

## **Role of Information Technology in Banking Sector in India**

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### **ABSTRACT**

Liberalization and Information technology has attracted many foreign banks to India, thereby opening up new markets, new products and efficient delivery channels for the banking industry. In the development of Indian Economy, Banking sector plays a very important and crucial role. With the use of technology there had been an increase in penetration, productivity and efficiency. It has not only increased the cost effectiveness but also has helped in making small value transactions viable. It also enhances choices, creates new markets, and improves productivity and efficiency. It has been noticed that financial markets have turned into a buyer's markets in India.

Commercial Banks in India are now becoming a one-stop Supermarket. The focus is shifting from mass banking to class banking with the introduction of value added and customized products. Technology allows banks to create what looks like a branch in a business building's lobby without having to hire manpower for manual operations. The branches are running on the concept of 24 X 7 working, made possible by the use of Tele banking, ATMs, Internet banking, Mobile banking and E - banking. These technologies driven delivery channels are being used to reach out to maximum number of customers at lower cost and in most efficient manner. The beauty of these banking innovations is that it puts both banker and customer in a win- win situation. Effective use of technology has a multiplier effect on growth and development.

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**Keywords:** ATMs, Commercial Banks, E - banking, Internet Banking, Information Technology, Liberalization, Mobile Banking, Telebanking.

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## **Introduction**

The banking industry of India is in the midst of an Information technology revolution. A combination of regulatory and competitive reasons has led to increasing importance of total banking automation in this industry. Information technology has basically been used under two different avenues in banking. One is communication and connectivity and other is business process reengineering. Information technology enables sophisticated product development, better market infrastructure, implementation of reliable techniques for control of risks and helps the financial intermediaries to reach geographically distant and diversified markets.

Information technology has changed the contours of three major functions being performed by the banks viz. access to liquidity, transformation of assets and monitoring of risks. Further, information technology and the communication networking systems have a crucial bearing on the efficiency of money, capital and foreign exchange markets.

The software packages for banking applications in India had their beginnings in the middle of 80s, when the banks started computerizing the branches in a limited manner. The early 90s saw the plummeting hardware prices and advent of cheap and inexpensive but high-powered PCs and servers. The commercial banks went in for Total Branch Automation Packages for computerization. The middle and late 90s witnessed the tornado of financial reforms, deregulation, globalization etc. coupled with rapid revolution in communication technologies and evolution of novel concept of 'convergence' of computer and communication technologies, like internet, mobile/cell phones etc. It changed the face of Indian banking system completely.

## **Literature Review**

Sharma M.C. and Sharma Abhinav reported that Indian public sector banks that hold around 75 % of market share do have taken initiative in the field of IT. They are moving towards the centralized database and decentralize decisions making process. They possess enviable quality manpower. Awareness and appreciation of IT are very much there. What is needed is a 'big push' the way it was given in the post nationalization period for expansionary activities. Sreelatha T and Chandra Shekhar Reveled that Technology has charged the face of the Indian banking sector through computation, while new private sector banks and foreign banks have an edge in this regard. Among the total number of public sector bank branches, 97.8 percent are fully computerized at end – March 2010 whereas all branches of SBI are fully computerized. Dhingra Sanjay explained that there are at least five different types of approaches in the literature that have been employed in measuring IT

effectiveness. Of those, three are econometric approaches i.e. stochastic frontier approach (SFA), distribution-free approach (DFA) and thick frontier approach (TFA), which are parametric, and two linear programming approaches which are nonparametric i.e. data envelopment analysis (DEA) and free disposal hull (FDH). Most of studies on banking have used either SFA or DEA approach to calculate the effectiveness.

### **Research Methodology**

The meaning of research as “a careful investigation or inquiry especially through search for new facts in any branch of knowledge.” Research is an academic activity and as such they should be used in a technical sense .some people consider research as a movement, a movement from the known to unknown. It is actually voyage of discovery.

#### *Objectives of the study*

The study has following objectives:

1. To find out the progress of computerization in all the public sector banks of India.
2. To analyze the banking innovations after computerization of public sector banks of India.
3. To analyze the ATM progress in the public sector banks of India.
4. To identify challenges in the implementation of I.T. solutions in the public sector banks of India.

#### *Sources of Data Collection*

The present study is based on the secondary data collected from different journals, magazines, sites and published data from various issues of RBI and different Public sector banks. Various studies on this subject have also been referred in this study. The heads and other functionaries have also been contacted personally to collect the required data for this study.

