3. **IT APPLICATION AND BANKING SECTOR**

   Reforms in Banking Sector
   Innovations in Banking Sector
   Technological up gradations

3.1 **Information Technology in Banking Sector**

   Reserve Bank of India has played a vital role in banking sector development on the basis of information available and judgment i.e. *decision making power*. It has also helped other banks, mostly public sector banks, in adopting technology. This process has three phases:

   **1st phase**
   To reduce cost and improve housekeeping. Computerization of back office operations.

   **2nd phase**
   To focus on customer satisfaction and improved risk management to gain competitive advantage.

   **3rd phase**
   To implement core banking solutions (CBS) combining both front office & back office. As a result of this phase branch customers have turned bank customers as they can access their account from any of the branch of a particular bank.

   A lot of technological up gradation have taken place in banking sector. RBI has again played a vital role with focus on security, safety, assurance and business continuity.
3.2 Technological developments

Technology has changed the face of banking in India. Modern day banking services are critically dependent on technological innovation and improvement.

There have been tremendous growth and diversification in banking activities over the last two decades. Development of a sound and adequate information system has become a necessity to meet the challenges of growth and diversification. The Banking Commission and the Reserve Bank of India have appointed various committees from time to time. The Tandon Committee was appointed in 1974 which gave the guidelines to banks for the follow up of credit, the Talwar Committee was appointed to look into the customer services in the banks, and the Goiporia Committee reported on accounting procedures and maintenance of records at bank branches. Talwar Committee on Customer Service in Banks had recommended computerization of some functions to avoid delays in customer service.

Until 1983, there was no major breakthrough in mechanization and computerization in the banking industry. In September 1983, an agreement was made between the Indian Banks' Association and the All India Bank Employees' Association on the installation of electric/electronic machines (other than computers), microprocessors, and mainframe computers to support specified functional areas in branches, zonal offices, and head offices. In July 1983, the Reserve Bank of India had appointed a Committee on Mechanization in Banking Industry to consider the question of drawing up a phased programme of mechanization for the Banking Industry bearing in mind the future expansion which is known as Rangarajan Committee.

Its report, popularly known as the Rangarajan Committee Report on Mechanisation in Banking Industry, is a blueprint for mechanization and computerization in banks. It covers various aspects of mechanization, for
instance, the areas of banking operations to be mechanized and the type of machines to be installed at branch, regional, and head offices. Major recommendations from this report are given overleaf. The report also discusses machine and manpower resources needed and describes the mode of implementing the mechanization and computerization programme. Major recommendations of the Rangarajan Committee The Committee envisaged the various benefits of mechanization in the areas of customer service and housekeeping.

Customers will get neat and accurate print outs of transactions on their account; all the standing and ad hoc instructions will faithfully be executed and the periodical interest calculations will be accurate. As regards housekeeping operations, once the vouchers are tallied with the machine listing of transactions in the form of supplementary, the day book and general ledger will be posted and balancing of books will not pose any problem. The safety procedural checks to protect the customer and the bank will automatically be carried out by the machine once it is designed for the purpose.

To give a fillip to bank computerization, The Reserve Bank of India (RBI) issued guidelines in consonance with the recommendations of the Rangarajan Committee (1989). The Central Vigilance Commissioner CVC (1998) also issued guidelines to public sector banks to computerize 70% of their banking operations by 1 January 2001. Such interventions have helped most of the banks to achieve targets or even exceed them.

The Committee on Technology Upgradation in Banks (1999) made it mandatory for banks to improve their efforts at networking their branches and to set up data warehouses for effective decision support systems. Today, Indian commercial banks have the privilege of choosing from a variety of delivery channels for their products and services. This includes the brick and
mortar branch office networks, ATMs, automated self-banking channels, telebanking and PC banking.

Many banks have recognized the competitive advantages inherent in IT and have rapidly increased business levels and profitability by being first movers in their segments. IT solutions allow financial institutions to effectively handle huge increases in transaction volumes as banks continue with geographical expansion and deliver improved levels of customer services at times and places suitable to themselves and their customers.

3.3 Reforms in Banking Sector

Banking and Financial sector has undergone a vast change in the last few years. These years have witnessed deregulation, liberalization and migration from legacy system to Core Banking. The Banking processes have become increasingly IT oriented, handling very large volume of sensitive financial transactions online and managing critical financial data. This has created a need for qualified personnel to manage critical installations like Data Centers, Network Centers and other installations in the Banks, as well as to develop and upgrade products and applications. The demand for quality professionals having domain knowledge of Banking and Information Technology has grown manifold.

