance for Financial Inclusion (2010, April), *The AFI Survey on Financial Inclusion Policy in Developing Countries : Preliminary Findings*.
- Alonso, J.; Fernandez, S.; Hoyo, C.; Moctezuma, C.; and Tuesta, D. (2013), Mobile Banking in Mexico as a Mechanism for Financial Inclusion : Recent Developments and a Closer Look into the Poential Market, *BBVA Research*.
- Anandarajan, M.; Igbaria, M.; and Anakwe, U. P. (2000), Technology Acceptance in the

- Banking Industry, *Information Technology and People*, 13(4), 298–312, doi : 10.1108/09593840010359491
- Anson, J.; Berthaud, A.; Klapper, L.; and Singer, D. (2013), Financial Inclusion and the Role of Post Office, *Development Research Group*, WPS6630.
- Arora, R. U. (2012), Financial Inclusion and Human Capital in Developing Asia : The Australian Connection, *Third World Quarterly*, 33(1), 177–197.
- Arora, S. (2012), The Banking Sector Intervention in the Microfinance World : A Study of Bankers' Perception and Outreach to Rural Microfinance in India with Special Reference to the State of Punjab, *Development in Practice*, 22(7), 991–1005.
- Biswas, N. (2010), Biometric ATM : Boon to Indian Rural Bank Customers, *Southern Economist*, ISSN 0034–4046, 48(14).
- Cámara, N.; and David, T. (2015), Factors that Matter for Financial Inclusion : Evidence from Peru, *AESTIMATIO*, 9 (2015), 8–29.
- Canato, A.; and Corrocher, N. (2004), Information and Communication Technology : Organisational Challenges for Italian Banks, *Accounting, Business and Financial History*, 14(3), 355–370.
- CGAP (2008), *Regulating Transformational Branchless Banking : Mobile Phones and Other Technology to Increase Access to Finance*, January.
- Consoli, D. (2005), The Dynamics of Technological Change in UK Retail Banking Services : An Evolutionary Perspective, *Research Policy*, 34(4), 461–480, doi : 10.1016/j.respol.2005.02.001
- Dasgupta, R. (2010), Two Approaches to Financial Inclusion, *Economic and Political Weekly*, 44, 41–44.
- Davis, F. D.; Bagozzi, R. P.; and Warshaw, P. R. (1989), User Acceptance of Computer Technology : A Comparison of Two Theoretical Models, *Management Science*, 35(8), 982–1003.
- Diniz, E.; Birochi, R.; and Pozzebon, M. (2012), Triggers and Barriers to Financial Inclusion : The Use of ICT-based Branchless Banking in an Amazon Country, *Electronic Commerce Research and Applications*, 11(5), 484–494.
- Fost; and Sullivan, (2009), *Bringing Financial Services to the Masses : An NCR White Paper on Financial Inclusion*, Ohio : NCR Corporation
- Gautam, T.; and Garg, K. (2014), Union Bank of India : Initiatives towards IT-enabled Financial Inclusion, *South Asian Journal of Business and Management Cases*, 3(2), 149–156, doi : 10.1177/2277977914548331
- Ghosh, D. A. (n.d.), Financial Inclusion Through Micro Finance in India and Emerging Role of POSB : An analysis, *SSRN Electronic Journal*.
- Ho, S. J.; and Mallick, S. K. (2009), The Impact of Information Technology on the Banking Industry, *Journal of the Operational Research Society*, 61(2), 211–221, doi : 10.1057/jors.2008.128.

