

ICT Evolution in Banking—A Strategy of Financial Inclusion

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Abstract—Banking sector promotes economic growth and development. As an efficient intermediary, it mobilizes funds from the surplus economic units to deficit units. It offers a wide range of financial services to serve the financial and economic needs of public, corporates and MSMEs. Therefore, Banks, as a financial intermediary, could serve as a catalyst for economic growth and development. In the pace of Globalization and Liberalization emphasis is on private sector banks which aim to enhance financial services along with the rapid usage of technology. As a result, public sector banks are encountering the problem of implementation and efficient use of ICT (Information and Communication Technology). It has become a serious concern to the public sector banks to face and sustain in cut throat competition in rendering banking financial services on par with private sector banks. In this context the banking industry has transformed from traditional to modern and customized its services through the introduction of innovative technical financial services. It has revolutionized the gamut of financial services by extending uninterrupted efficient financial services to the neglected sections of society. The present paper is based on empirical observation, focusing on strategies of ICT towards financial inclusion in revolutionizing Banking and Financial services and also to suggest few measures for better implementation of Banking and Financial services.

Keywords: Information and Communication Technology, Financial Inclusion, Financial Services, Competitive Edge, Financial Intermediary.

1. CONCEPTUAL FRAMEWORK OF ICT AND FINANCIAL INCLUSION

1.1 Introduction

The banking sector is the major component of world economies shouldered to ensure the efficient financial services. In this technical world its outreach to the Global market has also increased. In this process of ensuring the efficient financial services the banks were tend to adopt and use technology. Indian banking industry, today is in the midst of information revolution. In this context the Information and Communication Technology (ICT) has become a buzz word all over the world, which is enabling inducement of rapid changes in all the sectors. It has become an important element as a key in revolutionizing and challenging the sectoral development of all the nations. It has in particular brought a

complete paradigm shift in its scope of activities enhancing the performance of banks by empowering customer service delivery in the banking industry.

The current paper studies about how banks are being transformed in their Global reach by the revolution and implications brought by the changes in the field of technology. It studies the effects of Information and Communication Technology (ICT) on the banking sector. The ICT is a parasol which contains an array of systems, devices and services used for data processing. The ICT enables the banks to reach the market by minimize its cost, enabling customers' better services by overcoming the physical infrastructure, physical distance.

1.2 Objectives of The Study

1. The study focuses on the adoption and implications of information and communications technology as a strategy of financial inclusion.
2. The study emphasizes on the strategies of ICT in banking industry.
3. The study focuses on understanding ICT Standardization measures.

1.3 Statement of Problem

One of the challenges being confronted by banking industry is financial inclusion through empowering Information and Communication Technology. It forms part of inculcating awareness among consumers, security, accessibility to computers, reluctance to change, the cost incurred for adoption of ICT.

2. EVOLUTION OF ICT IN ENHANCING ACCELERATED BANKING AND FINANCIAL SERVICES - A BOON FOR BANKING INDUSTRY

The banking sector plays a crucial role in influencing the financial system and financial – economic development. The services offered by banking industry are highly complex and heterogeneous in wider terms. To ensure financial services to be more effective, the speeding up of technology leverage in

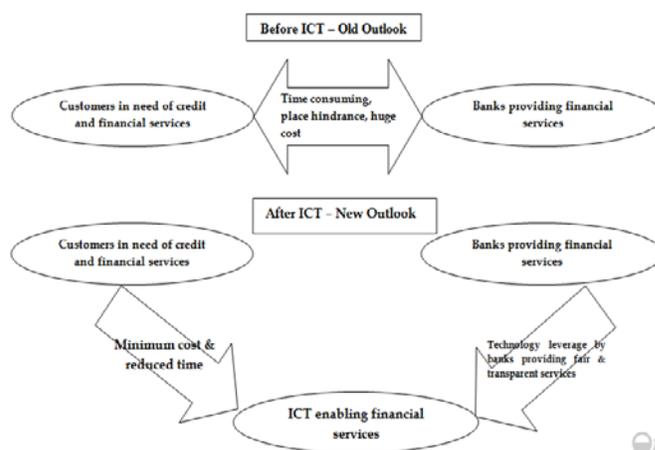
financial services can be a better mechanism. The development in this aspect is evident since three and half decades. Hence ICT in banking is a provision facilitating and enabling financial services.

