



## Status of Information Technology in the Modern Scenario: A Screen Short of Indian Banking Sector

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### **Abstract**

Banking can simply be expressed as the business of keeping, lending, exchanging and issuing money [Barnhart and Barnhart, 2000]. It can also be expressed as the business of bankers. Banking to-day is under-going a radical transformation. The symptoms are obvious; new products, new players, new channels are appearing daily. This transformation is taking place across all sectors of the banking industry. Information Technology (IT) is one of the major issues on any bank chief executive's agenda, thrust into prominence by the massive and increasing magnitude of its costs at a time when competitive pressure has never been greater, (Carrington et al., 1994). Information system or technology can be any organized combination of people, hardware, software, communications networks, and data resources that collect, transform, and disseminate information in an organization. Banks urgently need to improve the ability to think strategically about information technology investments. Only banks that use their technology resources effectively have the opportunity to secure real competitive advantage in this fast changing industry through real product or service differentiation. The Indian banks are subject to tremendous pressures to perform as otherwise their very survival would be at stake. Information Technology (IT) plays an important role in the banking sector as it would not only ensure smooth passage of inter-related transactions over the electronic medium but will also facilitate complex financial product innovation and product development. The application of Information Technology (IT) and Electronic Banking (e-banking) is becoming the order of the day with the banking system heading towards virtual banking. As an extreme case of Electronic Banking (e-banking), World Wide Banking (WWB) on the pattern of World Wide Web (WWW) can be visualized. That means all banks would be interlinked and individual bank identity, as far as the customer is concerned, does not exist. There is no need to have large number of physical bank branches, extension counters. There is no need of person-to-person physical interaction or

dealings. Customers would be able to do all their banking operations sitting in their offices or homes and operating through internet. This would be the case of banking reaching the customers. This paper made an attempt to study various services provided by the bank with the help of Information Technology (IT), electronic banking (e-banking), service quality, banking system and confidentiality of data.

Electronic banking (e-banking) is generally an extension of traditional banking, using the internet as an electric delivery channel for banking products and services. The intense competitive environment is continuously forcing the banks to become customer-centric. To-day technology has emerged as a strategic resource for achieving higher efficiency, control of operations, productivity and profitability for Banks as well as it is the realization of their "anywhere, anytime, anyway" banking dream for customers. But instead of all these benefits, the awareness and adoption rate of banking services among the rural customers is still found very low. The banking to-day is redefined and re-engineered with the use of Information Technology (IT) and it is sure that the future of banking will offer more sophisticated services to customers with the continuous product and process innovations. Thus there is a paradigm shift from seller's market to buyer's market. So, banks also change their approach from "Conventional Banking to Convenience Banking" and "Mass banking to Class Banking". The study examines various relevant issues relating to role of Information Technology (IT) in banking and recommends ensuring privacy and confidentiality of data's, implement Information Technology (IT) and other Cyber laws properly. This will ensure the developmental role of Information Technology (IT) in the banking industry.

### **Key-words:**

Banking Sector, Information Technology, Electronic Banking, World Wide Web, World Wide Banking, Innovation, Challenges, Economic Development,



*Governmental incentives, Employment and Education, Awareness*

## 1. Introduction

To-day, we are having a fairly well developed banking system with different classes of banks - public sector banks, foreign banks, private sector banks - both old and new generation, regional rural banks and co-operative banks with the Reserve Bank of India (RBI) as the fountain head of the system. In the banking field, there has been an unprecedented growth and diversification of banking industry has been so stupendous that it has no parallel in the annals of banking anywhere in the world. During the last 48 years since 1969, tremendous changes have taken place in the banking industry. The banks have shed their traditional functions and have been innovating, improving and coming out with new types of the services to cater to the emerging needs of their customers. Massive branch expansion in the rural and under-developed areas, mobilizing of savings and diversification of credit facilities to the either to neglected areas like small scale industrial sector, agricultural and other preferred areas like export sector etc... have resulted in the widening and deepening of the financial infrastructure and transferred the fundamental character of class banking into mass banking.

There has been considerable innovation and diversification in the business of major commercial banks. Some of them have engaged in the areas of consumer credit, credit cards, merchant banking, leasing, mutual funds etc. A few banks have already set-up subsidiaries for merchant banking, leasing and mutual funds and many more are in the process of doing so. Some banks have commenced factoring business.

The major challenges faced by banks today are as to how to cope with competitive forces and strengthen their balance sheet. To-day, banks are groaning with burden of Non Performing Assets (NPAs). It is rightly felt that these contaminated debts, if not recovered, will eat into the very vitals of the banks. Another major anxiety before the banking industry is the high transaction cost of carrying Non-Performing Assets (NPAs) in their books. The resolution of the Non-Performing Assets (NPAs) problem requiring greater accountability on the part of the corporate, greater disclosure in the case of defaults, an efficient

credit information sharing system and an appropriate legal framework pertaining to the banking system so that court procedures can be streamlined and actual recoveries made within an acceptable time frame. The banking industry cannot afford to sustain itself with such high levels of Non-Performing Assets (NPAs) thus, *'lend, but lent for a purpose and with a purpose ought to be the slogan for salvation'*.

The Indian banks are subject to tremendous pressures to perform as otherwise their very survival would be at stake. Information Technology (IT) plays an important role in the banking sector as it would not only ensure smooth passage of inter-related transactions over the electric medium but will also facilitate complex financial product innovation and product development. The application of IT and e-banking is becoming the order of the day with the banking system heading towards virtual banking.

As an extreme case of e-banking World Wide Banking (WWB), on the pattern of World Wide Web (WWW) can be visualized. That means all banks would be interlinked and individual bank identity, as far as the customer is concerned, does not exist. There is no need to have large number of physical bank branches, extension counters. There is no need to have large number of physical bank branches, extension counters. There is no need of person-to-person physical interaction or dealings. Customers would be able to do all their banking operations sitting in their offices or homes and operating through internet. This would be the case of banking reaching the customers.

Banking landscape is changing very fast. Many new players with different muscle powers will enter the market. The Reserve Bank in its bid to move towards the best international banking practices will further sharpen the prudential norms and strengthen its supervisor mechanism. There will be more transparency and disclosures.

In the days to come, banks are expected to play a very useful role in the economic development and the emerging market will provide ample business opportunities to harness. Human Resources Management (HRM) is assuming to be of greater importance. As banking in India will become more and more Knowledge supported, human capital will emerge as the finest assets of the banking system. Ultimately banking is people and not just figures.



