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Financial Inclusion through Mobile Banking in India

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Abstract: Information technology is the key for financial inclusion because that is the only way to reduce the cost significantly and reach the masses. But all technologies are not suitable for financial inclusion due to affordability, accessibility, security and privacy. In the last decade, mobile phone technology has emerged as the most potential and well suited channel for financial inclusion. M-banking as a new type of banking services carrier can provide efficient and effective financial services for unbanked and rural peoples in India. Increased cellular service users in rural Indian provide wide opportunity to expand m-banking service in India. Mobile phone, although a critical tool of financial inclusion, does not guarantee adoption. Their major shortcomings are network coverage, security, low cost effectiveness, inconvenience in using mobile handset, IT literacy etc. There are many challenges in adoption and successful implementation of mobile technology especially in rural areas.
In this paper an attempt has been made to explore the potential of mobile phone technology in accelerating financial inclusion in India. This paper defined a set of customer requirements to m-banking services in India and highlights pitfalls of the mobile technology for financial inclusion along with opportunities for their improvement.

Keyword: Mobile banking, financial inclusion, ICT, Telecommunication

I. INTRODUCTION

Financial inclusion is delivery of banking services at an affordable cost to the vast sections of disadvantaged and low income groups. At present, in India many peoples in remote areas and rural areas have not appropriate banking services like saving accounts, insurance, credit and even less to more advanced financial services that could help to improve security, predictability and opportunities for entrepreneurship. Therefore, the government of India and the Reserve Bank of India encouraging to commercial and cooperative banks to provide banking facilities to those peoples through modern technology i.e. internet banking, ATM, smart cards, mobile banking and business correspondents[9].

To make inclusive finance a reality in India, Reserve Bank of India and Indian government has taken number of initiatives which includes offer a basic banking 'No Frills Account' and zero bank account to low income group; easier credit facility up to 25,000; simplified know your customer (KYC) norms; use of ICTs; smart cards system; EBT (electronic benefit transfer) through banks, promotion of business correspondent (BC) and business facilitators (BF) models and 100 per cent financial inclusion derive. But, results are not satisfactory. The reasons are many. In India, financial inclusion is pervasive given the low geographical outreach of financial service providers, as a large segment of the population is based in rural areas whereas majority of bank branches are located in urban or peri urban areas. Out of the 600,000 habitations in the country, only about 30,000 have a commercial bank branch. Just about 40 per cent of the populations across the country have bank accounts, and this ratio is much lower in the northeast of the country [2].

It is realized that mobile banking is one of the important way to financial inclusion in India. Recent scenario shows that, wireless infrastructures have emerged as an effective option of connecting to an ever-evolving expansive information network such as the Internet and mobile phone service in India. In the 21st century, "mobile" does not only mean of communication it is now mean of banking and financial services.
India has a vast un-banked population, most of who reside in the rural areas. The traditional banking industry cannot cater to the needs of India's large rural population. Setting up a conventional branch in a rural area would require considerable amounts of money to be spent on infrastructure and additional personnel. Most of rural Indians are cut-off from access to basic financial services which includes deposits and withdrawals from a trusted source.

However, India is the second largest telecommunications market and has more than 650 million mobile phone customers. Mobile phones are quite common even in the remote villages. The mobile phone industry is growing at a rate of 100 million per year. It is expected to touch the 1 billion mark by 2013. Given these premises, the need to turn the mobile phone into an instrument which enables access to financial services became a necessity.

II. MOBILE BANKING

Mobile banking also known as M-Banking, m-banking, SMS Banking etc. is a term used for performing balance checks, account transactions, payments, credit applications etc. via a mobile device such as a mobile phone or Personal Digital Assistant (PDA). The earliest mobile banking services were offered via SMS. With the introduction of the first primitive smart phones with WAP support enabling the

use of the mobile web in 1999, the first European banks started to offer mobile banking on this platform to their customers [5].

