



INFORMATION TECHNOLOGY AND ITS ROLE IN INDIAN BANKING SECTOR

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Abstract

With the globalization trends world over it is difficult for any nation big or small, developed or developing, to remain isolated from what is happening around. For a country like India, which is one of the most promising emerging markets, such isolation is nearly impossible. More particularly in the area of Information Technology, where India has definitely an edge over its competitors, remaining away or uniformity of the world trends is untenable. Financial sector in general and banking industry in particular is the largest spender and beneficiary from information technology. This endeavours to relate the international trends in it with the Indian banking industry. An attempt has been made in this paper to examine various innovative instruments that have been introduced by Banks in recent times.

Keywords: Banking Sector, Information Technology, Automated Systems and Processes, Mobile Banking and Knowledge Management.

1. Introduction

Information technology refers to the acquisition, processing, storage and dissemination of all types of information using computer technology and telecommunication systems. Technology includes all matters concerned with the furtherance of computer science and technology and with the design, development, installation and implementation of information system and applications. Information technology architecture is an integrated framework for acquiring and evolving IT to achieve strategic goals. It has both logical and technical components. Computer hardware and software, voice, data, network, satellite, other telecommunications technologies, multimedia application development tools. These technologies are used for the input, storage, processing and communication of information.

Information technology includes ancillary equipment, software, firmware and similar procedures, services etc. Modern high throughput technologies are providing vast amounts of the sequences, expressions and functional data for genes and protein. One of the most difficult challenges is turning this enormous pool of information into useful scientific insight and novel therapeutic products.

Technology has brought a complete paradigm shift in the functioning of banks and delivery of banking services. Gone are the days when every banking transaction required a visit to the bank branch. Today, most of the transactions can be done from the home and customers need not visit the bank branch for anything. Technology is no longer an enabler, but a business driver. The growth of the internet, mobiles and communication technology has added a different dimension to banking. The information technology available today is being leveraged in customer acquisitions, driving automation and process efficiency, delivering ease and efficiency to customers.

The increased penetration and impact on the scale of business can be judged from metrics such as deposit and credit per account, which according to the RBI data was INR 6,412 and INR 20, 757 in 1992 and INR 19, 898 and INR 84, 618 in 2000—these metrics increased to INR 59, 217 and INR 258, 751 in 2009, respectively, approximately thrice the levels in 2000 and 10 times the levels in 1992.

Many of the IT initiatives of banks started in the late 1990s or early 2000 with an emphasis on the adoption of core banking solutions (CBS), automation of branches and centralization of operations in the CBS. Over the last decade, most of the banks completed the transformation to technology-driven organizations. Moving from a manual, scale-constrained environment to a global presence with automated systems and processes, it is difficult



to envisage the adverse scenario, the sector was in the era before the reforms, when a simple deposit or withdrawal of cash would require a day. ATMs, mobile banking and online bill payments facilities to vendors and utility service providers have almost obviated the need for customers to visit a branch. Branches are also transforming from operating as transaction processing points into relationship management hubs. The change has been very productive for banks bringing in an increase in productivity and operational efficiency to be more competitive. Better risk management due to centralization of information and real time availability of critical data for decision making.

With most of the banks being technology-enabled, the focus is shifting to computerizing regional rural banks (RRBs). In addition, banks are moving toward decision making and business intelligence software and trying to optimize the IT infrastructure created.

2. Growth and Expansion

Over the last Decade, the size of the banking industry has grown by 7.5 times. The business per employee has increased from INR 27.6 million in 2007-08 to INR 62.7million in 2011-12, while the profit per employee increased from INR 0.12 million in 2007-08 to INR 0.39 million in 2011-12. Indian banks are also no longer constrained by geography as they have worldwide operations. IT has been instrumental in the global expansion of banks. It is a huge challenge for banks to maintain and keep the vast network operational. IT has helped banks put in place alternate delivery channels such as internet and phone. Mobile banking and ATMs are rapidly becoming the prime delivery channels. The consolidation and centralization of information is also providing banks with accelerated decision making and risk management capabilities. Electronic payments through credit and debit cards are also emerging as a fast-growing segment providing ease of use and convenience to customers. The banking sector is projected to grow at a strong pace over the next decade and will need to strongly leverage the IT infrastructure to acquire and service the customer base and risk management.

3. Computerization in Banks

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 2013 whereas all branches of SBI are fully computerized.

