A STUDY ON ROLE OF INFORMATION TECHNOLOGY IN DEVELOPMENT OF INDIAN BANKING SECTOR

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ABSTRACT:

Over the last three decades, banking sector has undergone huge transformation because of technological innovations. IT has brought a paradigm shift in banking sector in the whole world.ECS, NEFT, RTGS, ATM , Retail banking are some of the major innovations in banking which makes banking lot more efficient & easy task by introducing value added products & customized products as compared to traditional banking. This paper studies about the role of Information Technology in advancement of banking industry & associated challenges ahead. Introduction of several online payment applications has opened up virtual options & also reduced errors thereby results in more penetration, productivity & efficiency.

KEY WORDS: Mobile Banking, ATM, Internet Banking, Payment Systems, E-banking, Information Technology.

1.INTRODUCTION:

Information technology (IT) is the use of any computers, storage, networking and other physical devices, infrastructure and processes to create, process, store, secure and exchange all forms of electronic data.It is a term that generally covers the harnessing of electronic technology for the information needs of a business at all levels.

Over the years, many innovations have taken place in the world,the most remarkable is the aspect of information technology.

Laudon D. and Laudon J. (2001), emphasize that Information and Communication Technology deals with the physical devices and software that link various computer hardware components and transfer data from one physical location to another.

Harold and Jeff (1995), challenge that financial service providers should modify their traditional operating practices to remain viable in the 1990s and decades that follow. They claimed that

most significant shortcomings in the banking industry today is a wide spread failure on the part of senior management in banks to grasp the improvement of technology .

But in today's era, Traditional management approaches that focus on financial figures and on centralized, analytical planning methods are considered to be insufficient for effectively steering the organization in dynamic environment.

1.1 .INFORMATION COMMUNICATION TECHNOLOGY(ICT)

Wirsiy and Shafack (2002) defined information communication technology as a broad-based term that encompasses the gathering, acquiring, organization, packaging, storage and retrieval, dissemination of above multi-media, using a combination of computers and telecommunications.

Development in information technology has brought about remarkablegrowth in banking sector across the globe. This is because information communication technology has brought about striking and dynamic changes in the global system of banking. Igwe, (2005), noted that the advent of the electronic mail and personal computers on every desk, the internet and its application to banking have produced amazing results. The basic existence of computer and information technology in financial institution has improved dramatically.

ICT has played an important role in all areas of human life. It has improved the overall processes of commercial banks performance, via the use of modernism and creativity pertaining to information technology by commercial bankswhich resultsin smooth, easy and convenient way of banking with quality service to customers, which has also lined way for efficiency and effectiveness to banking.

The various innovations in banking and financial sector are ECS, RTGS, EFT, NEFT, ATM, Retail Banking, Debit & Credit cards, free advisory services, implementation of standing instructions of customers,payments of utility bills, fund transfers, internet banking, telephone banking, mobilebanking, selling insurance products, issue of free cheque books, travellercheques and manymore value added services.

1.2 TECHNOLOGICAL DEVELOPMENT IN BANKS

The important events in the field of IT in the banking sector in India are:

- 1980s- Use of Advanced Ledger Posting Machines (ALPM) which reduced errors in calculations & transactions.
- Late 1980s-Focus on Total Branch Automation(TBA),Introduction of MICR technology.
- Early 90s: Introduction of card-based payments- Debit/ Credit card
- 1990s- Electronic Clearing Services (ECS) was introduced.
- 2000s- Introduction of Electronic Fund Transfer (EFT)
- Early 2000s- Real Time Gross Settlement System was introduced.
- 2005 onwards- Introduction of National Electronic Fund Transfer (NEFT)
- 2007- Introduction of CTS

1.3 REASONS FOR INTRODUCTION OF IT IN BANKS:

• Adoption of information technology in financial institutions and IT based new services offered by competitors
• Rising competition in banking industry
• Globalization in banking
• To meet the growing demand of customers for mobility, speed, efficiency and economy through various technology based services
• A technological revolution in the Indian economy

IT has a great impact on Bank's performance. IT reduces the operational cost (cost effect), and makes transactions much easier.IT assist to improve their service quality, increase speed of service delivery, minimize cost, increase profitability, offer convenience in providing anytime and anywhere banking. Hence, adoption of such technologies is highly cherished.

Information technology has given rise to new innovations in the product designing and their delivery in the banking and finance industries. Customer services and customer satisfaction are their prime work. Current banking sector has come up with a lot of initiatives that oriented to providing a better customer services with the help of new technologies. Banking through internet

has emerged as a strategic resource for achieving higher efficiency, control of operations and reduction of cost by replacing paper based and labour intensive methods with automated processes thus leading to higher productivity and profitability.

1.4 RECENT I.T APPLICATIONS IN BANKING SECTOR

Dr. Rangarajan committee had drawn up in 1983-84 plans for computerization and mechanisation in the banking industry and looked into the 93 modalities of drawing up a phased plan for mechanisation for the banking industry covering the period 1985-1989. The committee in its report in 1984 suggested the introduction of computerization and mechanization at the branch, Regional office or Zonal office and Head office levels of banks. According to Rangarajan Committee (II), 7827 branches of the Public Sector banks were recognized for full branch computerization upto March 2000 of which around 4620 were computerized as on March 99. Meanwhile, the networking of the already-computerized branches also assumed urgency and some of the Banks have started inter-connecting their computerized branches using leased telephone lines or Very Small Aperture Terminals (VSATS). This is done to provide a more broad service to customers and at the same time give banks better centralized control over the branch operations. As of now, New Private Sector and Foreign Banks have an edge over Public Sector Banks as far as implementation of technological solutions is concerned. However, the latter are in the process of making huge investments in technology.