#### *Type of Research design*

Researcher has collected database through the exploratory research design.

#### *Significance of the study*

The use of Information Technology in all spheres of financial and banking sectors is a deep reality. The sector has enabled the banking sector to go beyond its traditional role and is now playing an increasingly important role in its key areas of operation as securitization, risks preference and liquidity among others to which IT helps in a big way. It has assumed such high levels that it is no longer possible for banks to manage their IT implementations on a standalone basis. With I.T. revolution, banks are increasingly interconnecting their computer systems not only across branches in a city but also to other geographic locations which high-speed network infrastructure and setting up

local areas and networks are now exposed to a growing number. The customers have high expectations and have become more demanding now as they are also more techno-savvy as compared to their counterparts of the yesteryears. They demand instant, anything and anywhere banking facilities. Though Reserve Bank of India has formulated many policies on adoption of I.T. in the overall working of the commercial banks in India, yet there is an urgent need to address the issues involved in this respect to compete with the banks at international level. As such there is a great need to focus more on this aspect. The present study helps a lot in this regard.

#### *Limitations of the study*

This research work carried out on the basis of secondary data only. Another important thing observed that duration of time. With this both limitation researcher tried to collect maximum database for this research study.

### **Analysis and Findings**

Technology has changed the face of the Indian banking sector through computerization. Though the new private and foreign sector banks have an edge at present, yet public sector banks have also made a significant progress in this regard. The analysis of the data collected from various banks has been done under the following heads:

#### *(a) Computerization in Banks*

Among the total number of public sector bank branches, 97.8 percent are fully computerized at the end of March 2010 whereas all branches of SBI are fully computerized.

**Table -1:** Computerization in Public Sector Banks (As on 31<sup>st</sup> March 2010)

Sr. No.	Name of the Bank	Branches under Core Banking Solutions %	Branches Fully Computerized %	Fully Computerized Branches (2+3) %	Branches Partially Computerized %
	Public Sector Banks	90.0	7.7	97.8	2.2
	Nationalized Bank	85.9	10.9	96.9	3.1
1	Allahabad Bank	39.9	59.9	99.8	0.2
2	Andhra Bank	100.0	-	100.0	-
3	Bank of Baroda	100.0	-	100.0	-
4	Bank of India	100.0	-	100.0	-
5	Bank of Maharashtra	100.0	-	100.0	-
6	Canara Bank	59.4	40.6	100.0	-
7	Central Bank of India	34.2	51.6	85.7	14.3
8	Corporation Bank	100.0	-	100.0	-
9	Dena Bank	100.0	-	100.0	-
10	Indian Bank	100.0	-	100.0	-
11	Indian Overseas Bank	100.0	-	100.0	-
12	Oriental Commerce Bank	100.0	-	100.0	-
13	Punjab National Bank	100.0	100.0	100.0	-
14	Punjab and Sind Bank	-	13.3	13.3	86.7
15	Syndicate Bank	100.0	-	100.0	-
16	UCO Bank	100.0	-	100.0	-
17	Union Bank of India	100.0	-	100.0	-
18	United Bank of India	100.0	-	100.0	-
19	Vijaya Bank	100.0	-	100.0	-
	<b>State Bank Group</b>	<b>100.0</b>	<b>-</b>	<b>100.0</b>	<b>-</b>
20	State Bank of India	100.0	-	100.0	-
21	State Bank of Bikaner & Jaipur	100.0	-	100.0	-
22	State Bank of Hyderabad	100.0	-	100.0	-
23	State Bank of Indore	100.0	-	100.0	-
24	State Bank of Mysore	100.0	-	100.0	-
25	State Bank of Patiala	100.0	-	100.0	-
26	State Bank of Travancore	100.0	-	100.0	-
#: Other than branches under Core Banking Solutions					
Note : Data for IDBI Bank Ltd. is not available					

Source: Data furnished by respective banks.