Table 1: Computerization in Public Sector Banks

Category	2010	2011	2012	2013
Fully computerized Branches (%)	85.6	93.7	95.0	97.8

Source: RBI, Annual Report 2012-13

4. Emerging Trends in Banking Technology

- Financial Inclusion
- Mobile Banking
- Electronic Payments
- CRM Initiatives
- IT Implementation and Management
- IT for Internal Effectiveness
- Managing IT Risk
- IT for business innovation

5. I.T. in Banking

Indian banking industry, today is in the midst of an IT revolution. A combination of regulatory and competitive reasons has led to increasing importance of total banking automation in the Indian Banking Industry. The bank

which used the right technology to supply timely information will see productivity increase and thereby gain a competitive edge. To compete in an economy which is opening up, it is imperative for the Indian Banks to observe the latest technology and modify it to suit their environment. Information technology offers a chance for banks to build new systems that address a wide range of customer needs including many that may not be imaginable today.

Following are the innovative services offered by the industry in the recent past:

5.1. Electronic Payment Services - E Cheques

Nowadays we are hearing about e-governance, e-mail, e-commerce, e-tail etc. In the same manner, a new technology is being developed in US for introduction of e-cheque, which will eventually replace the conventional paper cheque. India, as harbinger to the introduction of e-cheque, the Negotiable Instruments Act has already been amended to include; Truncated cheque and E-cheque instruments.

5.2. Real Time Gross Settlement (RTGS)

Real Time Gross Settlement system, introduced in India since March 2004, is a Interlink Research Analysis system through which electronics instructions can be given by banks to transfer funds from their account to the account of another bank. The (RTGS) Real Time Gross Settlement system is maintained and operated by the RBI and provides a means of efficient and faster funds transfer among banks facilitating their financial operations. As the name suggests, funds transfer between banks takes place on a 'Real Time' basis. Therefore, money can reach the beneficiary instantaneously and the beneficiary's bank has the responsibility to credit the beneficiary's account within two hours. As on November 30, 2013 there are more than 72000 RTGS enabled bank branches.

Table 2 Growth of RTGS in India

Item	Volume (000's)			Value (Rupees in Crores)		
	2010-11	2011-12	2012-13	2010-11	2011-12	2012-13
RTGS	5840	13,366	33.21	2,73,18,330	3,22,79,881	3,94,53,359

5.3. Electronic Funds Transfer (EFT)

Electronic Funds Transfer (EFT) is a system whereby anyone who wants to make payment to another person/company etc. can approach his bank and make cash payment or give instructions/ authorization to transfer funds directly from his own account to the bank account of the receiver/beneficiary. Complete details such as the receiver's name, bank account number, account type (savings or current account), bank name, city, branch name etc. should be furnished to the bank at the time of requesting for such transfers so that the amount reaches the beneficiaries' account correctly and faster.. RBI (Reserve Bank of India) is the service provider of Electronic Funds Transfer (EFT).

5.4. Electronic Clearing Service (ECS)

Electronic Clearing Service is a retail payment system that can be used to make bulk payments/receipts of a similar nature especially where each individual payment is of a repetitive nature and of relatively smaller amount. This facility is meant for companies and government departments to make/receive large volumes of payments rather than for funds transfers by individuals.

Table 3: ECS transaction in Rs. Crores

Item	2008-09	2009-10	2010-11	2011-12	2012-13
ECS Credit	32,324	83,277	7,82,222	97,487	1,17,833
ECS Debit	12,986	25,441	48,937	66,976	69,819

Source: RBI, Annual Report 2012-13.

5.5. Automatic Teller Machine (ATM)

Automatic Teller Machine is the most popular device in India, which enables the customers to withdraw their money 24 hours a day 7 days a week. It is a device that allows customer who has an Automatic Teller Machine (ATM) card to perform routine banking transactions without interacting with a human teller. In addition to cash withdrawal, Automatic Teller Machines (ATMs) can be used for payment of utility bills, funds transfer between accounts, deposit of cheques and cash into accounts, balance enquiry etc.

5.6. Point of Sale Terminal

Point of Sale Terminal is a computer terminal that is linked online to the computerized customer information files in a bank and magnetically encoded plastic transaction card that identifies the customer to the computer. During a transaction, the customer's account is debited and the retailer's account is credited by the computer for the amount of purchase.

5.7. Tele Banking

Tele Banking facilitates the customer to do entire non-cash related banking on telephone. Under this device Automatic Voice Recorder is used for simpler queries and transactions. For complicated queries and transactions, manned phone terminals are used.