Services and products like "Anywhere Banking" "Tele-Banking" "Internet banking" "Web Banking" , e-banking, e-commerce, e-business etc. have become the buzzwords of the day and the Banks are trying to cope with the competition by offering innovative and attractively packaged technology-based services to their customers.

MIS,Data Warehousing, Data Mining & Business Restructuring are important for control & maintenance of customer and business/industry data bases for strategic planning.

MIS covers, basically, information needed for control, performance monitoring, decision making etc. and encompasses most activities in administrative offices like processing of statutory returns under Reserve Bank of India Act, monthly/quarterly performance reports from branches, credit information/BSR, inter-branch transactions, personnel inventory, provident fund accounting,

profit and loss accounts, cash and investment management, stationery stock accounting, and branch house keeping etc.

Some of the innovative products offered by banking industry are:

1.4.1.Electronic Clearing & Settlement System:

The Indian banking sector has been growing successfully, innovating and trying to adopt and implement electronic payments to enhance the banking system. Though the Indian payment systems have always been dominated by paper-based transactions, e-payments are now more popular. Ever since the introduction of e-payments in India, the banking sector has witnessed growth like never before.

According to a survey by Celent, the ratio of e-payments to paper based transactions has considerably increased between 2004 and 2008. This has happened as a result of advances in technology and increasing consumer awareness of the ease and efficiency of internet and mobile transactions.RBI has enhanced the payment system by introducing MICR technology, ECS, EFT, NEFT, RTGS etc.

(I)**Electronic Clearing Services**: ECS is an electronics mode of payment/receipt for transactions that are repetitive and periodic in nature.

ECS is used by institutions for making bulk payment or bulk collection of amounts from one bank account to many bank accounts or vice versa. Primarily, there are two variants of ECS - ECS Credit and ECS Debit.

ECS Credit is used by an institution for granting credit to a large number of beneficiaries having accounts with bank branches at various locations within the jurisdiction of a ECS Centre by raising a single debit to the bank account of the user institution. ECS Credit enables payment of amounts towards distribution of dividend, interest, salary, pension, etc., of the user institution. **ECS Debit** is used by an institution for raising debits to a large number of accounts maintained with bank branches at various locations within the jurisdiction of an ECS Centre for single credit to the bank account of the user institution.

ECS Debit is useful for payment of telephone / electricity / water bills, cess / tax collections, loan installment repayments, periodic investments in mutual funds, insurance premium etc., that are periodic or repetitive in nature and payable to the user institution by large number of customers etc.

(II) **MICR Clearing**: MICR is an acronym for Magnetic Ink Character Recognition. The MICR Code is a numeric code that uniquely identifies a bank-branch participating in the ECS Credit scheme. This is a 9 digit code to identify the location of the bank branch; the first 3 characters represent the city, the next 3 the bank and the last 3 the branch. The MICR Code allotted to a bank branch is printed on the MICR band of cheques issued by bank branches.

Traditional cheque clearing process is time consuming and lengthy it affects value of transaction of settlement. To enhance speed of cheque clearing the RBI has started MICR cheque and MICR clearing system. MICR technology transformed cheque processing systems by enabling the introduction of automated clearing houses. The system is well stabilized in India with the overall reject rates of around 1% while international reject rates are around 2%. Cheque clearing accounts for over 95% of the retail payment and more than 70% of cheque clearing is based on MICR technology.

(III) **Cheque Truncation System (CTS):**CTS 2010 is the standard prescribed by the RBI recently for cheques issued by all banks in the country. CTS means that instead of sending the cheque in physical form by the collecting bank to the paying bank, an electronic image of the cheque is transmitted to the drawee branch for payment through the clearing house, thereby eliminating the cumbersome physical presentation of the cheque to the paying bank, thus saving in time and costs involved in traditional clearing system.

(IV) **Real Time Gross Settlement (RTGS)**: The acronym 'RTGS' stands for Real Time Gross Settlement, which can be defined as the continuous (real-time) settlement of funds transfers individually on an order by order basis (without netting).

RTGS was introduced by RBI on 26 March, 2004 as the ultimate architecture for online real time inter-bank payment and settlement for large value funds. The payment instructions are received online from participants and are processed individually on gross basis throughout the operating day. In RTGS, the customer of one bank branch can transfer the money to customer of any other

branch. RTGS settles the payment on transaction by transaction basis. But it should be noted that RTGS system requires large amount of intraday liquidity for the settlement of payments. The cost of liquidity depends on the variables such as amount required, opportunity cost of maintaining liquid balances and cost of intraday credit.

Salient Features of RTGS

- Payments are settled transaction by transaction.
- Settlement of funds is final and irrevocable.
- Settlement is done on real time.
- Funds settled can be further used immediately.
- It is a fully secured system which uses digital signatures and public key encryption.

(V) **Electronic Fund Transfer (EFT) &National Electronic Fund Transfer (NEFT):**

EFT System hosted and operated by the RBI, permits transfer of funds, uptoRs. 5 lakh from any account at any branch of any member bank in any city to any other account at any branch of any member bank in any other city. This system utilizes the Service Branches of the member banks and the nodal offices of RBI. The Reserve Bank of India acts as the service provider as well as regulator. The NEFT was introduced in 2005. Since its inception the coverage of NEFT has increased. It is called Special Electronic Fund Transfer (SEFT) also.