The terms m-banking, m-payments, m-transfers, m-payments, and m-finance refer collectively to a set of applications that enable people to use their mobile telephones to manipulate their bank accounts, store value in an account linked to their handsets, transfer funds, or even access credit or insurance products. Mobile banking allows bank customers to check balances, monitor transactions, obtain other account information, transfer funds, locate branches or ATMs, fund transfer, mobile phone recharge, pay bills, tax pay etc. All these service are performing via SMS, WAP, GPRS, 3G or mobile Internet.

The concept of mobile payment originates in Finland. Sonera, a telecommunication company in Finland, released a mobile payment system named Sonera Mobile Pay (SMP) in 1999. Then cellular payment service named PayBox started in 2000 to online shopping In Germany. In 2001, service like SMP service Pro-tect was released as Mobile Money System (MMS) in Japan. Korean banks also developed mobile banking network to reduce transaction cost in banking operations and increase convenience since 2002 and launched post pay mobile payment system. In order to demand of mobile divides to use in m-banking almost of cellular device developer companies alike Ericsson, Motorola, Nokia, LG, Siemens, Samsung, Sony etc. are developing their mobile handset according to m-banking requirements. Most recent handsets are enabled with CDMA, GSM, WAP, 3G, SMS, MMS, JAWA, GPRS, Bluetooth, Infrared, and windows also [9].

Internet Banking helped give the customer's anytime access to their banks. Customers could check out their account details, get their bank statements, perform transactions like transferring money to other accounts and pay their bills sitting in the comfort of their homes and offices. However the biggest limitation of Internet banking is the requirement of a PC with an Internet connection, not a big obstacle if we look at the US and the European countries, but definitely a big barrier if we consider most of the developing countries of Asia like China and India. Mobile banking addresses this fundamental limitation of Internet Banking, as it reduces the customer requirement to just a mobile phone [8].

III. TECHNOLOGIES USE MOBILE BANKING

Mobile Banking is being deployed using mobile applications developed on one of the following four channels.

[a] IVR (Interactive Voice Response)
[b] SMS (Short Messaging Service)
[c] WAP (Wireless Access Protocol)
[d] Standalone Mobile Application Clients

A. IVR – Interactive Voice Response

IVR or Interactive Voice Response service operates through pre-specified numbers that banks advertise to their customers. Customer's make a call at the IVR number and are usually greeted by a stored electronic message followed by a menu of different options. Customers can choose options by pressing the corresponding number in their keypads, and are then read out the corresponding information, mostly using a text to speech program.

Mobile banking based on IVR has some major limitations that they can be used only for Enquiry based services. Also, IVR is more expensive as compared to other channels as it involves making a voice call which is generally more expensive than sending an SMS or making data transfer (as in WAP or Standalone clients).

B. SMS – Short Messaging Service

SMS uses the popular text-messaging standard to enable mobile application based banking. The way this works is that the customer requests for information by sending an SMS containing a service command to a pre-specified number. The bank responds with a reply SMS containing the specific information.

However there have been few instances where even transaction-based services have been made available to customer using SMS. For instance, customers of the Bank can make fund transfer by sending the SMS.

One of the major reasons that transaction based services have not taken of on SMS is because of concerns about security.

The main advantage of deploying mobile applications over SMS is that almost all mobile phones are SMS enabled. An SMS based service is hosted on a SMS gateway that further connects to the Mobile service providers SMS Centre. There are a couple of hosted IP based SMS gateways available in the market and also some open source ones like Kannel.

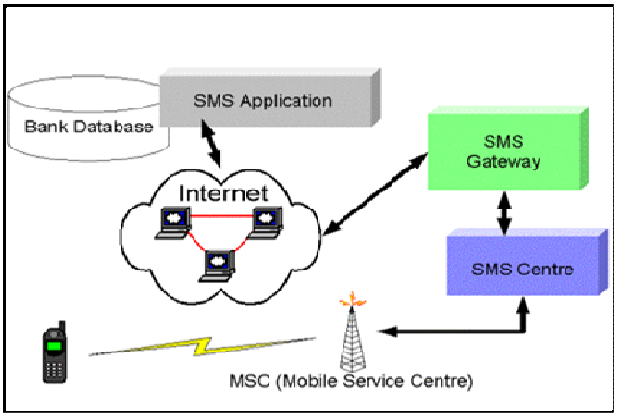

Figure 1: SMS Network Architecture

C. WAP – Wireless Access Protocol

WAP uses a concept similar to that used in Internet banking. Banks maintain WAP sites which customer's access using a WAP compatible browser on their mobile phones. WAP sites offer the familiar form based interface and can also implement security quite effectively.

