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Impact of information technology on Indian banking sector

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Abstract
All the technological initiatives taken by banks are part of their channel diversification strategy. Through there is certainly a high level of importance attached to technology, it is at present not necessarily a priority for all banks. As far as banks are concerned, migrating customers to any self-directed channel is the main goal. However, the future of banking will be one in which customers can address most of their needs through self-directed means and the key differentiator will be how effective a bank is in getting its customers use technology and derives measurable value.

Keywords: core banking solution, Indian banking sector, information technology, remote banking, risks in banks

Introduction

Technology can be defined as knowledge of methods to perform certain tasks efficiently and solve problems pertaining to products and services. Information technology has brought about revolutionary changes in the world and the business environment in most of the sectors have become technology dependent. Since the banking sector has been subjected to tremendous changes because of the new technology, it is worth discussing the technological environment in the banking sector. The financial sector, comprising banks, stock exchanges and insurance organisations, have been the backbone of every country. They are the agents to implement and bring about economic reforms. Any change in this sector through technology would have a sweeping impact on any country. The developments in information collection, storage, processing, transmission technologies have influenced all aspects of the banking activity. The objectives of this paper are to describe the extent to which these developments have taken place in the banking industry with special reference to India and analyse adaptations and risks related to technological progress as well as relevant issues.

Information technology (IT) developments affect banking in two ways:

1. First, they contribute in the reduction of costs associated with the management of information (collection, storage, processing and transmission) by replacing paper based and labour-intensive methods with automated processes.
2. Secondly, they modify the ways in which customers have access to a bank's services and products, mainly through the use of automated processes such as remote banking. The phenomenon of remote banking is very recent.

Remote banking is currently offered by all the major banks in India. Most of the standard retail banking services are offered through the use of Automatic Teller Machines (ATMs), tele banking and online banking. Online banking is generally not widespread, yet all the major banks have their online banking portals. Internet banking is expected to have the highest growth potential incorporating increasingly sophisticated products. The use of electronic money is one such innovation. The main reasons for slow acceptance of internet banking are cost as well as security concerns, low reach of Internet and weak legal system.

Entry of Technology in Global Banking

The rapid advancement in Information and Communication Technology (ICT) has had a profound impact on the banking industry and the wider financial sector over the last two decades and it has now become a tool that facilitates banks organizational structures, business strategies, customer services and other related functions. The recent "IT revolution" has exerted far-reaching impacts on economies, in general, and the financial services industry, in particular. Within the financial services industry, the banking sector was one of the first to embrace technology and benefit significantly from IT development. Tracing the genesis, we can observe that technological revolution in banking started in the 1950s, with the installation of the first automated bookkeeping machines at banks. This was well before the other industries became IT savvy. Automation in banking became widespread over the next few decades as bankers quickly realized that much of their labour-intensive information-handling processes could be automated with the use of computers. The first Automated Teller Machine (ATM) is reported to have been introduced in the USA in 1968, and it was only a cash dispenser. The advent of ATMs helped both to improve customer convenience and reduce costs. ATMs enabled facilities of withdrawing funds, accounts inquiries and transferring funds between accounts making face-to-face interaction between bank staff and customers as optional.

Technology in Indian Banking System

The foundation for large-scale induction of IT in the banking sector was provided by the recommendations of the committees headed by Dr. C. Rangarajan, in 1984 and 1989. Subsequently, in 1994, the Reserve Bank constituted a committee on 'Technology Upgradation in the Banking Sector'. The committee made a number of recommendations covering payment systems

including setting up of an autonomous centre for development and research in banking technology. The Institute for Development and Research in Banking Technology (IDRBT), Hyderabad, was created as a sequel. It has established and operates the Indian Financial Network (INFINET), conductancy services apart from providing educational and training facilities for the banking sector. It plays the role of an incubator for bringing innovation in banking technology.

Pace of Technology Adoption in Banks

The stand-alone IT infrastructure in banks in early 2000 began to migrate to core banking platform for integration of banking transactions among bank branches to provide the facility of access to bank account from anywhere. Thus, going beyond the gathering, processing, analyzing and providing service at the counters locally within the bank, IT moved to provide anywhere any time banking. The big change came from the move from localized banking to universalization of banking service through core banking solution, which provided the ultimate comfort to customers. Accordingly, in order to provide global standard of service, most Banks have migrated to Core Banking Solution and introduced e-banking products and set up on-site and off-site ATMs. Currently, 67% of Bank branches are on CBS mode, while around 35000 ATMs are located off-site. The service charges on use of other bank's ATMs have been dispensed with. Core banking solution refers to a common IT solution wherein a central shared database supports the entire banking application. Business processes in all the branches of a bank update a common database in a central server located at Data centre, which gives a consolidated view of the bank's operations. Branches function as delivery channels providing services to the customer of the bank. Core Banking Solution is an integrated application that supports real time, multi-banking and multi-channel strategies. The single biggest achievement of implementing the Core Banking Solution is that each customer is truly the customer of the Bank and not just the customer of the Branch, where his/her account is maintained.