National Electronic Fund Transfer (NEFT) system is a nationwide system that facilitates individuals, firms and corporates to electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country.It is done via electronic messages. Even though it is not on real time basis like RTGS (Real Time Gross Settlement), hourly batches are run in order to speed up the transactions.To participate in NEFT the participating banks branch needs to have IFSC code

Indian Financial System Code (IFSC) is an alpha numeric code designed to uniquely identify the bank-branches in India. This is 11 digit code with first 4 characters representing the banks code, the next character reserved as control character (Presently 0 appears in the fifth position) and

remaining 6 characters to identify the branch. The MICR code has 9 digits to identify the bank-branch.

1.4.2 Electronic Clearing Cards: -

Electronic Clearing Cards such as debit, smart cards and credit cards.

Using a **credit card** is a payment method that allows you to purchase items and services without having to use cash. When credit cardholder uses his credit card, his credit card issuer will pay the merchant on his behalf and issues bill to customer later in the form of a monthly statement.

Debit card allows "anywhere any time accesses" to the customers with their savings or current account. Debit card is a prepaid card with some value stored in it. Every time a person uses this card, the Internet Banking House gets money transferred to its account from bank account of debit card holder.

A magnetic stripe is inserted into cards to enhance its security which is called **Smart Card**. It can store a lot of information like personal information, health history, personal banking details etc on magnetic stripe.

1.4.3. Telephone Banking/Mobile Banking:

Telephone banking is a service provided by a bank, that enables customers to perform a range of financial transactions over the telephone, without the need to visit a bank branch or automated teller machine. **Mobile banking** in lay man terms means the using of a mobile phone to offer banking services. Telephone banking times are usually longer than branch opening times, and some banks offer the service on a 24-hour basis. Most financial institutions have restrictions on which accounts may be accessed through telephone banking, as well as a limit on the amount that can be transacted.

Mobile text and alert is the simplest, allowing the user to transfer funds or access account information via text message. Texting terminology varies from bank to bank, but the overall function is generally the same. For example, texting "Bal" will obtain the account balance while "Tra" will allow inter-account transfers. Users need to first register and verify their phone numbers with their bank, but once that's completed, they can also set up alerts to let them know about negative balances or deposit confirmations.

Mobile web is the second mobile banking option. Similar to online account access from a home-based computer, this option allows for checking balances, bill payment and account transfers simply by logging into the user's account via a mobile web browser.

In case of mobile banking, the banking services are provided to the customers having the credit card accounts with bank. Mobile banking service is primarily available over SMS (Short Messaging Service) or through GPRS (General Packet Radio Service) or sometimes through USSD (Unstructured Supplementary Service Data).Tele banking is based on voice processing technology provided by specialized software.
The types of financial transactions which a customer may transact through telephone banking include

- Reviewing list of latest transactions
- Obtaining account balance
- Mini Statement
- Payment of utility bills
- Report loss of ATM/ Debit Card
- Request for pass book, demand draft etc

Researcher has seen multiple-fold increase in mobile banking transactions in the last several years. There has been an increased penetration of smartphones and this is the drive factors for mobile banking. The customers are getting more comfortable with mobile transactions. Besides, all the publicity that is there towards mobile banking, ecommerce, etc, is leading to customers being aware about the common possibilities on mobile phones.

From the bank's point of view, telephone banking minimizes the cost of handling transactions by reducing the need for customers to visit a bank branch for non-cash withdrawal and deposit transactions. handled using telephone banking, and a customer needs to visit an ATM or bank branch for cash withdrawals and cash or cheque deposits.

1.4.4. Automated Teller Machine(ATM):

An **automated teller machine** or **automatic teller machine** also known as an **automated banking machine** , is an electronic telecommunications device that enables the customers of

a bank to perform financial transactions, particularly cash withdrawal, without the need for a bank employee.

According to the ATM Industry Association (ATMIA), there are now close to 3 million ATMs installed worldwide.On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip that contains a unique card number and some security information such as an expiration date or CVVC (CVV). Authentication is provided by the customer entering a personal identification number (PIN).

Using an ATM, customers can access their bank deposit or credit accounts in order to make a variety of transactions such as cashwithdrawals, check balances, or credit mobile phones.

In India, ATM industry is growing at an exponential rate. So to say, ATM has brought a self service revolution. ATMs were introduced to the Indian banking industry during 1987 by HSBC Bank in Mumbai. Mr.Jaivinder Gill, MD of NCR India has stated, "As banks continue to open new branches, attract new customers, and encourage existing and new account holders to use cards, the Indian ATM industry is set to grow. Since many banks still operate proprietary networks, the increasing number of banking customers is likely to spur ATM growth."ATM technology was used to reach the customers at a lower initial and transaction cost with hassle free services.

3. REVIEW OF LITERATURE

Sullivan (2000) reported that the use of internet technology has no significant impact on the profitability of banks. On average, this study found that neither banks were helped nor harmed by offering the internet delivery channel. The study pointed out that the profitability of internet banks and non-internet banks are almost similar to each other.

Jalan (2002) pointed out that information and communication technology (ICT) has bought the fundamental revolution in banking sector. Due to the enormous benefits of IT application, now banks seem to perceive internet banking as a substitute for the existing branching structure (Corrocher 2002). Arora(2003) highlighted the significance of bank transformation. Technology has a definitive role in facilitating transactions in the banking sector and the impact of technology implementation has resulted in the introduction of new products and services by various banks in India.

From the above reviews it was found that banking industry has adopted information technology for better management of funds & for attracting & retaining customers.

4.OBJECTIVES OF THE STUDY:

The objective of this paper are:

- To study the role of information technology in advancement of Indian banking industry
- To study the type of challenges which banking industry has to face by adoption of technology in banking industry.