During the recent years, the pace and quality of banking was changed by the technological advancements made in this area. Computerization as well as the adoption of core banking solutions was one of the major steps in improving the efficiency of banking services. The new private sector banks and most of the foreign banks, which started their operations in the mid nineties followed by liberalization, were the front runners in adopting technology. For old private sector banks and public sector banks adoption of technology was an arduous job because of the historical records and practices.
Technology is central to the design and delivery of banking services. The modern-day banking services are critically dependent on technological innovation and improvement. During 2010-11, several new initiatives were taken by the Reserve Bank towards improving the banking sector technology.

3.3.1 Anywhere & Anytime Banking

Anywhere Banking refers to the option where a customer can carry out banking transactions anywhere. He may not visit to bank branch. Anytime Banking refers to the option where a customer can carry out banking transactions anytime during the day. Banks are open from 9AM to 5PM. There is no time constraint with this. This can be achieved through the above banking facilities like ATMs, internet banking, mobile banking, credit cards etc.

3.3.2 Automated Teller Machine (ATMs)

An automated teller machine or automatic teller machine (ATM), also known as an automated banking machine (ABM) in Canada, and a Cash point (which is a trademark of Lloyds TSB), cash machine or sometimes a hole in the wall in British English, is a computerized telecommunications device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller.

On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip, which contains a unique card number and some security information such as an expiration date or CVVC (CVV). Authentication is provided by the customer entering a personal identification number (PIN).

Using an ATM, customers can access their bank accounts in order to make cash withdrawals, debit card cash advances, and check their account
balances as well as purchase prepaid cell phone credit. If the currency being withdrawn from the ATM is different from that which the bank account is denominated in (e.g.: Withdrawing Japanese Yen from a bank account containing US Dollars), the money will be converted at an official wholesale exchange rate. Thus, ATMs often provide one of the best possible official exchange rates for foreign travelers, and are also widely used for this purpose.

Further, introduction of automated teller machines (ATMs) enabled customers to do banking without visiting the bank branch. In 2010-11 the number of ATMs witnessed a growth of 24 per cent over the previous year.

However, the percentage of off-site ATMs to total ATMs witnessed a marginal decline to 45.3 per cent in 2010-11 from 45.7 per cent in 2009-10. More than 65 per cent of the total ATMs belonged to the public sector banks as at end March 2011.

During 2010-11, the number of debit cards grew at the rate of 25 per cent over the previous year. In synchronization with the trend observed in case of ATMs, nearly three fourths of the total debit cards were issued by PSBs as at end March 2011. The share of PSBs in outstanding debit cards witnessed an increase during the recent years, while that of new private sector banks and foreign banks witnessed a decline over the same period. However, in absolute terms, the number of outstanding debit cards witnessed an increase for new private sector banks during the recent years.

When HBSC installed the first Automated Teller Machine (ATM) in 1987, it was considered the first and most visible piece of evidence announcing the arrival of electronic banking in India. In the last decade, ATMs have mushroomed over the urban Indian landscape, becoming today’s most preferred delivery channel. ATMs were followed by telebanking and PC banking in the late 1990s. The next step in this evolutionary process was
Internet banking. ICICI Bank was the first among the new private banks to launch its net banking service (Infinity).

3.3.3 **Mobile Banking or SMS Banking**

When people are hard pressed for time, the need for "anytime anywhere" banking gains utmost importance. Bearing this in mind, banks provide a novel service which gives retail customers account information and real-time transaction capabilities from their cell phones. With SMS banking the following services can be obtained:

- To get account balance details
- To request a cheque book
- To request last three transaction details
- To pay bills for electricity, mobile, insurance etc.

In order to avail the services mentioned above, a user subscribing to a wireless carrier sends an SMS with a predefined code to the bulk service provider’s number.

The service provider forwards this message to the bank’s mobile banking applications. The mobile banking applications interface with the core banking servers (that contain the user account information) that service the request made by the user. The response is then sent by the mobile banking applications to the bulk service provider who in turn forward it to the valid user via SMS.

3.3.4 **Credit/Debit Cards**

A debit card (also known as a bank card or check card) is a plastic card that provides the card holder electronic access to his or her bank account(s) at a financial institution. Some cards have a stored value with which a payment is made, while most relay a message to the card holder's bank to withdraw funds from a designated account in favor of the payee's designated bank
account. The card can be used as an alternative payment method to cash when making purchases. In some cases, the primary account number is assigned exclusively for use on the Internet and there is no physical card.