Benefits of Integrated CBS Operations are

- Customer data is stored in a centralized location, more time is available to the branches for front office activities like attending to customers, product promotion marketing, business expansion and cross selling of products. This benefits customers as they get more attention of banks.
- Single window service for the varied needs of the customers is made available at the branches. This enhances the quality and speed of customer service at the branch.
- There is a uniform approach to the branch rules/ operations for handling customer needs.
- Branches can innovate methods to better satisfy the customers by customizing services.
- A look alike internal ambience and layout of branches is possible at the end state so that customers feel good to experience the enhanced services.
- Branches are not to spend their time in attending to trouble shooting of systems, database and servers. They serve customers with a full service orientation as service stations.
- Anywhere / anytime branch banking is available to the customers.
- As multiple delivery channels are facilitated, Internet banking, online access to all ATM network, tele-banking facility, bill payment etc. are made available to the customers.
- Customers need not necessarily visit branches as the multiple e-delivery channels enable them to transact basic banking even from the comfort of home / office.
- Availability of MIS at a central location enhances the decision support to help modify products / services for better customer satisfaction.
- There will be effective control and monitoring of branch banking and surveillance of customer service quality is improved.
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- Faster introduction of customer centric products from the central location ensures sustained efforts to bring improvements.
- Data on the nation-wide payment system enables further development and security systems in operating the electronic payment infrastructure.

As such the visible benefits of IT in day-to-day banking are quite well known. There is 'Anywhere banking' through core banking systems, 'Anytime Banking' through new 24/7/365 delivery channels such as Automated Teller Machines (ATMs) and Net and Mobile banking in some banks. In addition, IT has enabled the efficient, accurate and timely management of the increased transaction volume that comes with a larger customer base. It has also facilitated the movement from class banking to mass banking and removed the limitations of PSBs known more as mass bankers. They are now fast attaining global standards and emerging as quality bankers. Thus, the Core Banking concept to a great extent emerged as a centralization process. The Banks have also undergone a massive change in terms of improvement in the IT communication network, which has greatly facilitated, not only the networking of the internal communication processes, but the integration with the external payment system gateways as well. CBS is also capable to process customer relationship management, treasury, ATM application, electronic banking, management information system, internet banking, mobile banking, smart card operations, biometric ATMs, chip based electronic purse and such other customer convenient electronic devices. We have also seen the developments in the communication network and messaging system in India as a whole in the form of Indian Financial Network (INFINET), Structured Financial Messaging System (SFMS), VSAT connectivity, cable and leased line connection, fiber optics channels, etc. There have been marked improvements in the Indian payment and settlement systems in the form of popularizing and strengthening of Real Time Gross Settlement (RTGS), Centralised Fund Management System (CFMS), Electronic Clearing System (ECS), National Electronic Fund Transfer (NEFT), Cheque Truncation, National Financial Switch (NFS), developments and initiatives at Clearing Corporation of India Limited (CCIL) platform, ATMs, electronic banking channels etc. to name a few.

Remote Banking

Remote banking refers to the provision of extending banking services without face to face contact between the bank employees and its customers. The key feature is that the remote banking services represent complementary or even substitutes to the conventional services provided by the bank's branch offices. The following types of services fall within the range of remote banking defined above:

Kiosk Banking (ATM Channel)

Here, the customer uses multipurpose ATMs installed by the bank which may also be used as an interactive link between the customer and the bank.

Telephone Banking (Phone Channel) of Business

In this channel telephone is used as a message carrier to enable person to person or voice-activated automated communication between the bank and the customer.

Online Banking (Internet Channel)

In such cases, Internet is used as a message carrier where the customer uses a PC and a modem (or Local Area Network) to connect to the bank using its online website or a software provided by the bank.

Remote banking is offered by some major banks. Today, the upwardly mobile customer expects remote banking as a basic service to be provided by the bank. For example, these days a bank like Citi Bank conducts most of its retail banking transactions through remote channels. In an extreme case, a bank can exist as a virtual bank without even having many branch offices. A large branch network, which spans through the whole of rural and urban areas, is sometimes not a priority for some banks. In principle, the banks can be categorised by their involvement in remote banking:

1. Banks that provide traditional services, but struggling with the new technology. For example, most of the public sector banks.
2. Old banking institutions that offer traditional banking services and are moving on to offer remote services in a big way. For example, SBI, which has started offering telephone banking, online banking and ATM facility on a very large scale.
3. New-age banks that operate with minimal number of physical branches and use remote banking for the bulk of their operations. E.g. ICICI, Kotak, HDFC which conduct a bulk of their operations through remote banking.