5. RESEARCH METHODOLOGY

The research design used to carry out this study is descriptive research because it deals with statistical data. The data collected is mainly secondary in nature. The sources of data for this thesis include the Annual reports published by the Reserve Bank of India, various magazines dealing with the current banking scenario and research papers.

6. ANALYSIS OF DATA

6.1 ELECTRONIC CLEARING SERVICES

Table 6.1 :Electronic Clearing Services - Annual Turnover

Item	Volume (million)				Value (` billion)			
	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13	2013-14	2014-15
ECS DR	164.7	176.5	192.9	226.0	833.6	1,083.1	1,268.0	1739.8
ECS CR	121.5	122.2	152.5	115.3	1,837.8	1,771.3	2,492.2	2019.1

Source: www.rbi.org.in, Annual report 2015

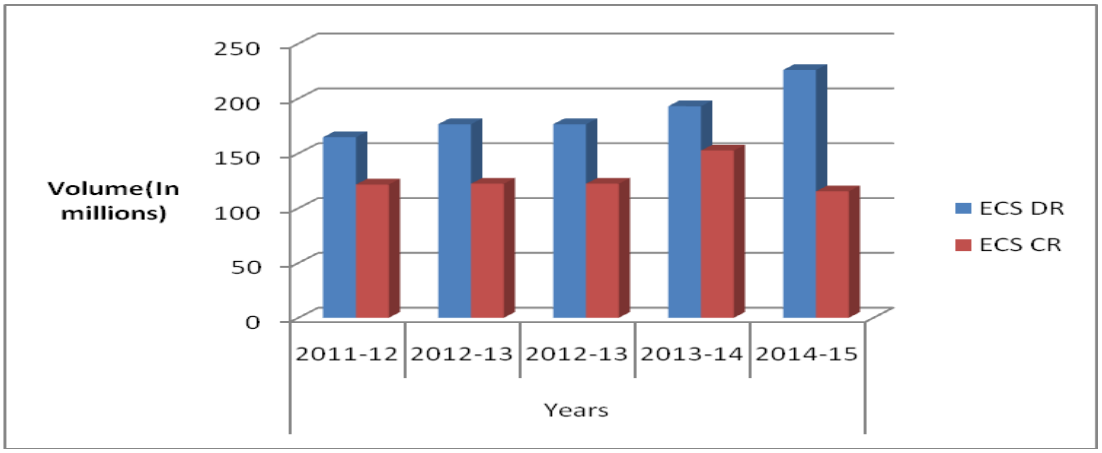


Fig 6.1 Volume of Electronic Clearing Services(Annual Turnover)

Table 6.1 shows that during 2013-14, the electronic clearing service (ECS) debit-handled 193 million transactions valued at around `1,268 billion and ECS credit processed 152 million transactions valued at around `2,493 billion. There is increase in no. of transactions processed by ECS Credit by 0.57% with decrease in their value of transactions by 3.61% in 2012-13 in comparison to 2011-12 & 5% increase in number of transaction with increase in their value by 40% in 2013-14 in comparison to 2012-13. There is also increasing trend in transactions processed by ECS Debit by 17% in 2014-15 in comparison to 2013-14.In 2014-15, ECS Debit handled around 226 million transactions valued at around `1739.8 billions.

With the gradual expansion of the regional electronic clearing service (RECS) operations, the volumes at many ECS centers have completely subsumed to RECS centers. The number of ECS centers now stands at 34 in addition to the 12 RECS centers in various centers and the national electronic clearing service (NECS) in Mumbai.

6.2 MICR & NON-MICR CLEARING

Table 6.2 :MICR & Non MICR Clearing - Annual Turnover

Item	Volume (million)				Value (` billion)			
	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13	2013-14	2014-15
MICR Clearing	934.9	823.3	439.0	22.4	65,093.2	57,504.0	31,129.8	1850.4
Non-MICR Clearing	227.0	215.3	225.7	208.5	18,815.1	20,898.3	17,681.8	16,819.0

Source: www.rbi.org.in, Annual report 2015

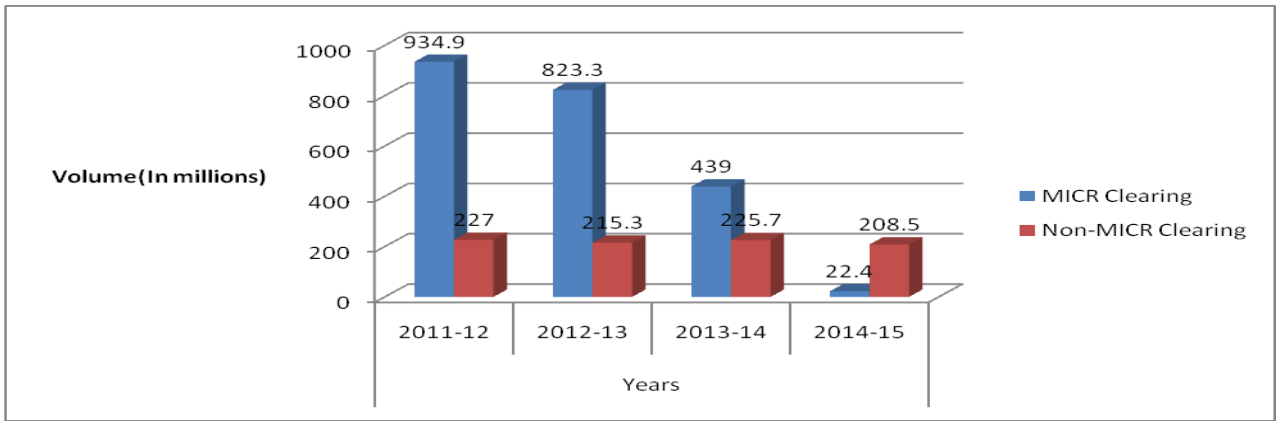


Fig 6.2 Volume of MICR & Non MICR Clearing(Annual Turnover)

Table 6.2 shows that value of transactions through MICR Clearing method has decreased in subsequent years from Rs 65,093.2 millions in 2011-12 to Rs 57,504 millions in 2012-13 &Rs 1850.4 millions in 2014-15. The total number of MICR CPCs in the country reduced from 66 to 19 because of introduction of Cheque Truncation System.