*(b) Banking Innovations*

Today we have electronic payment system along with currency notes. India's financial sector is

moving towards a scenario, where it can have new instruments along with liquidity and safety. Migration from cash and cheque based payment system. It has become a necessity to electronic fund transfer system on account of the following reasons:

1. Large volumes of transaction,
2. High cost of physical handling and storage of paper instruments.
3. Delay in realization is a common feature.
4. Finality of payment takes time because the physical movement of instruments in large volumes from branches to and from clearing house, and sorting them according to each bank branch at the center creates problems

*The two most common technologies used for electronic payments are as follows*

*(i) National Electronic fund Transfer (NEFT) :*

It is a nation-wide payment system facilitating one-to-one funds transfer. Under this Scheme, individuals, firms and corporate can electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country participating in the Scheme. For being part of the NEFT funds transfer network, a bank branch has to be NEFT- enabled.

*(ii. Real Time Gross Settlement (RTGS)*

The acronym RTGS stands for Real Time Gross Settlement. RTGS system is a funds transfer mechanism where transfer of money takes place from one bank to another on a real time and on gross basis. This is the fastest possible money transfer system through the banking channel. 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 bunching with any other transaction. Considering that money transfer takes place in the books of the Reserve Bank of India, the payment is taken as final and irrevocable.

RTGS volume crossed 0.3 million transactions twice during March 2012 and the necessary resource augmentation was undertaken to handle the high transaction volumes. In view of the increasing volumes, as also other business requirements, the Reserve Bank is in the process of replacing the existing RTGS with NG-RTGS, which provides more functions and facilities. The NG-RTGS is expected to adopt the emerging messaging standards.

The table below indicates the various payment indicators along with their annual turnover.

**Table-2: Payment System Indicators - Annual Turnover**

Item	Volume (million)			Value (₹ trillion)		
	2009-10	2010-11	2011-12	2009-10	2010-11	2011-12
1	2	3	4	5	6	7
<b>Systemically Important Payment Systems (SIPS)</b>						
1. RTGS	33.2	49.3	55	322.8	394.5	484.9
Total SIPS (1)	33.2	49.3	55	322.8	394.5	484.9
<b>Financial Markets Clearing</b>						
2. CBLO	0.1	0.2	0.1	155.4	122.6	111.6
3. Government Securities Clearing	0.4	0.4	0.4	89.9	69.7	72.5
4. Forex Clearing	0.9	1.2	1.3	142.1	191.6	222
Total Financial Markets Clearing (2-4)	1.4	1.7	1.9	387.4	383.9	406.1
<b>Others</b>						
5. MICR Clearing	1,149.70	1,155.10	1,114.50	85.3	83	80.2
6. Non-MICR Clearing	230.6	232.3	227	18.8	18.3	18.8
<b>Retail Electronic Clearing</b>						
7. ECS DR	149.3	156.7	164.7	0.7	0.7	0.8
8. ECS CR	98.1	117.3	121.5	1.2	1.8	1.8
9. EFT/NEFT	66.3	132.3	226.1	4.1	9.4	17.9
Total Retail Electronic Clearing	313.7	406.3	512.3	6	11.9	20.6
<b>Cards</b>						
10. Credit Cards	234.2	265.1	320	0.6	0.8	1
11. Debit Cards	170.2	237.1	327.5	0.3	0.4	0.5
Total Cards	404.4	502.2	647.5	0.9	1.1	1.5
Total Others (5 to 11)	2,098.40	2,295.90	2,501.30	110.9	114.4	121.1
<b>Grand Total (1-11)</b>	<b>2,133.00</b>	<b>2,346.90</b>	<b>2,558.20</b>	<b>821.1</b>	<b>892.9</b>	<b>1,012.00</b>

Note:

1. Data for MICR clearing include data for high value clearing (HVC) for the year 2009-10. HVC was a special clearing of cheques for ` 0.1 million (later changed to `1 million) and was discontinued from April 1, 2010.
2. At the end of April 2012, MICR clearing was available at 64 centres (66 centres during the previous year) and the cheque truncation system (CTS) is available at two centres, namely New Delhi and Chennai. Full cheque clearing volume at New Delhi and Chennai has been migrated to CTS from July 2009 and March 2012 respectively. The CTS data is part of the MICR data clearing.
3. Settlement of government securities clearing and forex transactions is through the Clearing Corporation of India Ltd (CCIL).
4. The figures for cards are for transactions at POS terminals only.
5. Transactions pertaining to pre-paid instruments (PPI) and mobile banking for a value of `62 billion and `18.21 billion respectively have not been included in the retail electronic clearing.