Banking environment has become highly competitive to-day. To be able to survive and grow in the changing market environment banks are going for the latest technologies, which is being perceived as an 'enabling resource' that can help in developing learner and more flexible structure that can respond quickly to the dynamics of a fast changing market scenario. It is also viewed as an instrument of cost reduction and effective communication either people and institutions associated with the banking business.

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 90's saw the plummeting hardware prices and advent of cheap and inexpensive but high powered PC's and Services and banks went in for what was called Total Branch Automation (TBA) packages. The middle and late 90's witnessed the tornado of financial reforms, deregulation globalization etc. coupled either rapid revolution in communication technologies and evolution of novel concept of convergence of communication technologies, like internet, mobile/cell phones etc. Technology has continuously played an important role in the working of banking institutions and the services provided by them. Safe-keeping of public money, transfer of money, issuing drafts, exploring investment opportunities and lending drafts, exploring investment is being provided.

Information Technology (IT) 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. Internet has significantly influenced delivery channels of the banks. Internet has emerged as an important medium for delivery of banking products and services.

The customers can view the accounts; get account statements, transfer funds and purchase drafts by just punching on few keys. The smart card's i.e., cards with micro processor chip have added new dimension to the scenario. An introduction of 'Cyber Cash' the exchange of cash takes place entirely through 'Cyber-books'. Collection of Electricity bills and telephone bills has become easy. The upgradeability and flexibility of internet technology after unprecedented opportunities for the banks are helpful to reach out to its customers. No doubt banking services have undergone drastic changes and so also the

expectation of customers from the banks has increased greater.

Information Technology is increasingly moving from a back office function to a prime assistant in increasing the value of a bank over time. Information Technology (IT) does so by maximizing banks of pro-active measures such as strengthening and standardizing banks infrastructure in respect of security, communication and networking, achieving inter branch connectivity, moving towards Real Time Gross Settlement (RTGS) environment the forecasting of liquidity by building real time databases, use of Magnetic Ink Character Recognition and Imaging technology for cheque clearing to name a few. Indian banks are going for the retail banking in a big way.

The key driver to change has largely been the increasing sophistication in technology and the growing popularity of the Internet. The shift from traditional banking to e-banking is changing customer's expectations.

## 2. Objectives of the Study

The objectives of my research are to address some of the issues relating to information technology how to helpful for banking sector in India. The objectives are;

- I. To examine the India's Information Technology (IT) industry
- II. To analyze the relationship between Information Technology (IT) and Indian banking sector
- III. To understand the need of modern banking services
- IV. To know the impact of technological banking services
- V. To aware the importance with respect to modern banking services
- VI. To realize the benefits of modern banking services

## 3. Information Technology (IT)

Information Technology (IT) is the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronics-based combination of computing and telecommunications. Information Technology (IT) is the industry, which through the use of computers and other supporting, equipment helps in



the spread of knowledge. Information Technology (IT) for some time was synonymous to computers. But with the rapid and advancement in various information delivery systems such as radio, television, telephone, newspapers, fax and of course computers and computer networks, information technology refers to the entire gamut of media and devices used to transmit and process information for use by various target groups in the society. Information Technology (IT) has therefore, been rightly termed at information and communication revolution.

#### **4. Banking**

An establishment authorized by a government to accept deposits, pay interest, clear cheques, make loans, act as an intermediary in financial transactions and provide other financial services to its customers – its called bank.

In simply says, banking can be defined as the business activity of accepting and safeguarding money owned by other individuals entities and then lending out this money in order to earn a profit. However, with the passage of time, the activities covered by banking business have widened and now various other services are also offered by banks. Now-a-days, the banking services include issuance of debit and credit cards providing safe custody of valuable items, lockers, ATM services and online transfer of funds across the country as well as world.

#### **5. Literature Review of the Study**

Arora, highlighted the significance of bank transformation. Technology has a definitive role in facilitating transactions in the banking sectors and the impact of technology implementation has resulted in the introduction of new products and service by various financial institutions in India.

Awasthi & Sharma, reveals that advances in technology are set to change the face of the banking business. Technology has transformed the delivery channels by banks in retail banking. The study also explored the challenges that banking institution and its regulatory face.

Rao, analyzed the impact of new technology on banking sector. The technology is changing the way the business is done and open new vistas for doing the same work differently in most cost –effective manner. Tele banking and internet-banking are making forays such that branch banking may give to home banking.

Bhasin, analyzed the impact of IT on financial sector. It has transformed the repetitive and overlapping systems and procedures, into simple single key pressing technology resulting in speed, accuracy and efficiency of conducting business and enabling them to enter into the new activities.

Sabnani, analyzed the importance of —Universal Banking| in India. The developments in IT and telecommunications are allowing international pooling of financial resources thereby spreading the risk across more than one market. He feels that Universal Banking System will increase in India.

Verma, analyzed the impact of IT on public sector banks and new private sector banks and observed that IT is a threat for public sector banks whereas strength of new private banks. New private banks are fully computerized and providing services on internet, especially ICICI Banks and HDFC Bank very active on this front and concentrating on Internet and e-Commerce to offer their clientele a whole range of products under one roof. Public sector banks have to do a lot on improving their productivity and efficiency.

Vageesh, highly appreciated the new private sector banks which have adopted IT. The new private sector banks with their state-of-the-art technology and grandiose plans to make in-roads into e-banking. Banks are foraying into net banking offering great convenience to the customers on one hand and results in lower transaction cost for the banks cost for the banks on the other hand.

#### **6. Role of Information Technology in various in the World**

Even a single day without computers leaves us feeling paralytic. Information Technology (IT) has made us completely dependent for even the simplest day-to-day task. The recent incident of system failure at key Swiss government ministries has brought Geneva to a standstill. This proves how information technology has drastically transformed the way we

carry out day-to-day activities. It is dynamic and vast and its absence for a day leaves a severe effect on us. Internet being the simplest form of Information Technology (IT) has a major role to play in our daily lives. It has become the back-bone of every organization as well as house hold.