6.3 CHEQUE TRUNCATION SYSTEM

Table 6.3 :Cheque Truncation System - Annual Turnover

Item	Volume (million)				Value (` billion)			
	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13	2013-14	2014-15
CTS	180.0	275.0	589.3	964.9	15,103.7	21,779.5	44,203.1	66769.9

Source: www.rbi.org.in, Annual report 2015

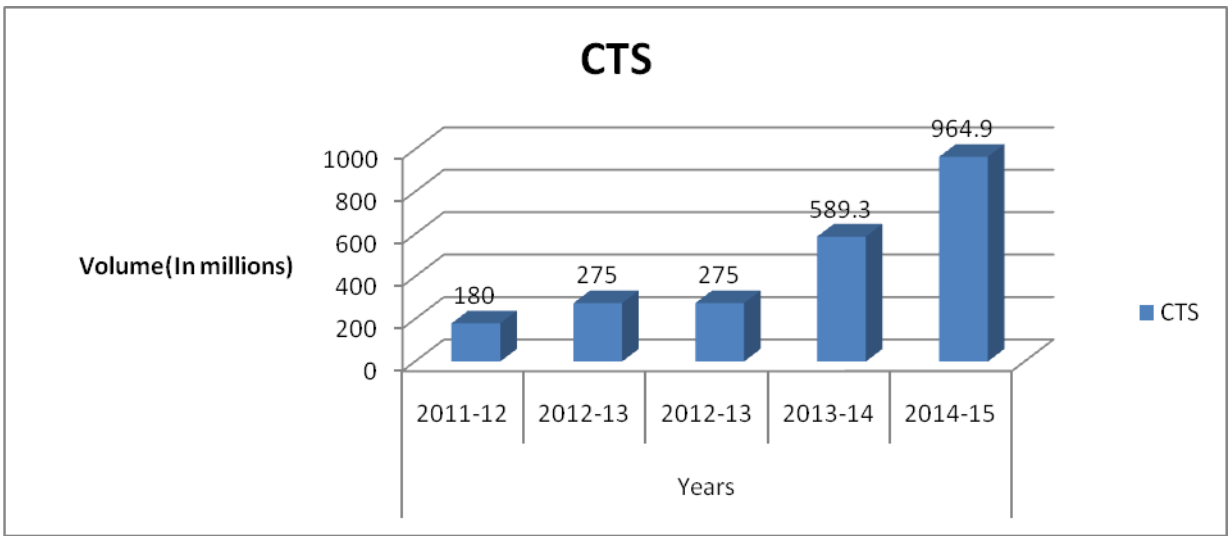


Fig 6.3 Volume of Cheque Truncation System(Annual Turnover)

Table 6.3 shows that in year 2011-12 i.e. at the time of introduction of CTS system, transactions processed through CTS were 180 million valued at '15103.7 trillion. There was subsequent increase in transactions processed with 275 million value at '21,779.5 trillion in 2012-13 & 589.3 million transaction of value 44203.1 trillion in 2013-14.In 2014-15, transactions processed through CTS were 964.9 million valued at '66769.9 billions.

6.4 REAL TIME GROSS SETTLEMENT

Table 6.4 :RTGS - Annual Turnover

Item	Volume (million)				Value (` billion)			
	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13	2013-14	2014-15
RTGS	55.0	68.5	81.1	92.8	539,307.5	676,841.0	734,252.4	754,032.4

Source: www.rbi.org.in, Annual report 2015

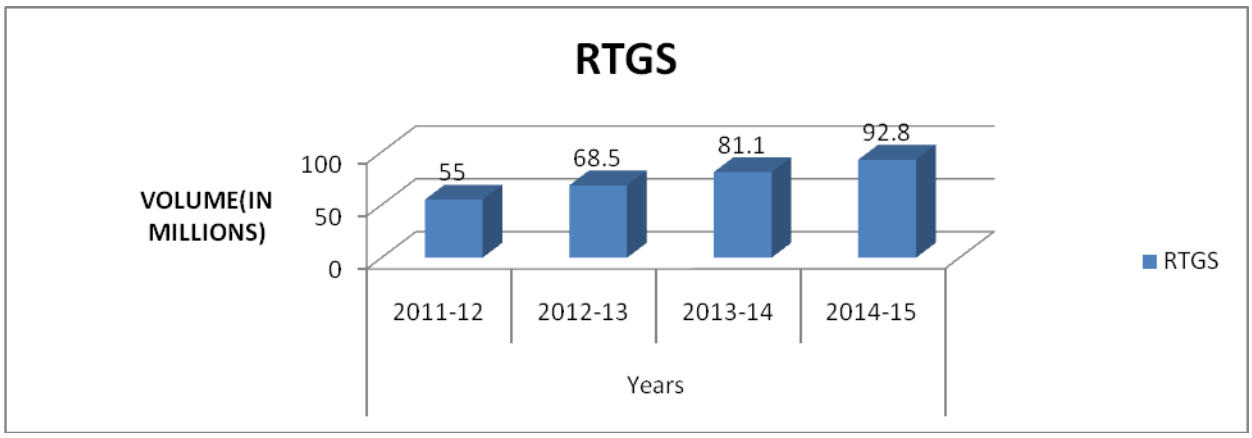


Fig 6.4 Volume of RTGS (Annual Turnover)