The growing need of financial inclusion across the world nations had taken a turn towards financial inclusion as the means for a more comprehensive growth. It entails each citizen of the country to use their earnings as a financial resource that they can put to work to improve their future financial status and simultaneously contribute to the nation's progress. To be precise financial inclusion is the process of ensuring accesses to appropriate financial products and services needed by the neglected and underprivileged sections of the society at an affordable cost in a fair and transparent manner by main streamlining the financial institutions.

The banking industry with the help of ICT has standardized and restructured in terms of flexible operations focusing on customer and reducing the time factor in accessibility of financial services. ICT mechanism ensures to capture customer profiles, facilitate unique identification, and provide reliable and uninterrupted connectivity to financial services to remote areas and across multiple channels of delivery. ICT enhances in offering multiple financial products (banking, insurance, capital market) on one hand and while ensuring consumer protection, develop comprehensive and reliable credit information system on other hand. So ICT is essential for efficient credit delivery and credit pricing policies, to take measures and streamline the financial products according to the local needs and segments, create awareness among customers, enable use of multimedia and multi-language for dissemination of information and advice. This revolution of ICT brought a great change with positive impacts in the field of financial services and with respect to banking industry. Through the leverage of information and communication technology the innovative and value added services are introduced viz., ATM, EFT, EDE, NEFT, RTGS, SWIFT, Smart Cards, MICR Cheques, PoS, Telephone Banking , Internet and Online Banking

Here an attempt is made to show how of ICT in filling the gap of financial inclusion with the help of following diagram.

The Fig. depicts that before introduction of ICT, the banks are focused only on providing of limited financial services by limiting themselves to a particular restricted branch. The focus is on the business growth within the ambit of limited service line and to generate margin through revenues earned by confined area of business. Whereas after introduction of ICT, it was a customization and innovation which has e-enabled in the process of extending value added services to the vast sections focusing on minimizing the cost and maximizing the revenue.



Source: Proposed Model of ICT

Fig. 1: Diagrammatic Representation of Enabling of Financial Services through ICT

3. ICT MECHANISM—STANDARDIZATION MEASURES BY BANKS

3.1 ICT Standardization Acts as an Enabler

The role of ICT has broadened the outreach of technologies as lucrative for economy by enabling the stakes to communicate through improved technology such as speed of internet, mobile banking, increased broadband technologies etc. Information and communications technology standards are increasingly relevant to development and fueling the banking industry ensuring efficient financial system. The implications of ICT standards in banks promote interoperability by making it easier to facilitate services through maintaining and exchange of data by banks among Governments, various financial institutions, and the customers they serve. It enables banks to gain advantage of the geographic dispersion by spread of branches connected through network interface. It entails banks to gain increase in productivity and also allows banks to exploit comparative advantages and save on costs. Hence ICT as an interface between financial institution and customers aims at inclusive of exclusive society to be part of global networks of financial information and services.

3.2 Standards for Empowering Financial Inclusion – ICT Enabler

The standards are essential for the following requirements: For identifying and appointing the BC /BF.

- Terms and conditions, agreement to be signed between the banks and BCs.
- Fidelity and insurance coverage for the field level agents.
- Standard for data storage in these devices.
- Standard for secured data transmission and related issues.

- Accounting standards for agents' financial transactions with Banks.
- Centralized hub/switch to be established online of ATM Switch, for interfacing with CBS Systems of different Banks.
- Service area approach may be adapted, for extending financial inclusion with specific villages to be allotted to specific Banks.

3.3 ICT in Banking Industry - Benefits to Society and Bankers

The ICT aimed at economizing the cost and increased the accessibility and availability of heterogeneous banking products and services at their location.

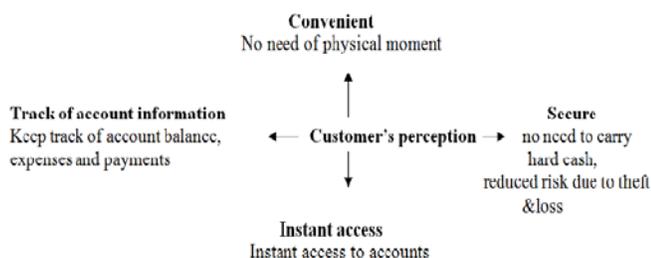


Fig. 2

The ICT aimed at empowerment of customer relationship management focusing of building long-term relationship with customer, gaining their satisfaction by enhancing trust & loyalty towards Bank.