- (i) It has entered almost all industry verticals for instance, railways, airways and sea networks are connected with the help of Information Technology (IT), as information plays a vital role in the smooth functioning in those sectors and lack of even for a second can create havoc.
- (ii) Banking is another sector that depends a lot on Information Technology (IT). From carrying out important transaction to storage of confidential data, Information Technology (IT) has made several complicated and time consuming work a lot simpler and faster with considerable amount of safety. In fact e-commerce has made on-line banking as well as on-line purchasing and selling of commodities and services much easier and faster adding to the convince of the common man. By simply searching on the internet one case orders anything with just a click of the mouse button.
- (iii) Similarly, the travel and tourism sector all over the world has benefited a lot from the development of Information Technology (IT) industry. One can avoid the crowd and lengthy procedures of booking air or railway or bus tickets. One can choose from the best deals and book tickets online from the comfort of their living room.
- (iv) Information Technology (IT) plays a major role in simplifying various organizational processes. Most business enterprises rely on the power of information technology for carrying out their daily tasks conveniently and faster. Information Technology (IT) makes complex procedures easier, faster and also helps a lot in avoiding redundancy. It lets individuals' access necessary data ensuring the safety of confidential ones.
- (v) The field of education has also been blessed with the benefits of Information Technology (IT). On-line application to universities, checking results study materials and much more has made the reach of education broad and easier and where not.

## 7. How Technologies create value in India

To assess the potential contribution of empowering technologies to India's future, I conducted a bottom-up analysis of applications in seven sectors of the Indian economy that account for 45 per cent of Gross Domestic Product (GDP) and more than 60 per cent of employment. In each of these sectors, I identify key challenges and the technologies that can help address them. For each sector, I rely on case examples and expert insights to refine the analysis and identify barriers to adoption and possible interventions.

**Financial services:** India's banking sector has used technology to digitize business operations and to create new delivery models and services, such as online brokerage, mobile banking, and online insurance sales. Disruptive technologies now offer an opportunity to address persistent challenges such as lack of financial inclusion; just 36 per cent of Indians have access to a bank account. Technology applications such as mobile payments can bring greater efficiencies; the government pays some \$100 billion per year through paper based channels. The applications we size could translate into economic value of \$32 billion to \$140 billion per year in 2025. The value arises from improved productivity and higher incomes of those using the services, and lower costs and reduced leakage in government transfers and payments. As many as 300 million Indians could gain access to banking services and could raise their incomes by 5 to 30 per cent due to better access to credit and the ability to save and make remittances. Leakage of subsidies could be reduced by 8 to 10 per cent.

**Education and skills:** Learning outcomes in India's educational institutions are poor due to variable quality of teaching, and vocational training capacity is not adequate for the growing workforce. If these issues are not addressed, India could have far too many low-skill workers in 2025 than the labour market will require. Technology applications can improve the quality of teaching and raise vocational attainment. School performance can be improved through e-administration, digital identity-based attendance systems, and online teacher certification and training. Blended learning with MOOCs (Massive Open Online Courses) can bring high-quality courses to students, and learning simulations



can boost hands-on training in nursing and other disciplines. We estimate an economic impact of \$60 billion to \$90 billion per year by 2025 from the higher productivity of more skilled workers. India could have about 24 million more high school and college educated workers and 18 million to 33 million more vocationally trained workers by 2025 due to use of digital technologies in the education sector.

**Health care:** Based on international standards, India has about half the doctors, nurses, and health-care centers it needs for its population and existing facilities are not geared to delivering optimal health outcomes. Disruptive technologies could transform delivery of public health services by 2025, extending care through remote health services (delivering expert consultations via the mobile Internet), digital tools that enable health-care workers with modest skills to carry out basic protocols, and low-cost diagnostic devices that work with smart-phones. Using Internet of Things tracking systems to curb counterfeit drugs could be worth as much as \$15 billion per year. The total value of empowering technologies in health care could be \$25 billion to \$65 billion per year in 2025. Of this, the largest share (\$15 billion to \$30 billion) could come from equipping health-care centers and health workers to bring services to some 400 million of India's poor.

**Agriculture and food:** India's agriculture sector has made strides since the Green Revolution but still has immense potential to raise farm productivity and farm income. Hybrid and genetically modified crops, precision farming (using sensors and GIS-based soil, weather, and water data to guide farming decisions), and mobile Internet-based farm extension and market information services can help create more than half the \$45 billion to \$80 billion per year in additional value the sector could realize in 2025. The remainder would come from improvements to storage and distribution systems, which could cut post-harvest losses and reforms to the public distribution system to reduce leakage, together saving as much as \$32 million per year in 2025. These improvements could raise the income of as many as 100 million farmers and bring better nutrition to 300 million to 400 million consumers.

**India's technology opportunity:** Transforming work, empowering people 9 McKinsey Global Institute Energy Under current trends, by 2025, India could become one of the most energy-insecure

countries in the world. Energy inclusion is also a major challenge: some 300 million people lack access to electricity. Globally disruptive energy technologies will have tremendous potential to improve sources of power in India as well unconventional oil and gas, solar technology, and both grid and off-grid and offshore renewable energy sources like wind, solar, and seaweed bio-fuels. Advanced metering infrastructure, low cost energy storage devices, and energy utilization technologies can capture efficiencies along the value chain. Collectively, the technology applications we size in energy could have economic impact of \$50 billion to \$95 billion per year in 2025, including the impact of carbon emissions avoided. The largest potential impact would come from smart metering, which could save India \$15 billion to \$20 billion per year in 2025 in reduced transmission losses. Other large contributors would be energy-efficiency technologies for buildings and vehicles, which could save \$15 billion worth of energy, and unconventional oil and gas, which might generate value of \$10 billion per year in 2025.

**Infrastructure:** India has a widely acknowledged infrastructure deficit that successive governments have attempted to address. Overcrowded roads, aging rail lines, and port systems using antiquated technology all slow the flow of goods and people and limit the growth potential of the economy; in India, logistics represent 14 per cent of the cost of goods, compared with 6 to 8 per cent globally. India needs new water and sanitation systems and has a housing gap of more than 18 million units. Infrastructure projects frequently come in late, over budget, and short of specifications. Use of Radio Frequency Identification (RFID) tags and other tracking technologies can automate terminal and warehouse management, raising efficiency by 50 per cent. Using sensors, water systems can cut leakage by 15 to 20 per cent, helping reduce water shortages. And project-management systems and next-generation building technologies (extensive use of factory-made prefabricated parts, for example) can help India deliver ten million affordable homes by 2025. Together these infrastructure technologies can contribute \$30 billion to \$45 billion per year in value in 2025.