Table 6.4 shows that in 2011-12 & 2012-13, RTGS processed around 55 million transactions & 68.5 million transactions respectively valued Rs. 539 trillions in 2011-12 &Rs 676,841 trillion in 2012-13.During 2013-14, the RTGS processed around 81 million transactions valued at `734 trillion. As on April 30, 2014 the number of RTGS enabled bank branches stood at 109,506.In 2014-15, RTGS processed 92.8 million transactions valued at Rs 754, 032.4 trillion.

6.5 NEFT/EFT

Table 6.5 :NEFT/EFT - Annual Turnover								
Item	Volume (million)				Value (` billion)			
	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13	2013-14	2014-15
EFT/NEFT	226.1	394.1	661.0	927.6	17,903.5	29,022.4	43,785.5	59803.8

Source: www.rbi.org.in, Annual report 2015

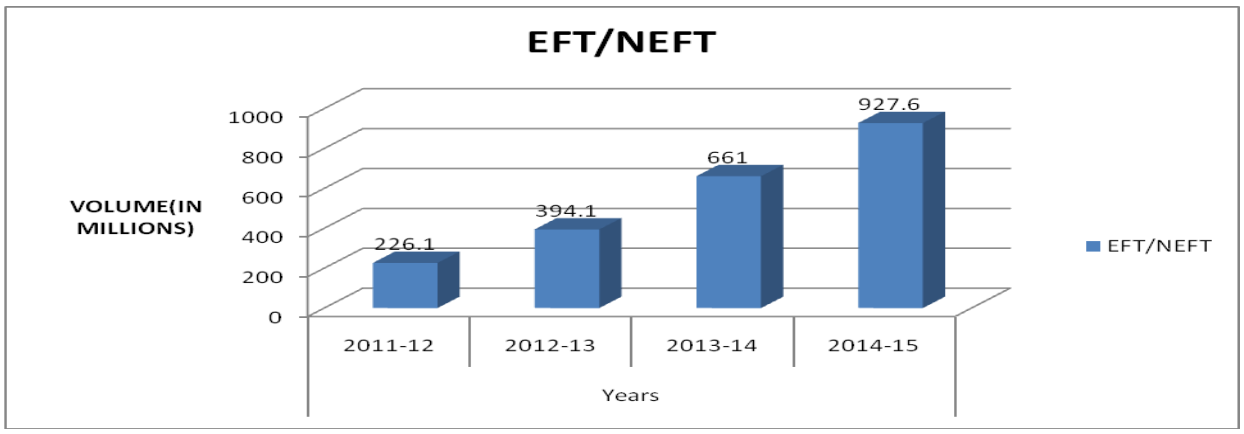


Fig 6.5 Volume of EFT/NEFT (Annual Turnover)

According to RBI annual Report 2013-14,During 2011-12 & 2012-13 , NEFT handled 226.1 million transactions valued at around `17 trillion and 394.1 million transactions valued at ’29 trillions.During 2013-14, NEFT handled 661 million transactions valued at around `44 trillion. In March 2014, NEFT processed a record volume of 82.8 million transactions. As on March 31, 2015, the national electronic funds transfer (NEFT) facility was available through 121,845 branches of 161 banks, in addition to the business correspondent (BC) outlets. NEFT handled 928 million transactions valued at around Rs. 60 trillion in 2014-15 as against 661 million transactions for Rs. 44 trillion in the previous year. During the month of March 2015, NEFT processed the largest ever monthly volume of 106 million transactions.

6.6 ELECTRONIC CLEARING CARDS

Table 6.6 :Electronic Clearing Cards - Annual Turnover								
Item	Volume (million)				Value (` billion)			
	2011-12	2012-13	2013-14	2014-15	2011-12	2012-13	2013-14	2014-15
Credit Cards	320.0	396.6	509.1	615.1	966.1	1229.5	1539.9	1899.2
Debit Cards	327.5	469.1	619.1	808.1	534.3	743.4	954.1	1213.4

