

Role of Literacy Level in Financial Inclusion in India: Empirical Evidence

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Abstract—Sustainable development of a country is closely related to the level of inclusion of the population into the financial net. Financial Inclusion is the issue at global level. Various authors have developed the Financial Inclusion Index based on different dimensions. The present study tries to assess the correlation between the Usage Dimension of Financial Inclusion Index and literacy level in India. Correlation has been statistically tested by using Karl Pearson coefficient of correlation. The results depict a large variation in extent of correlation among the different states of the country with a very low correlation at the national level. Thus, the Government should promote the use of Information Communication Technology models like biometric ATM, telecentres to achieve Financial Inclusion in India as these models does not compulsorily requires high literacy levels.

Index Terms—India, financial inclusion, financial exclusion, literacy rate.

I. INTRODUCTION

India is one of the fastest growing economies of the world. Despite such a high economic growth our rural population seems to miss the benefits of this growth. At around 350-450 million people or some 70-80 million families, India has the largest absolute number of world's poor as reported in Human Development Report (2006) [1]. A major concern nationwide is that rural poor have benefited very little from the fast pace economic growth. As a result of this exclusive growth, the migration of rural poor to urban areas has increased the urban poverty and migration related social problems. Increasing globalization throws tremendous opportunities to grow but this growth will prove to be beneficial to the society if it is all inclusive growth. There has been the widening gap between have and have nots of the society. One of the reasons of this disparity is financial exclusion and this can be bridged through the inclusion of the rural sector of the society in the financial system, that is, financial inclusion. Rangarajan Committee (2008) on financial inclusion stated that: 'Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by the vulnerable group such as weaker sections and low income groups at an affordable cost' [2].

Financial exclusion can be defined as the divide with an increased range of personal finance options for a segment of high and upper middle income population and a significantly

large section of the population lack access to even the most basic banking services. Vast majorities of population living in rural areas of the country have serious issues in accessing formal financial services as shown in Fig. 1.

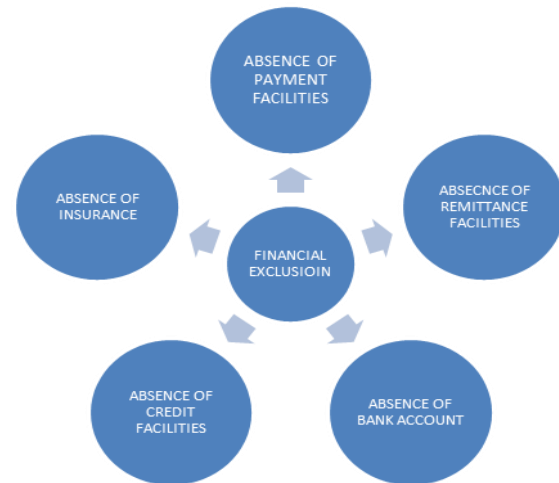


Fig. 1. Supply side factors of financial exclusion.

Financial Exclusion can be viewed from two angles viz. supply of financial services and demand of financial services. Supply of financial services means the adequate supply of finance options like loan facilities, credit cards, debit cards, saving accounts, loan facilities in rural areas. Demand for financial services means the acceptability of financial products by the rural poor i.e level of awareness and understanding the advantages of the financial product or it can also be termed as financial literacy. In a country like India with large population, financial exclusion has a geographic dimension as well - inaccessibility, distances, and lack of proper infrastructure hinder financial inclusion. According to Sinha and Subramiam (2007) as per Census 2001, in India only 36% of the people use some kind of banking services and the Boston Consulting Group Report on financial inclusion in India also affirms that financial exclusion reflects the stark socioeconomic divide that characterizes the emerging markets [3].

II. FINANCIAL EXCLUSION WORLDWIDE

Financial Exclusion is an issue to be addressed at global level; even developed countries are confronted with this issue. According to United Nations Report (2006) "Financial inclusion has become worldwide concern, relevant equally in the economies of the underdeveloped, developing and developed nations. Building an inclusive financial sector has gained growing global recognition bringing to the fore the

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need for development strategies that touch all lives, instead of a selected few” [4]. According to Vighneswara (2011) even in the developed nation like USA 9% percent of the population do not have the bank account [5]. In United Kingdom the government has established a framework for ensuring improved financial inclusion by setting up a Financial Inclusion Fund of 120 million pound sterling over three years alongwith Financial Inclusion Task Force to oversee its progress. According to Mohan (2006), in Sweden approximately 2% of adults did not have a bank account in 2000 and in Germany the figure was around 3% [6]. Extent of Financial Exclusion in some selected countries is given in Table I.