Penetration of Remote Banking Services and Channels

Most of the traditional banking services can be effectively implemented by banks using remote channels too. In many cases, the remote channels are better placed than the conventional ones to serve a customer. Until now, major emphasis has been given on ATM and telephone-based services by the banks that have used the remote banking channels but they have been slow to catch up with net-based banking. Moreover, the remote channels are still used to provide basic services while more sophisticated services are provided on a face to face basis or by direct contact through telephone.

Use of ATMs

Use of ATMs has seen an exponential growth in India. ICICI Bank is the most aggressive deployer of ATMs and has seen its base surge from 125 ATMs in January 2000 to more than 3000 ATMs today. Such has been the impact of ATMs that ICICI Bank's customer base has grown from two million to ten million. Banks are also developing new strategies to leverage their ATM outlets. For instance, rather than setting up a branch in every suburb, ICICI Bank has a ratio of 8 ATMs to one branch office, thus effectively reaching out to a large customer base at a substantially lower cost.

Online Banking

The total number of registered users for Internet banking in India is over five million. India has a little less than three million active Internet banking users. And though this is just 0.3 per cent of the total population, it represent a high percent of the India's Internet user population, thus indicating that the concept of Internet banking is surely catching on.

Telephone Banking

Telephone banking is also catching up across the countries. Transactions, such as request for loan, credit cards and account balance enquiries, are increasingly being carried out through a phone or mobile.

Future Trends in Remote Banking

Banks are now increasingly adjusting their technology investment towards remote banking channels to account for the shift of customers towards the same. With ATMs networks already in place in most of the urban areas, the drive is now focused towards the rural areas where the use of ATMs is still uncommon. The banks are also seeking IT solutions to ensure that transactions on the net are more secure and efficient. The spread of such e-banking is also subject to the socio-economic background of the clients but it is expected that in future, service offered through the net will be far more superior to those services offered through the conventional channels.

So, following are some of the use future trends in the new-age banking channels:

- Spectacular growth in the use of online banking facilities to manage money rather than just for account reporting- in both retail and corporate sectors.
- New digital signature legally binding in many countries leading to entirely new patterns of consumer activity.
- Huge growth in wireless banking and payment services using mobile phones.

One problem for the banks in this new age is the increased competition. On the internet, he competitors are just a mouse click away. So, it would be a challenge for the banks to differentiate their services from their competitor. The Internet and technology are expected to develop more quickly for such applications. Another challenge is to increase the use of PC and Internet which depends largely upon the cost to the customer, the telecom infrastructure and computer literacy among the population which is still low. Security problems, identification problems, increasing costs and legal frameworks also pose a challenge.

Technology and Bank's Strategies

As an all-encompassing development, new technology has important implications for all aspects of strategy and offers major opportunities through investment in the following areas:

- Application of IT into banks internal operations, products and distribution methods in order to gain competitive advantages and increase the market share as well as to improve efficiency and risk management.
- The formation of alliances with technology partners, telecommunication providers and IT vendors in order to create common platforms which allow further developments in the effective application of the most up-data IT and to optimise R&D implementation costs; and
- Diversification into other businesses such as electronic commerce and non-financial services.

Technology is an important strategic tool for banks to safeguard long-term competitiveness, cost efficiency and profitability. Technology enables banks to obtain additional marketing instruments and a better knowledge of the needs and habits of their customers and possibly to achieve significant cost reductions. In any case, banks also need to evaluate to risk involved in adopting any technology.

Cost Aspects

The most important driver of quick adoption fo technology in any sector is the possibility of achieving significant cost reductions in the long term. Banking sector is no different. The use of technology in banking sector might reduce the per transaction cost and hence the overall operating expenses in the long run. The cost reduction may be attributed to the following factors:

- The reduced cost of automated processes as compared to labour-intensive ways to process the various bank transactions. This is a long term phenomenon.
- The lower Turn around Time (TAT) and the response time for the transactions.
- Existence of greater economies of scale in the case of automated processes as compared to manual processes.
- Centralisation of information and processing functions lead to reduction in costs in the long run.

Typically, it might cost a bank close to Rs. 50 per transaction if conducted in a branch. The same, if done through an ATM, costs about Rs. 15. A look at the volume of ATM transaction conducted reflects the level of success of this delivery channel. The other important delivery channel, from a bank's perspective is Internet banking. The adoption of Internet banking by the bank's customers is important since the costs per transaction in this case are even lower than those of an ATM. A net-based transaction costs the bank only about Rs. 4.