- Howcroft, B.; Hamilton, R.; and Hewer, P. (2002), Consumer Attitude and the Usage and Adoption of Home-based banking in the United Kingdom, *International Journal of Bank Marketing*, 20(3), 111–121, doi : 10.1108/02652320210424205.
- iMaCS Research, (2011), *Workshop on Role of ICT in Financial Inclusion by United Nations Development Programme (UNDP) and National Bank for Agriculture and Rural Development (NABARD)*.
- Indian Banking Association, (2014), *Banking on Technology : Perspectives of Indian Banking Industry*.
- Jo Black, N.; Lockett, A.; Winklhofer, H.; and Ennew, C. (2001), The Adoption of Internet Financial Services : A Qualitative Study, *International Journal of Retail and Distribution Management*, 29(8), 390–398, doi : 10.1108/09590550110397033.
- Jones, P. A. (2008), From Tackling Poverty to Achieving Financial Inclusion — The Changing Role of British Credit Unions in Low Income Communities, *The Journal of Socio-Economics*, 37(6), 2141–2154, doi : 10.1016/j.socec.2007.12.001
- Kaiser, H. F. (1974), An Index of Factorial Simplicity, *Psychometrika*, 39(1), 31–36.
- Kamath, R. (2007), Financial Inclusion vis-a-vis Social Banking, *Economic and Political Weekly*, 42(15), 1334–1335.
- Koenig-Lewis, N.; Palmer, A.; and Moll, A. (2010), Predicting Young Consumers' Take Up of Mobile Banking Services, *International Journal of Bank Marketing*, 28(5), 410–432, doi : 10.1108/02652321011064917
- Laukkanen, T. (2007), Internet vs. Mobile Banking : Comparing Customer Value Perceptions, *Business Process Management Journal*, 13(6), 788–797, doi:10.1108/14637150710834550
- Lee, M. C. (2009), Factors Influencing the Adoption of Internet Banking : An Integration of TAM and TPB with Perceived Risk and Perceived Benefit, *Electronic Commerce Research and Applications*, 8(3), 130–141, doi : 10.1016/j.elerap.2008.11.006
- Lichtenstein, S.; and Williamson, K. (2006), Understanding Consumer Adoption of Internet Banking : An Interpretive Study in the Australian Banking Context, *Journal of Electronic Commerce Research*, 7(2), 50–66.
- Morgan, P.; and Pontines, V. (n.d.), Financial Stability and Financial Inclusion, *SSRN Electronic Journal*.
- Nath, R.; Schrick, P.; and Parzinger, M. (2001), Bankers' Perspectives on Internet Banking, *E-Service Journal*, 1(1), 21–36, doi : 10.2979/esj.2001.1.1.21
- Nath, R.; Bhal, K. T.; and Kapoor, G. T. (2013), Factors Influencing IT Adoption by Bank Employees : An Extended TAM Approach, *VIKALPA*, 38(4), 83-96.
- Nitsure, R. R. (2003), E-banking : Challenges and Opportunities, *Economic and Political Weekly*, 38, 5377–5381.
- Puhazhendhi, V. (2012), Financial Inclusion - Forward Step for Micro Finance Sector, *The Journal of Indian Institute of Banking and Finance*, 30-36.

- Raitani, S.; and Vyas, V. (2014), An Exploratory Study of Factors Influencing the E-loyalty of Online Banking Consumers, *The IUP Journal of Bank Management*, XIII (3), 34–48.
- Ramayah, T.; Jantan, M.; Nasser, M.; Noor, M.; Ling, K. Pei; and Razak, R. C. (2003), Receptiveness of Internet Banking by Malaysian Consumers : The Case of Penang, *Asian Academy of Management Journal*, 8(2), 1–29.
- Ranjani, K. S.; and Bapat, V. (2015), Deepening Financial Inclusion Beyond Account Opening : Road Ahead for Banks, *Business Perspectives and Research*, 3(1), 52–65, doi : 10.1177/2278533714551864
- Sahrawat, R. (2010), Financial Inclusion – From Obligation to Opportunity, Retrieved December, 2016, http://www.tcs.com/SiteCollectionDocuments/White%20Papers/Government_Whitepaper_Financial_Inclusion_09_2010.pdf
- Servon, L.; and Kaestner, R. (2008), Consumer Financial Literacy and the Impact of Online Banking on the Financial Behavior of Lower-income Bank Customers, *Journal of Consumer Affairs*, 42(2), 271–305, doi:10.1111/j.1745-6606.2008.00108.x
- Singh, C.; Mittal, A.; Garg, R.; Goenka, A.; Goud, R. P.; Ram, K.; and Kumar, U. (n.d.), Financial Inclusion in India : Select Issues, *SSRN Electronic Journal*.
- Van Winden, W. (2001), The End of Social Exclusion? On Information Technology Policy As a Key to Social Inclusion in Large European Cities, *Regional Studies*, 35(9), 861–877.
- Wambua, S. M.; and Datche, E. (2013), Innovative Factors that Affect Financial inclusion in Banking Industry, (A Case Study of Equity Bank Mombasa Country, Kenya), *International Journal of Sciences : Basic and Applied Research (IJSBAR)*, 12(1), 37–56.
- Wentzel, J. P.; Diatha, K. S.; and Yadavalli, V. (2013), An Application of the Extended Technology Acceptance Model in Understanding Technology-enabled Financial Service Adoption in South Africa, *Development Southern Africa*, 30(4-05), 659–673.