TABLE I: FINANCIAL EXCLUSION WORLD WIDE

Country	Percentage of population with bank account	Extent of Financial Exclusion
USA	91	9
Denmark	99	1
Europe	89.6	10.4
Botswana	47	53
Brazil	43	57
South Africa	31.7	68.3
Namibia	28.4	71.6
Mexico	21.3	78.7

Source: Mohan (2006)

III. FINANCIAL EXCLUSION IN INDIA

A. Extent of Financial Exclusion

Vital financial exclusion statistics as per NSSO survey as reported in IDBI Gilts Report 2007 are discussed here [7]. In general 51.4 percent of farmer households are financially excluded from both the formal and informal sources of credit. Of the total farmer households, only 27 per cent access formal sources of credit; one third of this group also borrows from non-formal sources. Overall, 73 percent of farmer households have no access to formal sources of credit. Region wise exclusion is most acute in Central, Eastern, North Eastern regions, having concentration of 64 percent of all financially excluded farmer households in the country. Overall indebtedness to formal sources of finance alone is only 19.66 percent in these three regions. From occupational groups perspective, marginal farmer households constitute 66 percent of total farm households. Only 45 percent of these households are indebted to either formal or non-formal sources of finance. About 20 percent of indebted marginal farmer households have access to formal sources of credit. Among non-cultivator households nearly 80 percent do not access credit from any source. Social groups perspective shows that, only 36 percent of Scheduled Tribes (ST) farmer households are indebted, with Scheduled Castes (SC) and Other Backward Classes (OBC) comprising 51 percent. Most of them borrow from informal sources.

In India financial inclusion is not evenly distributed, some states are much more financially excluded than the others. Table II reflects such disparities.

TABLE II: FINANCIAL EXCLUSION IN INDIA

Extent of Financial Exclusion	States
Above 75%	Meghalaya, Arunachal Pradesh, Uttarakhand, Assam, Mizoram, Manipur, Jharkhand
50% to 75%	Bihar, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Nagaland, Odisha, Sikkim, Tripura, Uttar Pradesh
25% to 50%	Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu, West Bengal
Below 25%	Andhra Pradesh

Source: Mohan (2006)

B. Reasons for Financial Exclusion

Major reasons for Financial Exclusion in India are:

- 1) High cost: Providing and utilizing financial services is not available free of cost for both the service provider and service utilizer. (i) Cost for service provider: Setting up of branches in rural areas are generally not advantageous due to high cost and low business (ii) Cost for service utilizer: It has been observed that poor living in rural area are reluctant to utilize these services due to high cost example, minimum balance requirements in saving account, fixed charges in credit cards and debit cards, loan processing charges etc
- 2) Non price barriers: Access to formal financial sources requires documents of proof regarding person's identity, postal address, income etc. poor people generally do not have these documents and thus are excluded from financial services.
- 3) Behavioral aspects: As per IDBI Gilts Report 2007 research in behavioral economics has shown that many people are not comfortable using formal financial services due to difficulty in understanding the language and reading the document [7]. Poor people also think that financial services and financial products are meant only for the upper strata of the society.

Government of India has set up National Mission on Financial Inclusion to promote inclusive growth in the country through universal access to finance of the poor and vulnerable groups within a specified time frame. The 'No Frills Account' scheme of Reserve Bank of India has brought significant progress in financial inclusion scenario in India. The Reserve Bank of India has undertaken a project titled as 'Project Financial Literacy'. The objective of the project is to disseminate information regarding the central bank and general banking poor, defence personnel and senior citizens. Government of India has taken various steps to deal the above mentioned reasons of financial exclusion. As per the suggestions of Rangarajan Committee the Financial Inclusion Technology Fund (FITF) had been set up in 2007-08 for five years with a corpus of Rs 500 crores each [2]. The objective of FITF has been to enhance investment in Information Communication Technology for promoting financial inclusion and stimulating the research in financial inclusion.

C. Financial Inclusion Index

This study is based on the Financial Inclusion Index (FII) developed by Chattopadhyaya and published in RBI Working Paper Series [8]. Various researches have shown several parameters to measure financial inclusion like number of bank accounts, geographic branch penetration, loan income ratio, deposit income ratio, etc. These individual indicators gives the misleading picture about the Indian economy therefor Chattopadhyaya developed the single indicator in the form of Financial Inclusion Index based on three dimensions. The Index has been framed on three dimensions:

Dimension 1: Banking Penetration - Banking penetration is the size of the banked population that is the number adults having the bank accounts in respective states.