3.3.1) Obstacles Encountered with Intervention of Technology – Concern's to be addressed

The traditional brick and mortar branches had left the rural masses to their fate bring line of differentiation in meeting the credit and financial requirement. At this moment in order to gain holistic approach and fill the gaps steps were taken to introduce the technology for enabling efficient financial services, but non-availability of digital network for the seamless connectivity and technical operable difficulties were encountered which need to addressed.

4. STRATEGIES ADOPTED AND STANDARDIZATION OF ICT FOR FINANCIAL INCLUSION

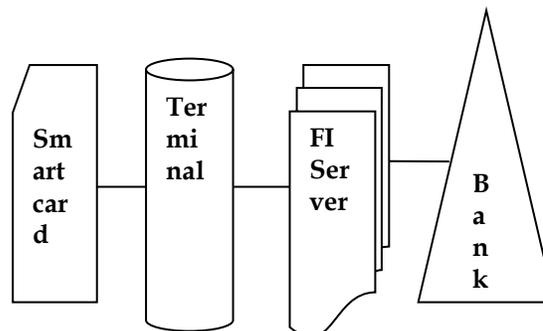
The development in technology is an advantageous to a country like India where a substantial portion of population still reside in areas unbanked to increase financial inclusion. At this juncture ICT empowers the banking industry to capture customer details, facilitate unique identification, ensure reliable and uninterrupted connectivity to remote areas and across multiple channels of delivery, offer multiple financial products relating to banking, insurance and capital market investments and trading. It ensures consumer protection,

develop appropriate products tailored to local needs and segments, provide customer education and counseling, and enable use of multimedia and multi-language for dissemination of information and advice.

In this process RBI has directed to setup intermediate banking through taking measures for institutionalization of business correspondents acting as an agent behalf of banks to enable customers with ease of access. Instead of traditional brick and mortar bank branches in remote regions measures were adopted to deploy those areas with modern information technology enabling with network connecting communication links and managerial capabilities. Banks with help of ICT have started implementation of financial inclusion measures. Broadly, two technologies have been identified in the process of financial inclusion. One is based on Smart Card technology and the other is based on Mobile based solutions.

4.1 Smart Card Based Financial Inclusion

ICT enables banks to meet the credit and financial requirements by empowering general banking services. The banks have developed Unique identification of customers through biometric authentication, to be more secure than PIN authentication. All bank terminals have been enabled to have access to balance enquiry and mini-statement showing minimum last five transactions.



Source: IDRBT, Open standards for smart card based solutions for financial inclusion

Fig. 3: Model of Smart Card based Solution

4.2 IBA – IDRBT Committee on Open Standards for Financial Inclusion

4.2.1) Smart Card Numbering Scheme

Under this smart card numbering scheme a uniform card number is allotted to the card holders, in routing the cardholder information and the transaction details to appropriate bank server. The scheme to be followed is as under:

Length of the card number: 19 Digits

- 9 – National Scheme
- 356 – Country Code

- XXXX – Bank Identification Number*
- XXXXX – Branch Code*
- XXXXX – Card Serial Number*
- X – Checksum (Luhn’s algorithm) *;
here *X are numerals

4.2.2 Smart Card Operating System

By going through various different options for the smart card OS it is decided by the committee COSTA standard since it is available free of cost compared to other operating systems that are priced and a license fee is required. This minimizes the cost to the customer and the implementing bank. This SCOSTA has been adopted by the Government of India for various multi application schemes such as RSBY, NREGS, Driving License, E-Passport etc.

4.2.3) FI Customer Card Data Architecture – This specification lays down the entire information of cardholder and his account history.

4.2.4) FI Terminal Operator Card Data Architecture – This specification is for the Terminal Operator Card. It will be used to perform mutual authentication – between a bank customer and a bank correspondent.

4.2.5) Terminal Functionality Specification – This specification enables in supporting the transactions like deposit, withdrawal, balance enquiry, mini statement; the optional specifications relating to fund transfer, remittances, bill payments, loans and investments, insurance etc

4.2.6) Key Management System – The key management system deployed at designated bank permits security framework interoperability between bank terminals of a particular bank although supplied by different vendors. The process of generation, derivation, maintenance and revocation of keys needs to be the task of each bank.