There might be certain catches while implementing technology in banking. These are:

- A relatively large number of transactions might have to be built up before economies of scale are achieved.
- Some redundancies might build up. For example, a remote banking channel and conventional channel catering to the same segment of customers will involve redundancy since multiple channels are present for the same use.
- Higher use of technology requires highly trained manpower. This involves significant training costs for the existing employees and a general rise in salaries.
- The technology keeps changing very rapidly and hence, banks must keep with the latest IT tool, which will further push up the cost.

In the banks, significant cost advantages will accrue only in long term, however, these reductions might not be dramatic. The variable costs will decrease while the fixed costs might increase. At present, it is difficult to assess how much cost advantage has been achieved by banks, however, the labour costs have seen a decline with the gradual implementation of technology.

Revenue Aspects

The investment in IT are not just on the basis of cost considerations but also with a view to attract more customers and thereby to increase the revenues. This is done by offering new services using technology and attracting more number of tech-savvy customers. Many banks have seen a surge in customer base and revenues since the time they implemented technology.

Technology has a major impact on a bank's relationship with its customer since the implementation of CRM (customer relationship management) tools in banking. Personal information and banking behaviour of each customer is retracked and stored which helps in coming up with customised solutions for the person. This improves the customer loyalty and also helps in targeted marketing for the bank.

Another aspect is the emergence of competition with the websites of banks just a mouse click away. This helps the customer look out for the best deal in the market. The market has today seen that many customers deal with multiple banks trying to locate the best player for their specific needs. One might have an account in ICICI but avail of a loan from SBI and carry a Citibank credit card. Increased competition might create a pressure to change the system to cost-based pricing. The new entrants, which avoid the costs related to a branch network, will have a certain cost advantage compared to established banks. Customer demand the best services and the implementation of technology can help retain the customers in the long run.

Impact on the Banking Sector

The technology resources are used in a number of ways by the banks. Certain effects on banking structure are visible in the form of:

Number of Customer

The branch networks are witnessing an impact as a result of technology. This is being done by deciding the number of customers to be serviced through both remote banking and conventional banking.

Bank Branches

In the short term, the branch network will remain as it is, since the physical presence is still considered necessary because the remote channels would not become complete substitutes.

Bank Personnel

The redundancy among bank employees will rise due to the automation of previously manual functions. The technical

competency among the employees will rise and bulk of employee work will shift to marketing, telephone operations and maintenance of the systems. Thus, the employee strength might not exactly change.

Outsourcing

Banks outsource activities, such as IT support, printing, security, transportation and document processing. Outsourcing is slated to increase drastically in future as organisations identity their correct position in the value chain. Outsourcing is being considered due to various reasons which include absence of in-house competence, improvement in efficiency and economies of scale or flexibility.

Mergers and Strategic Alliances

Increased cost of technology might force the banks to merge to leverage upon complementary competencies. Cost efficiency can be achieved by the use of more efficient technologies in merged banks. Strategic alliances have been forged between various banks to increase cooperation and know-how and share IT costs, reap economies of scale and provide systems such as common use of ATMs. Thus, synergies of two or more banks can lead to increased profitability for all.

Effect of Technology on Risks in Banking

The technological innovations and subsequent adaptation of technology by the banks have an impact on the overall risk profile of banks. Possible effects of IT on various types of risks for banks are classified below:

Strategic Risks

The strategic risk includes:

- Increased competition
- Excessive investments in technology
- Long time lag for break even

Legal Risks

The legal risks are attributable to the laws and regulations in the wake of the ever-changing technology. These laws related to validity and proof of electronic signatures, customers' privacy, technical failure responsibilities and data protection. The legal disputes may arise due to disputed cash withdrawals, sharing responsibility between banks vulnerability of transactions on internet, hacking and breakdown of computers.

Operational Risks

For banks, there is always an operational risk of technological failure. Open Internet architecture poses a risk of external intrusion while employees pose a risk of data leakage. Some operational risks are the mishandling of IT products, inadequate safety of IT infrastructure, leakage of passwords, dependence on third parties, obsolescence of technology or ill designed IT package.

Credit Risks

An increased use of technology leads to easing of mechanisms to disburse loans. The use of IT has enabled better quantification and management of credit risks.

Conclusion

The rapid advancement in Information and Communication Technology (ICT) has had a profound impact on the banking industry and the wider financial sector over the last two decades and it has now become a tool that facilitates banks organizational structures, business strategies, customer services and other related functions. The recent "IT revolution" has exerted far-reaching impacts on economies, in general, and the financial services industry, in particular. The Banks have also undergone a massive change in terms of improvement in the IT communication network, which has greatly facilitated, not only the networking of the internal communication processes, but the integration with the external payment system gateways as well.

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