Banks offers a WAP based service channel to its customers. The banks customers can now have an anytime, anywhere access to a secure reliable service that allows them to access all enquiry and transaction based services and also more complex transaction like trade in securities through their phone.

A WAP based service requires hosting a WAP gateway. Mobile Application users access the bank's site through the WAP gateway to carry out transactions, much like internet users access a web portal for accessing the banks services.
The following figure demonstrates the framework for enabling mobile applications over WAP. The actually forms that go into a mobile application are stored on a WAP server, and served on demand. The WAP Gateway forms an access point to the internet from the mobile network.

D. Standalone Mobile Application Clients

Standalone mobile applications are most suitable to implement complex banking transactions like trading in securities. They can be easily customized according to the user interface complexity supported by the mobile. In addition, mobile applications enable the implementation of a very secure and reliable channel of communication.
Requirement of mobile applications clients is that they require to be downloaded on the client device before they can be used, which further requires the mobile device to support one of the many development environments like J2ME or Qualcomm's BREW. J2ME is becoming an industry standard to deploy mobile applications and requires the mobile phone to support Java

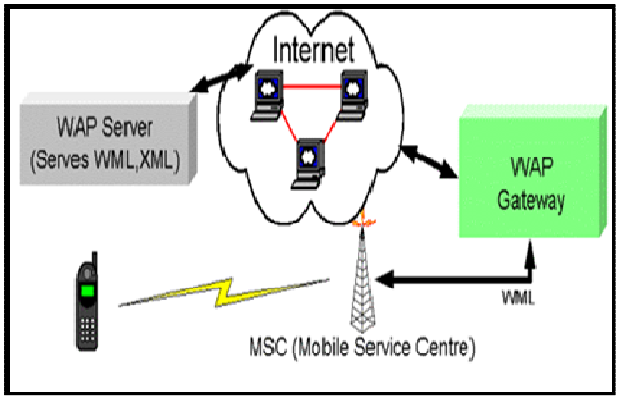

Figure 2: WAP Network Architecture for Mobile Applications

IV. MOBILE BANKING IN INDIA

One of the key barriers to access to financial services to the poor and particularly to those living in remote rural areas is the price of being banked and the access to banks. The costs include both the fees charged by the financial institutions and the time and money required to access the bank. So we need a system where the services can be delivered to the remote areas at low cost, which can be done through mobile banking i.e. banking services on mobiles. Since there has been a telecom revolution, call charges and mobile phones became cheaper and cheaper that most people own a cell phone (an estimate says that about 737 million people in India own cell phones by 2012). Implementing banking service on mobile phone is done through providing them a user portal through which they can do the balance checks, cash transfers and payments by simple message. And more recent announcement of TRAI says that there is going to be a significant decrease in the messaging prices, which actually makes the transaction cost range from 2 Rupees to 5 Rupees on an average. So we will be in a position to make transactions at a very low cost when compared to an amount of 35-40 Rupees through Bank branch, 15-30 through ATMs and 10 Rupees through Internet. And about 90 percent of the mobile connections are pre-paid which makes it even easier to make the transactions. When you want to do a transaction all you should have is a sufficient balance in your mobile which can take care of the transaction. This means we are converting the airtime to money.

Indian telecommunication service scenario indicates that cellular or mobile phone service was growing tremendously in last five years. As TRAIs report on telecommunication industry in India, The wireline phone connections were declining in the last few years and mobile phone connections were increased very fast. At present, 16 cellular service providers providing cellular service in Indian and there were 621.28 million phone connections in India out of these 584.32 million mobile phone connections. Mobile phone service was not only spread in urban areas but also in rural areas in India. The rural mobile connections have reached the 190.88 million mark as against 111.63 million in the previous year and now 32.67% of total wireless subscribers are now in rural areas and the rural teledensity at the end of March 2010 was 24.29%. It is great opportunity to the bankers to facilitate banking service to unbanked through mobile banking system in India. Providing mobile banking services to the unbanked is not only social responsibility of the bankers but also it is a golden opportunity to the business expansion.