Dimension 2: Availability of Banking Services - Availability of banking services is the availability of financial services like bank branches, ATM etc in respective states.

Dimension 3: Usage of Banking Services - Usage of banking services is the number of transactions taking place in the bank account that is the actual use of financial services.

The Index divides twenty-three states of the country in three categories - States with high, medium and low financial inclusion as shown in Table III. Financial Inclusion Index ranges between 0 to 1 where 0 denotes the low financial inclusion and 1 denotes the complete financial inclusion.

The present study tries to assess the correlation between Usage Dimension of Financial Inclusion Index and literacy level in India.

IV. RESEARCH METHODOLOGY

To study the relationship between the Financial Inclusion Index and literacy rate, the Karl Pearson Coefficient of Correlation has been used. Karl Pearson Coefficient of Correlation is defined as:

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{n(\sum x^2) - (\sum x)^2} \sqrt{n(\sum y^2) - (\sum y)^2}}$$

The coefficient of correlation (r) lies in between -1 and +1. When r is negative it means that there is a negative correlation between two variables while if r is positive it means that there is positive correlation between the two variables. For conducting the present study the SPSS software has been used.

V. DATA ANALYSIS AND DISCUSSION

Data has been analyzed for the usage dimension of Financial Inclusion Index and the literacy rate by applying the statistical test of Karl Pearson Coefficient of correlation. Analysis is based on the data compiled in Table III. This data has been subjected to SPSS and the statistical results are shown in Table IV.

Table IV reveals that on an overall basis literacy rate does not have a high negative relationship with financial inclusion. Negative relationship exists at all the three levels of financial inclusion index, that is, high, medium and low. While

positive correlation exists at the country level. Negative correlation shows that literacy rate does not affect the financial inclusion. Low positive correlation at country level indicates the literacy level has low impact on financial inclusion in the country.

TABLE III: FINANCIAL INCLUSION INDEX AND LITERACY RATE IN INDIA

State ¹	Financial Inclusion Index ¹	Usage Dimension of Financial Inclusion Index	Literacy Rate ²
High Financial Inclusion			
Kerala	0.54	.28	93.91
Maharashtra	0.53	1	82.91
Karnataka	0.53	.46	75.6
Medium Financial Inclusion			
Tamil Nadu	0.48	.38	80.33
Punjab	0.45	.29	76.68
Andhra Pradesh	0.41	.41	67.66
Himachal Pradesh	0.33	.18	83.78
Haryana	0.32	.34	76.64
Sikkim	0.32	.12	82.2
Low Financial Inclusion			
West Bengal	0.28	.23	77.08
Gujarat	0.26	.16	79.31
Uttar Pradesh	0.24	.15	69.72
Orissa	0.20	.14	73.45
Rajasthan	0.19	.08	67.06
Madhya Pradesh	0.16	.11	70.63
Bihar	0.15	.12	63.82
Assam	0.13	.14	73.18
Meghalaya	0.21	.09	75.48
Tripura	0.20	.08	87.75
Arunachal Pradesh	0.17	.08	66.95
Mizoram	0.16	.07	91.58
Nagaland	0.05	.07	80.11
Manipur	0.01	.01	79.85

1. Chattopadhyaya, S. K., RBI Working paper Series WPS DEPR: 8/2011 Financial Inclusion in India: A case study of West Bengal [8].
2. Census India 2011 [9]

TABLE IV: SUMMARY ANALYSIS

Category	High Financial Inclusion	Medium Financial Inclusion	Low Financial Inclusion	Overall Analysis
Correlation coefficient (r)	-.351	-.739	-.223	.123

VI. MODELS FOR FINANCIAL INCLUSION

An effective inclusive growth model for rural areas in India will have to be driven by Information Communication Technology. Technology can be leveraged to open up the channels beyond branch network and create the required banking footprints to reach the unbanked; the technology has to enable the branch to go where customer is present instead of the present scenario that the customer should go to the branch. RBI's Annual Policy for 2007-08 urged the banks to scale up the efforts for IT based financial inclusion and develop the technologies that are highly secure, amenable to

audit and follow widely accepted open standards to allow interoperability among the different systems operated by the bank [10]. RBI has set up an advisory group for IT enabled financial inclusion to facilitate development of IT solutions for delivery of banking services, the group will advise certain minimum parameters and standards that are essential for setting up robust interoperable systems on open platforms. Technology has grown tremendously in the past decade and has changed the way the various sectors operate.