**Government services:** Like other nations, India grapples with the challenge of making its government more effective and responsive to citizens. By our estimate, 50 percent of government spending on basic

services does not translate into real benefits for people, and cumbersome government processes are an obstacle to investment and growth. We do not size the economic impact of e-government services, but their positive impact on competitiveness is well established. India has made a good start with its National e-Governance Plan, and it can take additional steps to capture the full potential over the next decade. Reengineering core government processes to simplify them and providing more integration of multiple services on technology platforms are essential next steps.

## 8. Technology based Modern Banking Services

Use of advanced technology has led to the shift from traditional banking methods to modern banking methods. Currently, the most common and useful technology based banking methods are online banking, Mobile banking, Video banking, Telephone banking, ATMs, Plastic money and so on.

**Online Banking:** It empowers customers to conduct financial banking transactions on a secure website which can be operated by a retail, virtual bank, credit union or building society. It makes banking faster and easy. The following are transactional and non – transactional applications of online banking services.

**Transactional:** Bill payments and wire transfers to third parties Fund transfer between customer's transactional and savings account Sale and purchase of investments Applications and transactions for loans and enrollment re-payments.

**Non-transactional:** Analyzing recent transactions Downloading bank statements, Viewing paid cheques, Financial Institution, Administration, Portfolio Management of multiple users at different authority levels Transaction approval process.

**Mobile Banking:** Mobile banking is a system that allows customers of a financial institution to conduct a number of financial transactions through a mobile device such as mobile phone or personal digital assistant. It is used for performing through mobile device such as a mobile phone or a Personal Digital Assistant (PDA), banking activities such as - Balance checks, Account details, Portfolio management, Account transactions, Payments and investments,

Credit applications and other transactions Mobile Banking enables connection with customers throughout the customer life cycle in a much better way than before.

Its main objectives are:

- Building customer relationships
- Reducing cost and gaining revenue
- Promotion of banking organization brand
- Personalization of banking experience

**Video Banking:** It is used for conducting banking transactions or consultations through a remote video connection. It can be performed over purpose built banking transaction machines similar to Automated Teller Machines (ATM) or through bank branches enabled with video conferencing.

Video banking improves the following banking activities;

- Customer authentication
- Cash and cheque deposits
- Cash and coin withdrawals
- Account transfers and bill payments
- Processing new accounts and loans
- Bank consultations and enquiries

**Telephone Banking:** It is a bank service provided by financial institutions allowing its customers to conduct banking transactions over the telephone. Institutions which provide banking services exclusively over telephone are called Phone Banks. They use special technology to modernize the customer by providing bank and account related information over a telephone.

Benefits of Telephone Banking

- Automated phone answering system
- Phone keypad response resources
- Voice recognition capability

Features of Telephone Banking

- Account balance information
- List of latest transactions
- Electronic bill payments
- Funds transfer between customer accounts
- Loan and account applications
- Purchase and redemption of investments
- Cheque book orders
- Debit or credit card replacements.
- Requests such as change of address

**ATM (Automated Teller Machine):** ATMs are electronic machines, which are operated by a customer himself to deposit or to withdraw cash from

bank. For using an ATM, a customer has to obtain an ATM card from his bank. The ATM card is a plastic card, which is magnetically coded. It can be easily read by the machine.

Advantages of ATMs;

- ATM provides 24 hours service
- It gives convenience to bank's customers
- It reduces the workload of bank's staff
- It provide service without any error
- It is very beneficial for travelers
- It may give customers new currency notes
- It provides privacy in banking transactions

Facilities of ATMs;

- Cash withdrawals
- Cash deposits
- Balance enquiry or checking the balance in the bank account
- Request for statement of account
- Change of personal identification number (PIN)
- Cheque book request
- Transfer of funds from one account to another account
- Other facilities like bill payments

**Plastic money:** Plastic Money is a must need of our busy life. Today plastic money is the best alternative of the cash. It is also safer to traveling with a plastic money card than cash. Today it is very easy to carry money without having a lot of cash or gold. This is a new idea of present life-style which has made money transition so easy that anybody can carry it with him or her in a pocket.

Benefits of Plastic Money

- Purchasing Power
- Time Saving
- Additional Safety
- Credit Limits
- Emergency need
- Additional features

**Electronic Payment System:** Electronic Payment is a financial exchange that takes place online between buyers and sellers. The content of this exchange is usually some form of digital financial instrument that is backed by a bank or an intermediary, or by a legal tender.

Benefits of Electronic Payment System;

- Speed
- Convenience
- Efficiency
- Reduced costs

- Increased customer base

**Electronic Data Interchange (EDI):** Electronic data interchange is an automated system of business-to-business data exchange. Two primary areas of EDI are data interchange and electronic funds transfer used among banks.

Benefits of Electronic Data Interchange;

- Cost efficiency
- Increased speed
- Improved accuracy
- Better logistics management and increased productivity
- Improved delivery of goods and services
- Migration from paper to electronic transactions
- Faster response time and Customer service improvement

**Cyber Cash:** Cyber cash is pioneer in the electronic commerce industry and the leading provider of Internet payment technologies and services. It enables merchants to accept secure payments on the Internet with more ease, flexibility, reliability and cost-savings than any other solution.

## 9. Electronic Banking (E-Banking)

Electronic banking made its debut in UK and USA 1920's. It becomes prominently popular during 1960, through electronic funds transfer and credit cards. The concept of web-based banking came into existence in Europe and USA in the beginning of 1980.