5.8. Electronic Data Interchange (EDI)

Electronic Data Interchange is the electronic exchange of business documents like purchase order, invoices, shipping notices, receiving advices etc. in a standard, computer processed, universally accepted format between trading partners. Electronic Data Interchange (EDI) can also be used to transmit financial information and payments in electronic form.

5.8. Implications

The banks were quickly responded to the changes in the industry; especially the new generation banks. The continuance of the trend has re-defined and re-engineered the banking operations as whole with more customization through leveraging technology. As technology makes banking convenient, customers can access banking services and do banking transactions any time and from any where. The importance of physical branches is going down. Thus, the changes have the following implications:

- Anywhere Anytime Anyplace Banking
- Timeless and Placeless Banking
- Banking at Convenience
- Dismantling of Physical Structure
- Goodbye to Traditional Instruments and Invitation to New Instruments
- Disappearance of Conventional Risk and Arrival of New Risks
- Leading to Currency-less Monetary system

6. Challenges in Implementation

It is becoming increasingly imperative for banks to assess and ascertain the benefits of technology implementation. The fruits of technology will certainly taste a lot sweeter when the returns can be measured in absolute terms, but it needs precautions and the safety nets. The increasing use of technology in banks has also brought up 'security' concerns. To avoid any mishaps on this account, banks ought to have in place a well-documented security policy including network security and internal security. The passing of the Information Technology Act-2000 has come as a boon to the banking sector, and banks should now ensure to abide strictly by its covenants. An effort should also be made to cover e-business in the country's consumer laws. Some are investing in it to drive the business growth, while others are having no option but to invest, to stay in business. The choice of right channel, justification of IT investment on ROI, e-governance, customer relationship management concerns, technological Obsolescence, mergers and acquisitions, penetration of IT in rural areas, and outsourcing of IT operations are the major challenges and issues in the use of IT in banking operations.

7. Future Trends

7.1. Beyond Core Banking

Increased adoption of e-payments and mobile banking are clearly the emerging areas which are bound to strengthen in the near future. In addition, the focus is shifting towards systems and processes needed in the maturity phase of the Technology needs curve. Banks will need to increasingly focus on cost and profitability management, business intelligence, dashboards/ executive information reports, data warehousing and analytics. Improving internal effectiveness and efficiency with integrated data warehouse and real-time access to all customer information will help the banks' decision making and ability to deliver appropriate products and services to the customers.

Banks must see beyond applications that provide solutions to today's problems. They need to develop a vision of comprehensive infrastructure comprising internal and external networks instantaneously moving information from data stores to users and back again. The importance of the IT-business unit partnership cannot be overemphasized. The people and processes are just as critical to success as hardware and software.

Undoubtedly, banks have made great technological advances in storing information. However, the full power to use that information to be more productive and make better decisions still goes unrealized. By continuing to emphasize only technology and the peripheral business processes it affects, banks have seriously neglected their personal and enterprise-wide intelligence.

The effectiveness of the infrastructure is measured in the value it brings to the customer. That value is diminished by business units and individuals that are not networked. Therefore, banks must provide access and training, to each member of the bank who directly or indirectly serves customers. To make this possible, clear standards and expectations must be published, so the information technology organization can bring individuals on-line in a consistent manner.

7.2. Increasing Interconnectivity and Ease of Payments through Different Form Factors

The economic role of payment systems is connected intimately to the economic role of money. Money is a unit of account, a store of value, and a medium of exchange. Cash, checks, electronic transfers, debit, credit and charge cards, as well as payment methods relying on mobile phones and on the internet are based on different systems for exchanging value between economic entities and on different form factors for engaging in this exchange. Anywhere anytime banking is becoming the norm due to the implementation of core banking solution (CBS), additionally increased efforts by the regulator in setting up Electronic Clearing Service (ECS), Real Time Gross Settlement (RTGS) and NEFT systems is leading to interconnectivity and ease of inter and intra-bank funds transfer. The increasing usage of credit/debit cards and mobile banking is facilitating the ease of payments through different factors linked to vendors and service providers. The trend is likely to strengthen with an increasing number of transactions moving online.

Presently, a technological development is closely related to computerization in banks branches for adoption of the core banking solution (CBS). An important development in the percentage of branches of public sector banks implementing core banking solution (CBS). The percentages of such branches increased by 79.4 % at end March 2011 to 90% at the end of March-2013.

Table 4: Branches under Core Banking (in %)

Name of the Bank	Branches Under Core Banking Solutions
Public Sector Banks	90%
Nationalized Banks	85.9%
State Bank Group	100%

Source: Report on Trend and Progress of Banking in India 2012-13.