Source: www.rbi.org.in, Annual report 2015

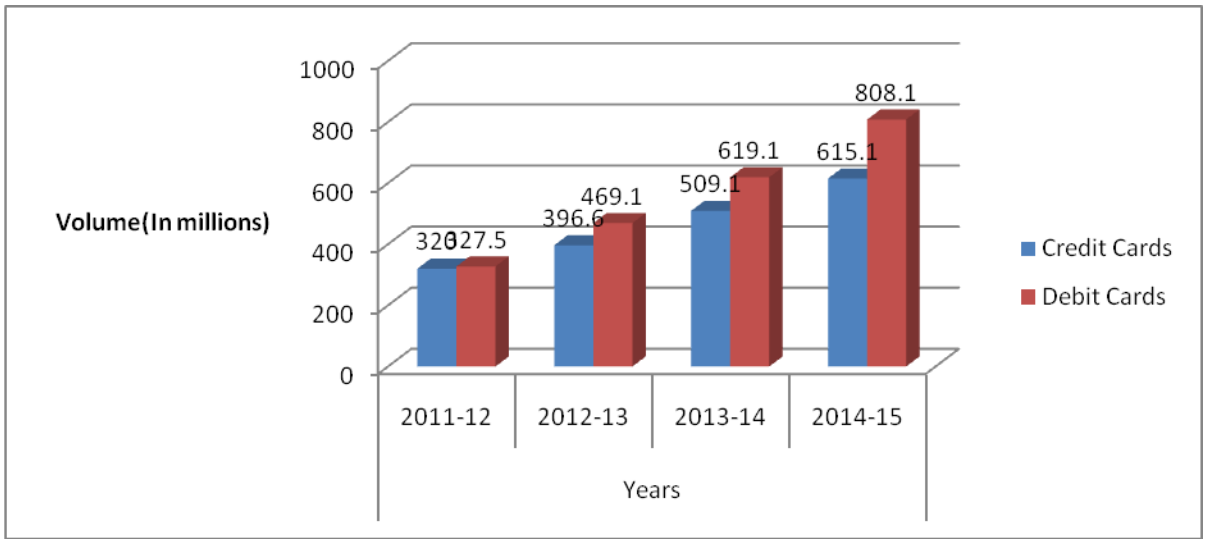


Fig 6.6 Volume of transactions through Electronic Clearing Cards (Annual Turnover)

Table 6.6 shows that volume of transactions through credit cards/ debit cards/ smart cards have increased significantly over the years. Transactions valued at ‘ 966.1 millions , ‘1229.5 million & ‘1539.9 millions in 2011-12, 2012-13 & 2013-14 respectively were processed through Credit Cards. Through debit cards transactions valued at ‘ 534.3 million, 743.4 million % 954.1 millions were processed.

According to India Card Payments Report 2014-15 by Worldline India Pvt, private banks continue to be the major issuers of cards with a share of 57 per cent in 2014-15. Their aggressive strategy has lowered the share of foreign banks to 22 per cent from 26 per cent in the previous year. The share of nationalized banks stands at 20 per cent.Transactions through debit and credit cards have grown 30 per cent and 23 per cent, respectively. The report said debit card transactions accounted for 57 per cent of the total card transactions at points of sale terminals. Debit cards are higher in circulation as they are issued on opening a bank account. While these cards are largely used for small-ticket transactions, credit cards are used for big purchases.

The increasing trend is also reflected in case of bulk electronic payments systems [total of electronic clearing service (ECS) and National Automated Clearing House (NACH)]. Banks continued to use both NACH operated by National Payments Corporation of India (NPCI) as well as ECS operated by the Reserve Bank.

6.7 MOBILE BANKING IN INDIA

Table 6.7: Mobile Banking –Annual Turnover			
Year	**No. of Users (Million)**	**Volume (Million)**	**Value (Billion Rs.)**
2011-12	12.96	25.56	18.21
	(117.45%)	(273.139%)	(196.58%)
2012-13	22.51	53.30	59.90
	(73.69%)	(108.53%)	(228.94%)
2013-14	35.53	94.71	224.38
	(57.84 %)	(77.66 %)	(274.59%)
2014-15	58.1%	179.73	589.12
	(63.5%)	(89.76%)	(162.55%)
Note: figures in brackets indicate the growth over the previous year.			

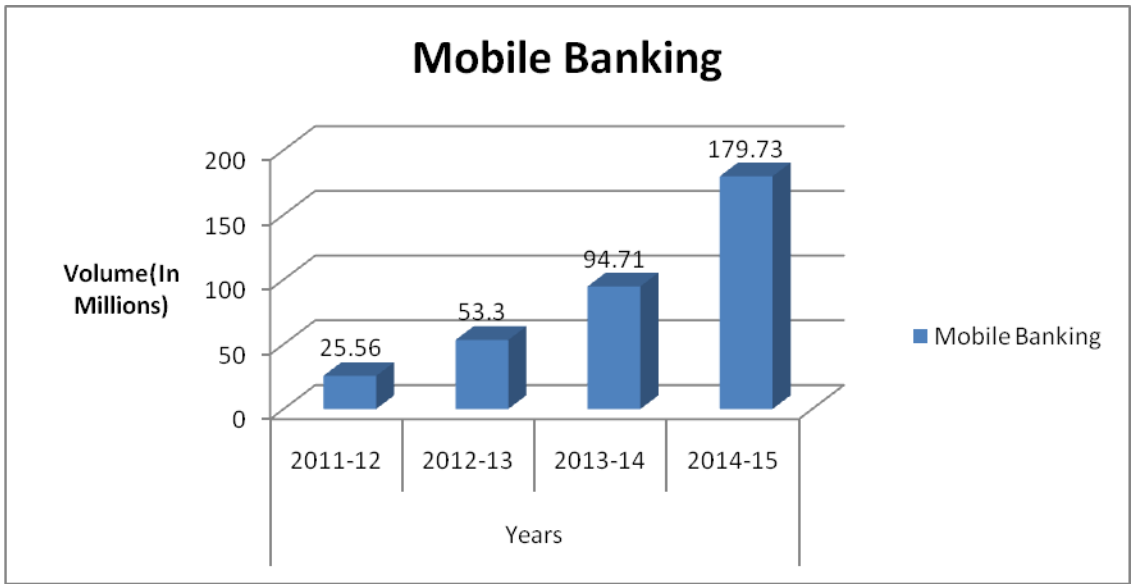


Fig 6. 7 Volume of Mobile Banking Transactions

According to Table 6.7, Mobile banking services handled 95 million transactions valued at around `60 billion which is much higher than around 26 millions in 2011-12 & 53 millions in 2012-13.