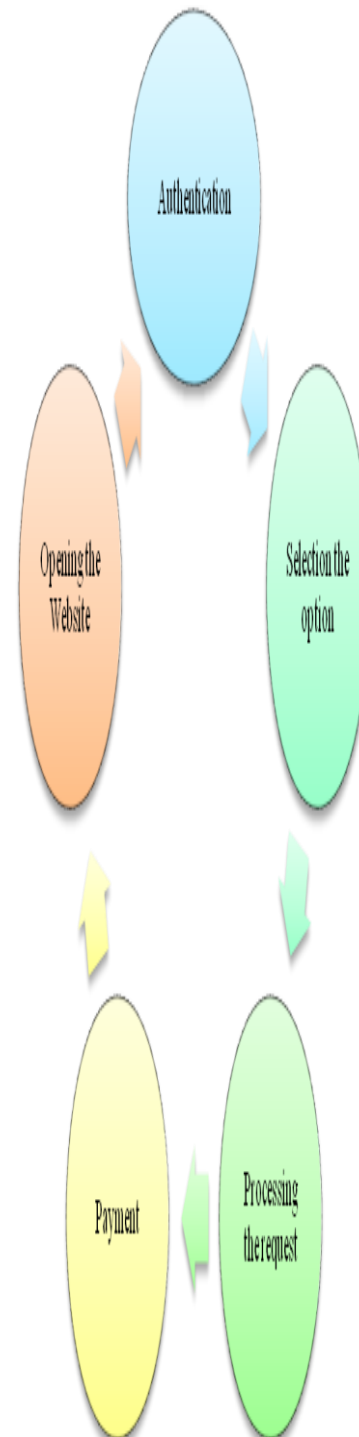
In India electronic banking (e-banking) is of recent origin. The traditional model for growth has been through branch banking. Only in the early 1990's has there been a start in the non-branch banking services. The new private sector banks and foreign banks are handicapped by the lack of a strong branch network in comparison with the public sector banks. In the absence of such networks, the market place has been the emergence of a lot of innovative services by these players through direct distribution strategies of non-branch delivery. All these banks are using home banking as a key 'pull' factor to remove customers away from the well entered public sector banks. Many banks have modernized their services with the facilities of computer and electronic equipments. The electronics revolution has made it possible to provide ease and flexibility in banking operations to the benefit of the customer. The e-banking has made the



customer say good-bye to huge account registers and large paper bank accounts.

The e-banks, which may call as easy bank offers the following services to its customers;

- Credit and Debit cards
- ATM's (Automated Tailor Machines)
- E-Cheques (Electronic Cheques)
- EFT (Electronic Funds Transfer)
- D-MAT accounts
- Mobile banking
- Telephone banking
- Internet banking
- EDI (Electronic Data Interchange)



**Figure 1: Process of E-Banking**

### **Benefits of Electronic Banking**

- **To the customers**

1. Anywhere Banking - No matter wherever the customer is in the world. Balance enquiry, request for services, issuing instructions etc. from anywhere in the world is possible.
2. Anytime Banking - Managing funds in real time and most importantly, 24 hours a day, 7 days a week.
3. Convenience acts as a tremendous psychological benefit all the time.
4. Brings down 'Cost of Banking' to the customer over a period, a period of time.
5. Cash withdrawal from any branches or ATMs.
6. On-line purchase of goods and services including on-line payment for the same.

➤ **To the banks**

1. Innovation, scheme, addresses competition and present the bank as technology driven in the banking sector market.
2. Reduces customer visits to the branch and thereby human intervention.
3. Inter-branch reconciliation is immediate thereby reducing chances of fraud and misappropriation.
4. On-line banking is an effective medium of promotion of various schemes of the bank, a marketing tool indeed.
5. Integrated customer data paves way for individualized and customized services.

## **10. Impact of Information Technology on the Service Quality**

The most visible impact of technology is reflected in the way the banks respond strategically for making its effective use for efficient service delivery. This impact on service quality can be summed up as below;

- With automation, service no longer remains a marketing edge with the large banks only. Small and relatively new banks with limited network of branches become better placed to compete with the established banks, by integrating IT in their operations.
- The technology has commoditizing some of the financial services. Therefore, the banks cannot take a lifetime relationship with the customers as granted and they have to work continuously to foster this relationship and retain customer loyalty.

- The technology serves as a powerful tool for customer servicing. On the other hand, it itself results in depersonalizing of the banking services. This has an adverse effect on relationship banking. A decade of computerization can probably never substitute a simple or a warm handshake.
- In order to reduce service delivery cost, banks need to automate routine customer inquiries through self-service channels. To do this they need to invest in call centers, kiosks, ATMs and internet banking today require IT infrastructure integrated with their business strategy to be customer centric.

## **11. Impact of Information Technology on Banking System**

The banking system is slowly shifting from the Traditional Banking towards relationship banking. Traditional banking towards relationship between the bank and its customers has been on a one-to-one level via the branch network. This was put into operation with clearing and decision making responsibilities concentrated at the individual branch level. The head office had responsibility for the overall clearing network, the size of the branch network and the training of staff in the branch network. The bank monitored the organization's performance and set the decision making parameters, but the information available to both branch staff and their customers was limited to one geographical location. The modern bank cannot rely on its branch network alone. Customers are now demanding new, more convenient, delivery systems, and services such as Internet banking have a dual role to the customer. They provide traditional banking services, but additionally offer much greater access to information on their account status and on the bank's many other services. To do this banks have to create account information layers, which can be accessed both by the bank staff as well as by the customers themselves. The use of interactive electronic links via the Internet could go a long way in providing the customers with greater level of information about both their own financial situation and about the services offered by the bank.

## **12. Impact of Information Technology on Privacy and Confidentiality of Data**



Data being stored in the computers is now being displayed when required on through internet banking, mobile banking, ATM's etc., all this has given rise to the issues of privacy and confidentiality of data are;

- The data processing capabilities of the computer, particularly the rapid throughput, integration and retrieval capabilities, give rise to doubts in the minds of individuals is being eroded.
- So long as the individual data items are available only to those directly concerned, everything seems to be in proper place, but the incidence of data being cross referenced to create detailed individual dossiers gives rise to privacy problems.
- Customers feel threatened about the inadequacy of privacy being maintained by the banks with regard to their transactions and link at computerized systems with suspicion.

Aside from any constitutional aspect, many nations deem privacy to be a subject of human right and consider it to be the responsibility of those who concerned with computer data processing for ensuring that the computer use dose not revolves to the stage where different data about people can be collected, integrated and retrieved quickly. Another important responsibility is to ensure the data is used only for the purpose intended.

### 13. Methodology of the Study

The present study is secondary in nature. I do not attempt has been made to include any statistical data in this investigation. The data used for the study has been collected from Books, Magazines, Newspapers, Research Articles or Papers, Journals, E-Journals Reports, Books, and on-line data bases. For that, I have used different websites.

### 14. Need-ness of the Study

The pace of development for the Indian banking industry has been tremendous over the past decade and the future growth of India's banking sector will remain high. India's financial services sector will enjoy generally strong growth during coming years, driven by rising personal incomes, corporate restructuring, financial sector liberalization and the growth of a more consumer-oriented, credit-oriented culture. The banks were finding it difficult to compete with the international banks in terms of the customer service without the use of the information

technology and computers. The use of the modern innovation and computerization of the banking sector of India has increased many folds after the economic liberalization of 1991 as the country's banking sector has been exposed to the world's market.