Some models that can be used without literacy being a precondition for their application have been listed here. These ICT-based models can be used aggressively in India as they are based on the strengths of the country. They can also be used in countries where literacy levels are low.

A. Biometric ATM

As a measure of financial inclusion First Bank of Nigeria has introduced biometric ATM. Bank plans to issue cards with biometric authentication functionality to the elderly and illiterate. The Podkarpacki Bank Spoldzielczy from Sanok plans to equip its ATM machines with the biometric readers, the reader will scan the fingerprint and also the bloodvessel pattern. Union Bank of India has launched the regions first solar powered, voice enabled biometric rural ATM in Ludhiana District (www.indainexpress.com). The ATM works on solar power and can support the biometric and pin based transaction.

B. Mobile Based Payment System

It is estimated that today while there are 15 crore saving account holders in India, there are approximately 43 crore mobile subscribers with 1 crore being added every month, so mobile payment technology offers immense scope for financial inclusion as quoted by Tushar et.al., 2010 [11]. Mobile money transactions will require the collective efforts of banks, telecom service providers and the technology developers. Yes Bank has already made the effort under National Innovation Program to deliver the business model of crop insurance through mobile technology.

C. Smart Card (Business Correspondent)

To obtain the card an individual has to provide documentary evidence of residency for more than one year and they should be registered under minimum employment guarantee scheme and social security pension program of India. The mechanism of operating the smart card is very simple, the business correspondent will carry a handheld device to the rural area, where the villager will swipe the card and authenticate the withdrawal using his fingerprint impression, after authentication the correspondent will give him the cash.

Indian Bank and Tata Consultancy has entered into agreement in which Tata Consultancy will provide the technology infrastructure, handheld devices and business correspondents to help the bank extend its coverage to consumers living in the rural areas through handheld devices which will support biometric authentication verification. Karnataka Bank Ltd has launched biometric smart cards for cash withdrawals, these smart cards have been launched in two rural districts of Karnataka under its financial inclusion programme.

D. Telecentres

Telecentres are places where shared access to information and communication technology and Information Technology enabled services are available. Phillip & Foote, (2007) has considered telecentres as a potential instrument for addressing the asymmetric information problem and the digital divide, and therefore as development enablers [12]. The World Summit on Information Society held in 2003 recognized telecentres as a cost effective way of bringing the information revolution to developing countries, and thus endowed with the potential to empower the poor. Government may use the principle of convergence of policies to support such centers, for example, the funds earmarked for encouragement of renewable energy resources such as solar power can be utilized to provide reliable power supply in these telecentres as quoted by Naik, 2011 [13].

Telecentres will serve as the multiway media of information. It can facilitate the creation of demand for services like education, insurance, health, agriculture etc, by bridging the gap between businesses and rural people. Telecentres can promote financial inclusion through the availability of information and filling up the demand and supply gap. Telecentres can provide various useful information regarding seeds, pesticides, special crops both to the farmers and business houses. For example, there are certain special crops which are not grown by the farmers because their demand is very less, retail houses can get these crops only through contract farming but generally farmers are suspicious regarding the prices and creditability of retail houses. Telecentres can play the vital role in providing the reliable information at both the ends and bridging the deficit.

Telecentres can promote financial inclusion through the availability of information and filling up the demand and supply gap. Telecentres can play a significant role in promoting insurance. The average insurance inclusion index for India is 0.29 which means that the insurance penetration is only 29% in the country as reported in the study conducted by Sankaramuthukumar et.al 2011 [14]. The reason for such low insurance inclusion index may be lack of reliable information, wrong selection of policies and high cost of obtaining the reliable information. If the telecentre function as an agent of insurance company the cost of obtaining reliable information will be reduced as telecentres are much closer to rural people. One of the examples of telecentres in India is Gyandoot in Madhya Pradesh.

VII. CONCLUSION

Large variations in the correlation between the Financial Inclusion Index and literacy rate in different states indicates that financial exclusion in India is not mainly due to the lower literacy rates. For instance, the state of Kerala has a very low value of the usage dimension of Financial Inclusion despite highest literacy rate, while Karnataka comparatively has a higher value of usage dimension in relation to the literacy level.

To achieve financial inclusion the government should emphasise on the behavioural factors rather than considering an improvement in literacy rate as a major determinant.

Models that do not consider literacy level as a prerequisite to use financial services like, Biometric ATM, Mobile Based Payment System, Smart Card, and Telecentres can be useful to achieve the goal of financial inclusion in India.

Large variations in the correlation index, indicates that there is a need to formulate state-level policies for financial inclusion that consider the socio-cultural diversity of the country.

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