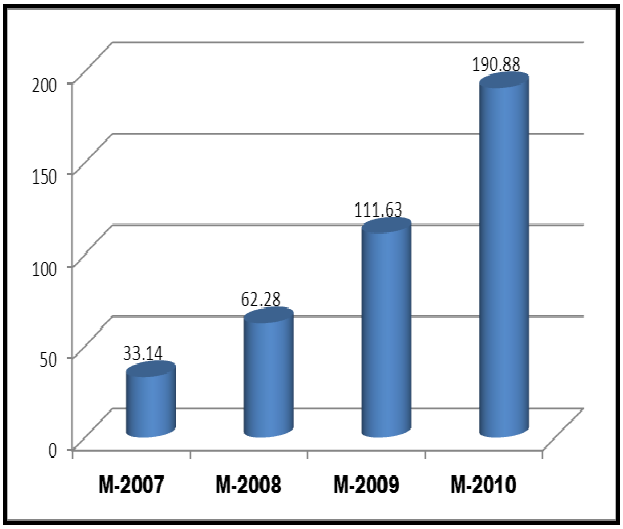

Figure 3: Rural Mobile Subscribers in India (in millions)

A customer to get mobile banking access in the case of SBI of India, he needs to have a bank account to hook up with the mobile by applying for m-banking in the bank. So he gets registered and provided by a user id and MPIN to get the access. In the case of SBI, currently they offer service to mobiles with GPRS/WAP/NFC interfaces. They are in the process of creating a technology where they can offer the service to the ordinary mobiles without any JAVA or WAP platform. So with the user id and MPIN we can access the portal and we are redirected to the menu which contains various options like Checking Balance, Cash Transfers, and

Payments. So with a click you will be in a position to carry the transaction at a very low cost.

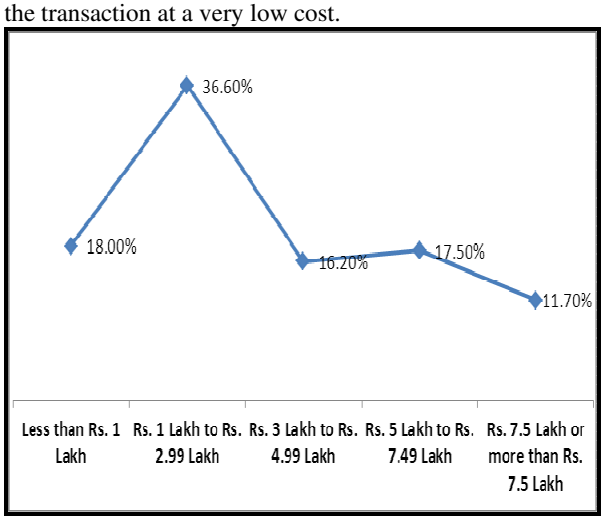

Figure 4: Mobile banking users – Income profile

Mobile banking is most used by subscribers falling in Rs. 1 Lakh to Rs. 2.99 Lakhs income bracket followed by less than Rs 1 Lakh income bracket. Therefore it is observed, mobile banking is more popular among low income group of mobile users than higher income group of mobile users [6].