5. TECHNOLOGICAL DEVELOPMENTS IN PAYMENT MECHANISM

Since past 3 decades vast technological developments and The new payment mechanism ensured control over the transactions and eliminates carrying of hard cash for transacting at market place. The payment system was enabled through “contactless” technology that has the potential to help Contactless payment has shown a path way by streamlining the payment industry. It is an add-on feature that can be made available with any payment product such as credit card, debit card and prepaid card; it includes gift cards, mall cards and travel cards. This new transitioned technology gained importance and attracted the attention of banking industry by providing solution for financial industry. This mechanism proved to be beneficial to the consumer and the retailer at Point-of-Sale terminal.

The ICT mechanism has envisaged the banking and financial industry through introduction of contactless card technology, contactless mobile technology, contactless ATM technology and money transfers through NEFT/RTGS/SWIFT, Point-of-Sale, Rupay cards, Kisok Service etc.

5.1) Contactless Card Technology

The card system helps in payment and communicating account information through wirelessly via Radio Frequency (RF) signals. Through this RF signals the card data is transmitted to the terminal and the payment transaction is processed utilizing the same infrastructure as other payment transactions. The different types of cards employed for contactless payments includes gift cards, teen spending cards, mass transit cards, mall cards, travel cards, tollgate cards and other types of cards in the market place that allow POS purchases.

5.2 Contactless Mobile Technology

The development of technology enhanced mobile banking bringing a new payment mechanism in payment system. In order to protect from technical frauds, the mechanism aimed at secured payment through password creation. Near Field Communication (NFC) technology allows the mobile phone to securely transmit and receive information over a short range (maximum range of a few inches) when you make a contactless payment.

5.3 Contactless ATM Technology

Automated Teller Machine (ATM) is one of the developments in technology that provides the customers of banks the facility of accessing their accounts for withdrawing cash and to carry out other financial transactions without the need of actually visiting a bank branch. In addition to cash withdrawal, ATMs can be used to accounts information, cash deposit, regular bill payment, purchase of re-load vouchers for mobiles, mini statement, request for cheque book / bank statement, fund transfer and loan account enquiry etc.

5.4 Point –Of-Sale

Point-of-Sale (PoS) is also called as Swipe Machine/Check Out, is the point at which a customer makes a payment to the merchant in exchange for goods or services. At the point of sale the retailer would calculate the amount owed by the customer and provide options for the customer to make payment and issue a receipt for the transaction.

5.5 Money Transfers – NEFT/RTGS/SWIFT

Money transfer is a special service that allows customers to transfer funds electronically from their account to other accounts maintained with any banks in India through RTGS or NEFT.

RTGS - Real Time Gross Settlement helps in fund transfer funds on a "real time" and on "gross" basis. Settlement in "real time" means payment transaction is not subjected to any waiting period. The transactions are settled as soon as they are processed. "Gross settlement" means the transaction is settled on one to one basis without bundling or netting with any other transaction. Once processed, payments are final and irrevocable. It is available for transaction of value of Rs.2.00 lakhs and above.

NEFT - NEFT is an electronic fund transfer system that operates on a Deferred Net Settlement where the settlement takes place with all transactions received till the particular cut-off time. These transactions are netted (payable and receivables) in NEFT whereas in RTGS the transactions are settled individually.

SWIFT - The Society for Worldwide Interbank Financial Telecommunication (SWIFT) provides a network that enables financial institutions worldwide to send and receive information about financial transactions in a secure, standardized and reliable environment.

5.6 Rupay Cards

RuPay is a domestic card scheme floated by National Payments Corporation of India (NPCI RuPay facilitates electronic payment at all Indian banks and financial institutions and it is a domestic alternative to the global real time payment firms like MasterCard and Visa. RuPay is a portmanteau word formed by the combination of Rupee and Payment.

5.7 Kiosk Service

A kiosk service is a computer terminal featuring specialized hardware and software designed within a public exhibit that provides access to information and applications for communication, commerce, entertainment, and education. Banks offer kiosk services such as E-ticketing etc by placing their kiosk machine at important places. Customers of Banks can book railway e-ticket using bank's kiosk machines.

6. SUGGESTION AND CONCLUSION

It is necessary for banking industry to make efforts for investing in ICT products to enable the financial industry and to achieve the benefits ICT in enabled financial services banks must organize awareness campaigns and orientation of clients. ICT has enabled innovative practices in financial industry which has intensified the competitiveness of the financial services industry. The measures were taken for Standardization of ICT which resulted in enhanced quality of banking operations and cost effective. Hence innovation in the financial services and ICT standardization is a boon for the banking industry in providing improved and efficient financial services and reducing the transaction cost and enabling ease of access to customers.

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