### 15. Significance of the Study

Customer services and customer satisfaction are the prime work of any system. Information technology has given rise to new innovations in the product designing and their delivery in the banking and finance industries. The change has been very productive for banks bringing in an increase in productivity and operational efficiency to be more competitive. With customers demanding '*anytime and anywhere*' access to their money and financial information, banks have no option but to implement wireless solutions in device-independent and network-agnostic ways.

Current banking sector has come up with a lot of initiatives in the form of 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.

### 16. Challenges of the Study

It has not been a smooth sailing for banks keen to jump onto the Information Technology (IT) bandwagon. There have been impediments in the path like the obduracy once shown by trade unions who felt that Information Technology (IT) could turn out to be a threat to secure employment, further. The banks face difficulties to expand its branch networks in remote areas due to lack of facilities. Another challenges the banks have had to face corners the inability of banks to retain the trained and talented personnel, especially those with a good knowledge. Increasing used of Information Technology (IT) in banks has also brought up security concerns. The passing of Information Technology (IT) Act has come as a boon to the banking sector and banks should now ensure to abide strictly by its covenants. An effort should be also made to cover e-business in the country's consumers' laws. The choice of right channel, justification of Information Technology (IT) investment on ROI, E-Governance disclosures, customers relationship management, penetration of Information Technology (IT) in rural areas,

outsourcing of Information Technology (IT) operations are the major challenges and issues in the use of Information Technology (IT) in banking operations.

## 17. Future Outlook in India

The Indian banks lag far behind the international banks in providing online banking. In fact, this is not possible without creating sufficient infrastructure or presence of sufficient number of users. The experience of ICICI Bank Ltd. and HDFC Bank Ltd. shows that the number of transactions carried out on the NET are very limited. Technology is going to hold the key to future of banking. Banking achievements not possible without Information Technology (IT) revolution. So, banks should try to find out the trigger of change. The approach of the Information Technology (IT) concept to the rural area may also be adopted. More and more regional languages software's could be introduced to attract more and more people from rural area also. The surplus manpower generated by the use of Information Technology (IT) should be used for marketing new schemes of the banks.

## 18. Recent Developments in Banking Sector

**Internet:** Internet is a networking of computers. In this marketing message can be transferred and received worldwide. The data can be sent and received in any part of the world. In no time, internet facility can do many a job for us.

It includes the following;

- This net can work as electronic mailing system.
- It can have access to the distant database, which may be a newspaper of foreign country.
- We can exchange our ideas through Internet. We can make contact with anyone who is a linked with internet.
- On internet, we can exchange letters, figures or diagrams and music recording.

Internet is a fast developing net and is of utmost important for public sector undertaking, Education Institutions, Research Organization etc...

## Society for World-wide Inter-bank Financial Telecommunications (SWIFT):

SWIFT, as a co-operative society was formed in May 1973 with 239 participating banks from 15 countries with its headquarters at Brussels. It started functioning in May 1977. RBI and 27 other public sector banks as well as 8 foreign banks in India have obtained the membership of the SWIFT. SWIFT provides have rapid, secure, reliable and cost effective mode of transmitting the financial messages worldwide. At present more than 3000 banks are the members of the network. To cater to the growth in messages, SWIFT was upgrade in the 80s and this version is called SWIFT-II. Banks in India are hooked to SWIFT-II system. SWIFT is a method of the sophisticated message transmission of international repute. This is highly cost effective, reliable and safe means of fund transfer.

- This network also facilitates the transfer of messages relating to fixed deposit, interest payment, debit-credit statements, foreign exchange etc.
- This service is available throughout the year, 24 hours a day.
- This system ensure against any loss of mutilation against transmission.

It serves almost all financial institution and selected range of other users. It is clear from the above benefit of SWIFT that it is very beneficial in effective customer service. SWIFT has extended its range to users like brokers, trust and other agents.

**Automated Teller Machine (ATM):** ATM is an electronic machine, which is operated by the customer himself to make deposits, withdrawals and other financial transactions. ATM is a step in improvement in customer service. ATM facility is available to the customer 24 hours a day. The customer is issued an ATM card. This is a plastic card, which bears the customer's name. This card is magnetically coded and can be read by this machine. Each cardholder is provided with a secret personal identification number (PIN). When the customer wants to use the card, he has to insert his plastic card in the slot of the machine. After the card is a recognized by the machine, the customer enters his personal identification number. After establishing the authentication of the customers, the ATM follows the customer to enter the amount to be withdrawn by

him. After processing that transaction and finding sufficient balances in his account, the output slot of ATM give the required cash to him. When the transaction is completed, the ATM ejects the customer's card.

**Cash Dispensers:** Cash withdrawal is the basic service rendered by the bank branches. The cash payment is made by the cashier or teller of the cash dispenses is an alternate to time saving. The operations by this machine are cheaper than manual operations and this machine is cheaper and fast than that of ATM. The customer is provided with a plastic card, which is magnetically coated. After completing the formalities, the machine allows the machine the transactions for required amount.

**Electronic Clearing Service:** In 1994, RBI appointed a committee to review the mechanization in the banks and also to review the electronic clearing service. The committee recommended in its report that electronic clearing service-credit clearing facility should be made available to all corporate bodies/Government institutions for making repetitive low value payment like dividend, interest, refund, salary, pension or commission, it was also recommended by the committee Electronic Clearing Service-Debit clearing may be introduced for pre-authorized debits for payments of utility bills, insurance premium and installments to leasing and financing companies. RBI has been necessary step to introduce these schemes, initially in Chennai, Mumbai, Calcutta and New Delhi. (6.) **Bank net:** Bank net is a first national level network in India, which was commissioned in February 1991. It is communication network established by RBI on the basis of recommendation of the committee appointed by it under the chairmanship of the executive director T.N.A. Lyre. Bank net has two phases: Bank net-I and Bank net- II.

#### **Areas of Operation and Application of Bank net;**

- The message of banking transaction can be transferred in the form of codes from the city to the other.
- Quick settlement of transactions and advices.
- Improvement in customer service-withdrawal of funds is possible from any member branch.

- Easy transfer of data and other statements to RBI.
- Useful in foreign exchange dealings.
- Access to SWIFT through Bank net is easily possible.

**Chip Card:** The customer of the bank is provided with a special type of credit card which bears customer's name, code etc. The credit amount of the customer account is written on the card with magnetic methods. The computer can read these magnetic spots. When the customer uses this card, the credit amount written on the card starts decreasing. After use of number of times, at one stage, the balance becomes nil on the card. At that juncture, the card is of no use. The customer has to deposit cash in his account for re-use of the card. Again the credit amount is written on the card by magnetic means.