*(i) Promoting Electronic Modes of Payment*

The Reserve Bank vigorously promotes the use of electronic modes of payment over paper based payments, as they are safe, secure, cost-effective and more efficient. The various security measures in card payment systems and the guidelines for intermediaries have also contributed to the safety of the system, resulting in the increased use of electronic payments

The increase in the spread of NEFT to 86,449 branches and RTGS to 84,638 branches as at end-May 2012 underscores the success of various policy initiatives in this regard. Further, the rationalization of the access criteria norms, including the option of sub-membership, is expected to increase the electronic payment products that banks offer to their customers.

To provide a fillip to the growth of the electronic payment system, the Reserve Bank had waived processing charges in March 2006. These have been re-introduced from July 1, 2011 by way of a service charge from originating banks to provide adequate compensation to banks that manage the operations and the destination bank. Along similar lines, service charges in the RTGS system were introduced from October 1, 2011 to recover operational costs and to bring further efficiency in the system. The RTGS service charges have been introduced with three sub-components: monthly membership fee, transaction fee, and time varying tariff. Member banks are permitted to pass on only the time varying tariff to their customers.



Reflecting these measures, transactions under NEFT grew by 71 per cent (volume) and 91 per cent (value) during 2011-12. The volume and value of gross transactions in RTGS also registered a growth of 11.7 per cent and 11.2 per cent respectively, during 2011-12. The value of gross transactions in RTGS constituted 51 per cent of the total value of non-cash payments during 2011-12.

The increasing usage of alternate modes of payments, such as credit cards, debit cards, PPIs and mobile payments has accelerated the growth of non-cash and non-paper based mode of payments. The use of both debit and credit cards at POS were at par in 2011-12; however, usage in value terms is still tilted towards credit cards.

PPIs registered a significant growth of over 67 per cent (in value terms) during 2011-12 and constituted 36.3 per cent of the total card segment in the country, with paper vouchers accounting for the bulk. As of end-March 2012, 39 banks (including the Department of Post) and 20 non-bank entities were authorized to issue PPIs in India. The launch of e-wallets by non-banks reflects the significant opportunity for mobile wallets and magstripe cards to increase their overall share in the PPI market.

To encourage the use of mobile phones as a channel of payment, India has adopted a bank led mobile payment model. As at end-March 2012, 49 banks with a customer base of 13 million provided mobile banking service in India. During the year 2011-12, 25.6 million mobile banking transactions valued at `18.2 billion were transacted, thus registering a growth of 198 per cent and 174 per cent, respectively, over the previous year.

*(ii) Card Payments:*

The Reserve Bank has mandated additional factor of authentication for the use of cards issued by banks in India. Accordingly, banks have implemented the same for all on-line card-not present (CNP) transactions (e-commerce, m-commerce and interactive voice response). The mandate has been extended to include all mail order telephone order and standing instructions by May 1, 2012, with the additional caveat that in the case of customer grievance for transactions effected without the additional authentication after the stipulated date, the issuer bank shall reimburse the loss to the customer without demur.

As part of the measures to contain the risk in card present transactions, the Reserve Bank in March 2011 constituted a working group on CP transactions to study and recommend an action plan to foolproof the system. The Reserve Bank has since advised banks and other stakeholders to implement the necessary measures <sup>1</sup> within the stipulated time-frame.

*(d) Growth of ATMs in India:*

Even though ATM originally developed for cash dispenses, now it includes many other bank related functions such as- cash withdrawal, paying routing bills fees and taxes, printing bank statements, funds transfers, purchasing online products, train tickets reservations, products from shopping mall, donations and charities, adding pre-paid cell phone/mobile phone credit, advertising channels for own or third party products and services and payment of insurance premiums.

**Table-3:** ATM Strength (as on 31st March 2011)

<b>Banks</b>	<b>Number</b>
Public Sector banks	49,487
Private Sector banks	23,651
Old Private sector banks	4,126
Foreign Banks	1,367
Total	74,505

About 70% of the total ATMs are in urban/metro areas. Public Sector banks have stronger reach in rural areas (SBI)

The use of electronic payment has witnessed manifold increase, partly reflecting increased adoption of technology. The growth of volume of ATMs indicates that customer most prefer ATMs for transactions. ATMs provide different kinds of services per customer. According to data from National Payments Corporation of India, the number of ATMs in the country — of private, public, foreign and cooperative banks, part of the National Financial Switch connecting all ATMs — had reached 98,025 by the end of April 2012.