6.8 AUTOMATED TELLER MACHINE

Table 6.8 :ATM				
Item	No. of ATM in India			
	2011-12	2012-13	2013-14	2014-15
ATM	92,455	114,364	141,465	174,988

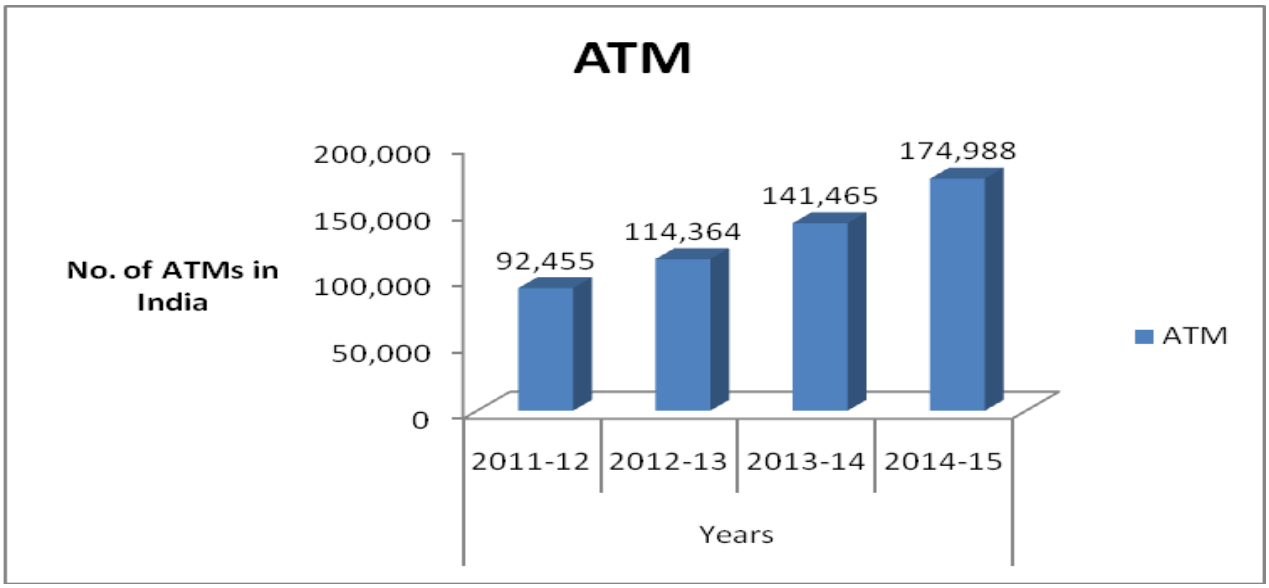


Fig 6. 8 No. of ATMs in India

ATM segment witnessed a growth rate of 30% since last 5 years in India. ATM terminals in India will be expected to grow at a compounded average growth rate of 25% between 2011 and 2015.

7. CHALLENGES:

Developing the right technology & using it in the proper way is very important factor while adopting technology. It is also essential to maintain high efficiency while remaining cost effective .Foreign banks & private banks offers many challenges to public & commercial banks. Hence it is very important for Indian Banks to maintain high standards with high quality to remain in the market. Competition brings innovation & development of new market trends.

Banks have adopted new & improved technology to serve customers better & innovative products. These technologies are imbibed with high security. The introduction of more effective

security systems does not mean that the banking sector is safe. Adoption of technology also brings some challenges. Some of them are discussed below:

1. Cyber-crime is major threat with the introduction if information technology in banking industry.The use of internet and other technologies have enhanced the risk of attack from cyber criminals across the globe. Although, with the advent of technologies, the banking sector has been able to reach more customers however, it has also enhanced the risk for customers who often feel reluctant and insecure in opting for such services. There is a need for the banks to evaluate their current operating practices.

2. There is lack of preparedness both on part of banks and customers in the adoption of new technological changes.

3. With introduction of new products, customer's expectations keeps on increasing which poses competition among various banks.

4. Changes in regulatory measures create another threat for banks.There are more regulatory investigations as regulators across the globe continue to scrutinize the current and past behavior of banks. Banks will have to continue to invest heavily in compliance and risk monitoring to ensure that they can deal with this increasing regulatory scrutiny.

5. There is lack of proper infrastructure for adoption of technology at large level.

6. Phishing is the also one of the Internet Scams. Phishing is the way of sending from a candid company which is operating on the internet. When the customers make an attempt, its request disclosing information at a bogus website will be operated by them. Information entered on the boguswebsite is captured by the criminals and they use it for their own purpose.

7.Fraudsters use skimmers to make fake ATM cards, a swipe-card device which reads consumer's ATM card'sinformation.

8. Another big challenge is employee resistance towards introduction of information technology because it changes the employee job profile & management practices.

9.Risk Management is also key challenge.The risk involvedin using IT in banking operations include security risk, legalrisks, strategic risk, money laundering risk, reputation risk etc.

10. Heavy investment in software & hardware is required.

8. SUGGESTIONS

Need of hour is to develop more sophisticated & secured applications with low cost technology. Bank should adopt better risk management technique to manage the risk which increases the productivity &reliability of banks. Banks have to adopt cohesive approach to fulfill ever changing needs of the customers.

9. CONCLUSION:

Information technology offers many opportunities innovative services to be offered to customers which are cost effective & market driven. IT has strengthened the Indian Banking Industry by developing multiple applications for payment, clearing, data storage & many more. Banks have been able to receive benefits from information technology, electronic banking and service delivery in the area of enhanced efficiency and efficacy of their operations so that more transactions can be processed quicker and most expediently, which undoubtly impact drastically on the overall performance of the banks. The consumer on the other hand, stands to enjoy the advantage of swift service delivery which will give increase volume of yield.

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