**Phone Banking:** Customers can now dial up the bank's designed telephone number and he by dialing his ID number will be able to get connectivity to bank's designated computer. The software provided in the machine interactive with the computer asking him to dial the code number of service required by him and suitably answers him. By using Automatic voice recorder (AVR) for simple queries and transactions and manned phone terminals for complicated queries and transactions, the customer can actually do entire non-cash relating banking on telephone: Anywhere, Anytime.

**Tele-banking:** Tele banking is another innovation, which provided the facility of 24 hour banking to the customer. Tele-banking is based on the voice processing facility available on bank computers. The caller usually a customer calls the bank anytime and can enquire balance in his account or other transaction history. In this system, the computers at bank are connected to a telephone link with the help of a modem. Voice processing facility provided in the software. This software identifies the voice of caller and provides him suitable reply. Some banks also use telephonic answering machine but this is limited to some brief functions. This is only telephone answering system and now Tele-banking. Tele banking is becoming popular since queries at ATM's are now becoming too long.



**Internet Banking:** Internet banking enables a customer to do banking transactions through the bank's website on the Internet. It is a system of accessing accounts and general information on bank products and services through a computer while sitting in its office or home. This is also called virtual banking. It is more or less bringing the bank to your computer. In traditional banking one has to approach the branch in person, to withdraw cash or deposit a cheque or request a statement of accounts etc. but internet banking has changed the way of banking. Now one can operate all these type of transactions on his computer through website of bank. All such transactions are encrypted; using sophisticated multi-layered security architecture, including firewalls and filters. One can be rest assured that one's transactions are secure and confidential.

**Mobile Banking:** Mobile banking facility is an extension of internet banking. The bank is in association with the cellular service providers offers this service. For this service, mobile phone should either be SMS or WAP enabled. These facilities are available even to those customers with only credit card accounts with the bank.

**Any where Banking:** With expansion of technology, it is now possible to obtain financial details from the bank from remote locations. Basic transaction can be effected from faraway places. Automated Teller Machines are playing an important role in providing remote services to the customers. Withdrawals from other stations have been possible due to inter-station connectivity of ATM's. The Rangarajan committee had also suggested the installation of ATM at non-branch locations, airports, hotels, Railway stations, Office Computers, Remote Banking is being further extended to the customer's office and home.

**Voice Mail:** Talking of answering systems, there are several banks mainly foreign banks now offering very advanced touch tone telephone answering service which route the customer call directly to the department concerned and allow the customer to leave a message for the concerned desk or department, if the person is not available.

## 19. Limitation of the Study

Due to time constraint this research review study has been made on the basis of previous data. This study

may be up-dated and redesigned by considering the latest available data. There is a lot of scope for further researches on this issue by considering other factors which I have not considered in my present study, it would have been more.

## 20. Trends in Information Technology

Certain trends have been visualized of information technology in banking sector all over the world.

**Outsourcing:** Outsourcing is one of the most talked about as also a controversial issue. The drivers for getting in to outsourcing are many to include gaps in Information Technology (IT) expectations and the reality, demystification of computerization in general and Information Technology (IT) in particulars, trend towards focusing on core competencies, increased legitimacy of outsourcing and intention of getting out of worries and sort of up gradation of hardware and software versions. Not that the practice is new as earlier it was refused to as 'buying time' or 'service bureau'. What is needed is the clear of outsourcing, beside a definite plan to be more competitive after outsourcing. It is necessary to have checks and balances to monitor vendor performance. Cost aspects merit consideration, as also a decision on the part of the process to be outsourced shall be significance. Exit route and resource on the amount of failure after outsourcing are the other issue to be looked onto. Not withstanding these risks, outsourcing has come to say.

**Integration:** One of the Information Technology (IT) trend is moving from hierarchy to team approach. The purpose is to see an alternative to retooling, to react speedily and to develop capabilities rather than exploiting them.

Such integration is necessary so as to address to prevalent situations;

(a) Functions needing data and not getting from others.

(b) Sending data to those who do not want to require them.

(c) Global data exist but do not travel to required business functions. Indian banks seem to follow this trend through the sincere redesign as described earlier. Instead of vertically divided pyramid type organizational set-ups, banks are now being to have separate group like finance, international consumer banking, industrial or commercial credit etc...



**From Solo to Partnership:** With the development of IT, two things are taking place simultaneously. The work force as a percentage of total staff is going down and spending on Information Technology (IT) as percentage of total spending is going up. The forms of partnership can include binding by superior service, accommodation in service sharing network, equal partnership and situations, where survival is threatened. At times, the partnership becomes necessary to get out of areas where there is no competitive advantage. Low development cost or wider geographical coverage is the aspects that create such partnership. Instances are not frequent, where joint ventures have been found with the Information Technology (IT) vendors.

**Distinctive Edge:** It is always said that many use but a few make use of Information Technology (IT). Historically, the emphasis is on using Information Technology (IT) for large volumes like payrolls, balancing the books, the consolidation etc. That realization on having IT as matter of competitive edge has come about very lately. It is recognized that customer service is not an easy thing to provide, but IT is used as a mean. It does give value additions and erases barriers for competitors to enter. Banks understand that the cost of cultivating the new customer is 5 to 6 times of retaining the old one. Customer normally switches banks due to poor service. The appreciation of these facts has compelled the banks world over to look upon Information Technology (IT) as an instrument to create distinctive edge over competitors. The private sector banks that were established in 1990's as a part of finance sector reforms did make good of Information Technology (IT) to have an edge over the others. The foreign banks operating in India have also been able to market Information Technology (IT) superiority as a distinctive edge. The public sector banks are still to make use of Information Technology (IT) in this regard, although they are blessed with huge information base all across the country. While steps are mooted in this direction by leading public sector banks, more offensive postures are necessary.

**Information Technology (IT) as Profit Centre:** In the embryonic phases, Information Technology (IT) was looked upon a means to get rid of high processing cost and time and to convert the manual operation with high volume/low complexity in two mechanical ones. With the evolutionary process, it was seen as the best means of generating,

MIS. The same approach gave the status of DSS to Information Technology (IT). All along, IT has been recognized as the service function in Indian Banks. However, the new trend that is emerging is considering IT as a profit centre. The cost benefit analysis of having Information Technology (IT) or otherwise in one part. But having IT set up to generate income for the organization is the new beginning. Getting jobs from outside the bank for processing data and the like are the current trends. The outsourcing done by others is the business, cater to by these organizations the trend of this kind is not deserved in Indian situation particularly banks. The Banks have been able to just manage what is to consider as their responsibility as Information Technology (IT) within the individual banks.