V. MOBILE BANKING SERVICE IN INDIA

Mobile banking can offer services such as the following:

A. Account Information

[a] Mini-statements and checking of account history
[b] Alerts on account activity or passing of set thresholds
[c] Monitoring of term deposits
[d] Access to loan statements
[e] Access to card statements
[f] Mutual funds / equity statements
[g] Pension plan management
[h] Status on cheque, stop payment on cheque
[i] Ordering cheque books
[j] Balance checking in the account
[k] Recent transactions
[l] PIN provision, Change of PIN and reminder over the Internet [1]

B. Payments, Deposits, Withdrawals, and Transfers

[a] Domestic and international fund transfers
[b] Micro-payment handling
[c] Mobile recharging
[d] Commercial payment processing
[e] Bill payment processing
[f] Withdrawal at banking agent
[g] Deposit at banking agent

C. Investments

[a] Portfolio management services
[b] Real-time stock quotes
[c] Personalized alerts and notifications on security prices

D. Support

[a] Status of requests for credit, including mortgage approval, and insurance coverage
[b] Check (cheque) book and card requests
[c] Exchange of data messages and email, including complaint submission and tracking
[d] ATM Location

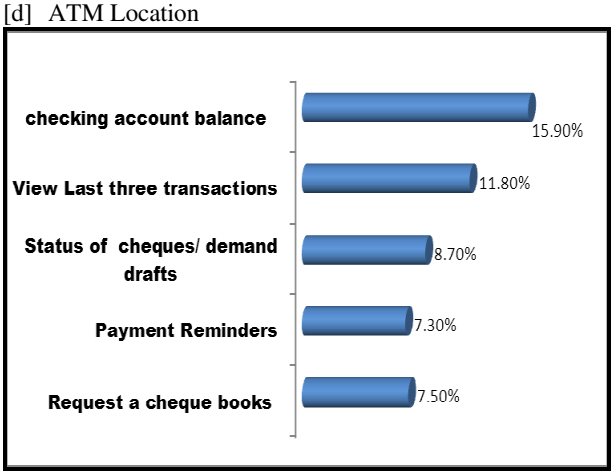

Figure 5: Statistics on most popular mobile banking services

VI. METHODOLOGY FOR DATA COLLECTION

The study employs primary data as well as secondary data. Primary data was collected by structured survey. Primary sources of data collection are based on the data to be collected from the different banks. The tools used to collect this data are through structured questionnaire, observation method and personal interviews.

Secondary data was collected from different published sources. The study has been done mainly based on secondary sources of data or information. This is an exploratory research based on secondary data obtained through the Net, books and related journals including different publications.

VII. PROBLEMS IN M-BANKING

Mobile banking is simplest and cost effective way to provide banking services to the unbanked in India. However, at present it is not accepted by common peoples in India because of followings reasons:

[a] Less IT literacy is badly affecting on the use of mobile phone as electronic device for banking. They have just using mobile phones for communication.
[b] Most of rural peoples have no idea about m-banking and how it is used.
[c] Continues and good quality of cellular service connectivity is not available in the rural areas.
[d] Security and trust are most important aspects of any banking service, but people have doubts about its security and reliability.
[e] M-banking provides limited range of services it not provides deposit facility which is essential service for the customers. If they want to deposit their money they must go in the branch.
[f] Refund service is very poor in the m-banking. If customer made some wrong transaction and he/she sent money to wrong person by mistake the bank does not

refund that money immediately. Stipulated time for refund such money is defined maximum 15 days.

[g] Breakdown of M-banking creates inconvenience for customers. Many time it fund that m-banking services are not ready to use.

[h] Language used in the m-banking software is also one of the barriers, almost all software using English as common language but rural people and less literate unable to use this software due to poor knowledge about English.

[i] Charges on GPRS or 3G service is not cheap to use in m-banking service. It reduces cost effectiveness of m-banking.

[j] What about very poor (Poorer) people who can't purchase mobile phone, if they used mobile phone with the banking correspondents staff is to be used for transactions, how will transactions be authenticated and recorded? It is basic problem in m-banking from poor's point of view.

[k] If customer is using m-banking, he would not be able to change to a different service provider and his phone number.

VIII. CONCLUSION

Indian banking scenario shows that there is need of m-banking for financial inclusion of poor and urban people. Since last five years mobile telephone service extended tremendously in India and it provides golden opportunities to extend m-banking service in India. However, because of various problems in m-banking system this is not widely accepted by Indian bank customers. Hence, there is need to improve m-banking service including network coverage and security in m- banking. Provide software in regional languages. Telecommunication department and cellular service providers should extend their network coverage in rural and remote areas to facilitate them communication and m-banking also.

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