7.3. Energy Management and Move towards 'Green Technology'

Most of the banks are conscious of the carbon foot print generated and are working towards energy management and use of 'Green Technology'. Some of the measures adopted are:

Adoption of Server Virtualization technologies to save on floor space, power & cooling components,

- Use of Data center enhancements and Best practices for optimum usage of space, hot air/cool air pockets etc.
- Adoption of Blade server technology to have higher computing power in smaller footprint.
- Up-gradation of older power hungry Servers, Storage and Networking Equipments.
- Dynamic power capping of Servers, Desktops by employing newer power saving.
- Technologies like processor stepping.
- Solar powered ATMs.
- Use of windmill energy.

Energy management and adoption of green technology will become increasingly important in the future and banks will have to streamline efforts towards accurately monitoring, measuring and optimizing the energy consumption.

8. Role of CRM Techniques

Customers have grown to expect comprehensive financial services from a single point of contact. They are attracted by many new products and services that non-banking institutions have been offering. The challenge for banks is to package these products and services and deliver them through convenient, user-friendly channels. Only by integrating people, processes, and technology across business lines will banks be able to forge a portfolio of virtual banking services based on the proclivities of specific customer market segments.

Consumer behavior is an important factor that will change the functioning and business plans of banks in the next decade. The banking sector will increasingly move towards a CRM banking model where the banks will have to develop and service products suited/ required at different phases of a consumers life. Banks have already started moving towards catching the customers young by providing school and college going students with bank accounts. As the youngster grows banks will have to track and predict the financial needs using sophisticated analytical models and deliver focused products and services.

It has always been difficult for large institutions to compile information on a single customer from multiple points of contact. Customers who choose services and products from multiple business areas typically are treated as separate relationships within each area. Because a customer- centric infrastructure does not exist at most banks, customer service representatives do not have the infrastructure support or the incentive to pull the information together. Without clearly understanding the strategic advantages of using a customer data warehouse, bank customer service representatives will not change their behavior, and any competitive advantage will be short-lived. The bank will gain minimal value from the significant investment required to develop the requisite technologies.

Knowledge Management treats the behavior of people as an equal and essential component of effective information-sharing. Knowledge management also enables knowledge from similar previous situations to inform current decisions. Both managers and service teams must play a role in building a knowledge culture. Managers must codify relevant experiences, packaging them to maximize their relevance and reusing them in new situations that create value. Once the knowledge has been codified, it needs to be shared with appropriate individuals.

An integrated approach to knowledge management enables the bank to group its products to serve specific market segments, such as lawyers, young professionals, retirees. The product groupings would be based on customer feedback as to which products are in demand and on the bank's assessment of each product's profitability. Once the bank identifies the product groupings, it can provide high-quality service, with high-quality support from front and back offices, cross-functional data bases, and customer service personnel.

For banks, information technology plays an important role in informed decision-making by creating a means to collect and codify experiences and solutions from similar decisions in such areas as financial management, customer service, or relationship development. The enabling technologies include client/server technology, distributed computing, networking, and data warehousing. Knowledge of what customers need most and are willing to pay a premium to get, should be frequently updated and shared across the bank. Technology allows the bank to accomplish this enormously complex task. Knowledge means more than just having information; it happens when information is put in proper context and shared. For customers, valuable knowledge might be reflected in the performance of their financial portfolio or in the ease and success of making transactions. The data warehouses and graphical interfaces that support the customer's portfolio provide real-time access to all customer accounts and present them in an integrated, seamless interface. For the bank, technology creates a tool for gathering knowledge about customers' financial behaviors, purchasing proclivities, portfolio performance, and market and competitive alternatives.

Profitability analysis is crucial to the bank's customer relationships, and it helps identify alternatives for delivering value to customers. At present, customer profitability is being redefined as customer relationship profitability. Customer relationship profitability includes not only a single customer account but the full relationship, which might extend to personal checking, a business account, an investment account, and more. For branch services to be mostly focused on marketing and cross selling, customer-centric knowledge will need to be leveraged in a well-teamed, highly automated branch platform.

9. Conclusion

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 I.T. are very much there. What is needed is a 'big push' the way it was given in the post nationalization period for expansionary activities.

From enabling banking services to driving transformation in the Industry, Information Technology course do promise to change the pace of banking to the next few years. Mobile bank and internet banking are going to make indoor in the banking sector in the near future. Even though IT systems are complex and sophisticated but they are "energy guzzlers". Hence, the future for banking sector is going to make rapid straights in near future.

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