**Prospering in Down Market:** The trend suggests that when there is a down turn in the market place, Pro-active corporations take the benefit of available unutilized resources to upgrade and revisit technology issues. This is seen as the right time to establish the R & D centre for Information Technology (IT).

There are false notions about technology and its capability. Some misconceptions include;

- Best-fit possible technology is implemented.
- System solution is good enough and there is need to look into user expectations.
- Innovations are generally successful.
- Success is related only to novel ideas.
- Technology is the sole determinant of business success, and
- Measures and standards i.e. audit and inspection issues stand in the way of innovation.

The time available to debate on similar issues is ample and these false notions get clarified during the down market. Eventually, the decision makers reach a consensus that Information Technology (IT) is not a panacea but it is an enabler that too when well supported by BRP (Business Process Re-engineering), human resources initiatives, physical infrastructure and responsive organization set up.



**Leading to Downsizing:** The Information Technology (IT) initiative is making the organization lean and flat. For Information Technology (IT) functionalities downsizing means transferring computing power from mainframe to the personal computer and workstations. Downsizing is a typical issue faced with associated problems. Absence of top management commitment, lack of understanding of the prevalent Information Technology (IT) infrastructure, doing too much and too fast and undertaking the exercise without a framework for controlling the downsizing operations are primarily the situations that create adversities in downsizing. In any case the trend of downsizing is very much existent in the Information Technology (IT) environment.

**Getting Competitive Intelligence:** Information Technology (IT) is now seen as a resource for gathering and dissemination of executive information system (EIS). The purpose is to minimize that the bombarding and focusing on the relevance, accuracy and timeliness of the information particularly about the competitors such information enhances follow up and tracks early warning on competitor move and also customer expectations..

As far as Indian banks are concerned individually, they have to compete with other banking industry participants as also with other players in the financial sector. The competition from for insurance and government notes and saving, mutual funds and the like is always forth-coming particularly because of attendant tax benefits. Collection of required information and using the same for business purpose is constrained by the availability of the information, its volume and diversity. As such it may take some time for this trend to be visible in Indian banking scenario.

## 19. Recommendations of the Study

The following recommendations are presented by the researcher to increase the use of technology facility by customers;

There should be periodic educational campaigns about the technological facilities and their usage by the banks to promote customer patronage. This helps customers to know all the technology services provided by the bank, how it is used and familiarized themselves with it. This will help both customers and banks to fully benefit from technology as expected. It

will also help erode some of the fear and perception that customers have concerning technology facilities and its use.

The ATM machine should be monitored always to make sure it has the capacity to provide its 24/7 service as expected of it. There should always be measure to load adequate fund in the machine, especially for weekend usage. Additional services should also be added into the ATM machine since it is the most common facility that customers are accustomed to. This will help ease queues and pressure in the banking hall if such services can be received via ATM machines.

Completion of correct MIS details in all accounts and SRM's.

Management and staff should be educated regularly to appreciate the impact of technology on their services. It will also help them to be abreast with any current trend in technology facility that will help the services delivery of the bank. Information Technology (IT) officers should be included in strategic decision making so that they can add their voice in making decisions. This will enable Information Technology (IT) officers explain to management that, though the initial installation cost of technology is expensive, it will become zero and even negative in the future. This will encourage management in invest in it without fear of losing money.

Customer – ID crystallization.

Aggressive marketing of Internet Banking & Debit Card products to increase share of delivery channels transaction.

Finally, security measures are supposed to be tightening day by day to make sure customers are safe in using technology facilities. At first it might be very difficult to steal one million dollars from a bank, but now with the help of technology, this can be done within a few seconds. Measure on how customers will protect their information should be posted at every strategic position. This will help to reduce insecurity on customers' information to wrong people.

## 20. Conclusions





The study aimed at getting the role of the adoption of technology into banking services delivery. It can be concluded that, for banks to remain competitive to deliver quality services to customers, there is considerable need to be innovative by adopting and diffusing various Information Technology (IT) innovations. Given the increasing competition in the retail banking industry and rapid technological evolution, the question of whether banks should use technology in services delivery is no longer necessary given the benefits of Information Technology (IT) on service delivery. This study has demonstrated that technology has play critical role in banking service delivery. The primary intention of integrating technology is to effectively and efficiently serve their customers better. It was also clear that the desire to introduce Information Technology (IT) services into banking activities is basically to be able to compete favorably in today's competitive business environment. Banks as business entities need to either follow the trend, by adopting technology in their service services or be phased out.

Information Technology (IT) is increasingly moving from a back office, furniture to a prime assistant in increasing the value of a bank over time.

The e-banking has made the customer say good-bye to huge account registers and large paper bank accounts.

Many banks have modernized their services with the facilities of computer and electronic equipments.

The electronics revolution has made it possible to provide ease and flexibility in banking operations to the benefit of the customers.

Technology facilities used by banks, as revealed in the study include - ATM, Personal Computer Banking, Point-of-Sale (POS) Transfer Terminal, Direct deposit and Withdrawal Services, Electronic Fund Transfer at Point of Sale (EFTPOS), Branch Networking, Electronic Cheque Conversion, E-Statement, SMS Alert, Electronic International Transfer, Electronic Account Opening and Electronic Salary Processing and Internet Banking. The introduction of these products has tremendous advantages on banks as well as on customers. Meanwhile, these benefits have not come without challenges. Most of these challenges are peculiar with individual banks, but on the whole all banks with the intention of adopting Information

Technology (IT) services in their activities face these challenges.

Notwithstanding this, there is bright future for technology on banking service delivery as technology is gradually becoming the order of the day. In general, use of Information Technology (IT) is comparatively better than the manual system of banking.

The banking industry has implemented Information Technology (IT) for improving different areas like – Customer Services and CRM, managing its operation, house-keeping, monitoring and controlling, risk management, managing its human resource etc. The transformation in banking services is providing various advantages to customers with anytime, anywhere access to their accounts as well as power to operate their accounts. Although the change is good but still banks in India are required to address the important issues to get the full benefits of Information Technology (IT) implementation.

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