*(e) Corporate Internet Banking:*

The Internet has initiated an electronic revolution in the global banking sector. Its dynamic and flexible nature as well as its ubiquitous reach has helped in leveraging a variety of banking activities. The Internet has emerged as one of the major distribution channels of banking products and services for banks in the U.S and in European countries. Consumers are embracing the many benefits of Internet banking like improved customer access which facilitates the offering of more services, attract new customers and reduce customer attrition. The followings are the advantages of Internet Banking:

*Advantages to customers:*

Banking from your desk: - with e-banking services, one can actually carry out a number of

transactions sitting on one's seat with just a few click. Net banking customers view their account balance and also open fixed deposits, transfer funds, pay electricity, telephone or mobile phones bills and much more.

Instant information: The accounts of the customers are updated as soon as the transaction takes place i.e., the accounts show the information updated to the last second. This means if a cheque issued by you has been debited from your account in the morning, your account status will reflect this when you log in to your accounts in the afternoon as against the earlier updating at the end of the day.

*Advantages to the banks:*

Lesser personnel required: online banking has encouraged a chunk of people, though a smaller one to carry out most of their transactions from a distance. This has resulted in lesser pressure on the employees in terms of entertaining customers. Easy publicity: banks can easily pass on the information about their new avenues/schemes without any wastage of time. Customers interested in the schemes would revert back and can be attended to later.

*(f). Payment Systems by RBI:* Inter-bank Clearing System, High Value Clearing System, MICR Clearing System, Government Securities Clearing System and Real Time Gross Settlement System

*Dimensions of IT Innovation*

*(a). Electronic-only retail commercial banking*

*(i) Potential for Electronic-only Retail Commercial Banking*

1. Greater price transparency.
2. Greater convenience to customers (including congenial resolution of customer complains through electronic media).
3. Each customer segment interacts with the bank through the most cost effective distribution channel.
4. Innovations (such as smart cards and digital cash) that circumvent banks' proprietary networks with alternative distribution or payment systems.
5. Creation of new customer segments and improved relationship banking.

*(ii) Challenges in Electronic-only Retail Commercial Banking*

1. Each new technological innovation accounts for (proportionally) smaller reductions in price differentials.
2. Bank customers remain unwilling to pay for interfaces for the new technology, while merchants expect to share the revenue of new payment media through lower commission charges.

3. Defection rates remain low thanks to the inertia of bank customers, which has been historically high.
4. Unknown brand name and associated high marketing expenditure (to attract long-term core deposits)002E

*(b). Operational Function Innovation*

*(i). Potential for electronic-only retail commercial banking*

Enhanced financial performance due to reductions in overhead expenses (i.e. no retail branch network) which are not offset by reductions in revenue or increases in other expenses. Standardization of activities in payment and lending services eliminates the uniqueness of banks' proven expertise and ability to control losses from payment activities efficiently access to a much wider base of depositors and high rates of asset growth

*(ii). Challenges for Electronic-only Retail Commercial Banking*

1. The possibility of scale economies make it very hard for potential entrants to catch up, even with technically better systems.
2. Continued importance of contextual non - standardized elements to assess risk.
3. The potential for fraud, money laundering and systemic failure requires supervision, regulation and minimum capital requirement.
4. More specialized (and expensive) labor force.

### **Conclusion**

The cut throat competition and increasing expectation of customers had resulted in increased awareness on information technology among the commercial banks in India. The arrival of foreign and new private sector banks with their superior technology based services has also forced the commercial banks in India to switch over to the new technology in their day to day operations. The use of technology in expanding banking sector in India is one of the key focus areas not only for commercial banks but for the policy makers also. The banks in India are using Information Technology not only to improve their own internal processes but also to improvise facilities and services to their customers. The efficient use of technology has facilitated accurate and timely management of the increased transaction volumes of banks which comes with larger customer base. Indian banking industry is greatly benefiting from I.T. revolution all over the world. It enabled sophisticated product development, better market infrastructure, implementation of reliable techniques for control of risks and has helped the financial intermediaries to reach geographically

distant and diversified markets. The Information Technology Act, 2000 has also provided the much needed legal recognition to the creation, transmission and retention of an electronic or magnetic data which can be treated as a valid proof in a court of law, except in those areas, which continue to be governed by the provisions of the Negotiable Instruments Act, 1881. By designing and offering simple, safe and secure technology, banks reach at the doorsteps of the customers with an objective of 'delight customer satisfaction'. In fact Information technology has succeeded in creating a win-win situation for all concerned segments in India.

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