A credit card is a small plastic card issued to users as a system of payment. It allows its holder to buy goods and services based on the holder's promise to pay for these goods and services. The issuer of the card creates a revolving account and grants a line of credit to the consumer (or the user) from which the user can borrow money for payment to a merchant or as a cash advance to the user.

3.3.5 National Electronic Fund Transfer (NEFT)

The national electronic fund transfer (NEFT) system is a nation-wide system that facilitates individuals, firms and corporate to electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country. For being part of the NEFT funds transfer network, a bank branch has to be NEFT-enabled. As at end-January 2011, 74,680 branches / offices of 101 banks in the country (out of around 82,400 bank branches) are NEFT-enabled. Steps are being taken to further widen the coverage both in terms of banks and branches / offices.

3.3.6 Real Time Gross Settlement (RTG)

Real time gross settlement systems (RTGS) are funds transfer systems where transfer of money or securities takes place from one bank to another on a "real time" and on "gross" basis. Settlement in "real time" means payment transaction is not subjected to any waiting period. The transactions are settled as soon as they are processed. "Gross settlement" means the transaction is settled on one to one basis without bunching or netting with any other transaction. Once processed, payments are final and irrevocable.
3.3.7 **Online Banking**

Online banking (or Internet banking or E-banking) allows customers of a financial institution to conduct financial transactions on a secure website operated by the institution, which can be a retail or virtual bank, credit union or building society.

To access online banking, the customer would go to the financial institution's website, and enter the online banking facility using the customer number and password. Some financial institutions have set up additional security steps for access, but there is no consistency to the approach adopted.

3.4 **Innovation in banking sector**

Technology is central to the design and delivery of banking services. The modern-day banking services are critically dependent on technological innovation and improvement. During 2010-11, several new initiatives were taken by the Reserve Bank towards improving the banking sector technology.

Technology adoption has changed the face of banking in India. Wide spread technology deployment in the banking business has also brought to the fore some new issues and challenges.

The Reserve Bank has successfully navigated the financial sector to safe shores based on information availability and judgment. Technology infrastructure played a key role in enabling timely availability and access to vital information in the fast evolving macro space. The Reserve Bank has also guided the banking system (mostly PSBs banks) in adoption of technology. In the *first phase*, banks computerized their labor intensive back office operations to reduce costs and improve housekeeping. In the *second phase*, banks focused on enhancing customer convenience to gain competitive advantage. In the *third phase*, which is presently in progress, banks have implemented Core Banking Solutions (CBS) combining both front office and
back office. This phase marked a paradigm shift in more senses than one and branch customers are now bank customers as they can access their accounts from any branch for defined purposes. CBS offered new opportunities for information management, for better customer service and improved risk management.

Extensive use of technology has brought about upgrades in general banking environment for all stakeholders. The Reserve Bank has played a role of a catalyst in this path and has been providing guidelines with due focus on security, safety, assurance and business continuity. In this background, the role of IT in banking sector needs to be revisited with focus on the following:

- Introducing technologies that balance 3 Cs – Cost, Control and Customer Service
- Implementing data warehouse and business intelligence that meets all internal MIS requirements as well as the information needs of the regulator
- Adoption of technology-based strategies for financial inclusion
- Usage of analytics for improvement of Customer Relationship Management (CRM), risk management and fraud detection / prevention.

The availability of IT/IS education training support from the Vendor needs to be stressed. Banks should ensure IT culture and awareness is well spread through such support systems, as it is prerequisite for successfully adding to the customer service and providing value addition in business decisions.

Today, Indian commercial banks have the privilege of choosing from a variety of delivery channels for their products and services. This includes the brick and mortar branch office networks, ATMs, automated self-banking channels, telebanking and PC banking.
IT solutions play a strategic role in capturing, drawing and transforming data from transactions into a decision making framework for designing and administering innovative products as well as enhancing the quality of service delivery that ultimately leads to greater customization of banking products. IT also enables banks to suitably right size and optimally deploy existing human resources, especially from surplus to deficit pockets in a technology driven environment.

Banks are induced to adopt IT for several reasons. In many cases, it is not possible to extend the life of older technologies operating in the banks as newer technologies provide rewarding opportunities.

The networked economy is the integration of people and institutions obtaining information, transacting business or in general doing things using electronic networks as the underlying backbone. Such an electronic interface supports many banking activities and services like branch operations (ATMs, stored value cards, credit cards, debit cards, etc.), trading desks, stock exchanges, Internet banking, etc. Thus, networking forms a critical component of the overall technology strategy of a bank.

- **Mobility:** Internet banking, any branch banking, mobile banking and SMS alerts.
- **High availability:** ATM networks and non-stop online banking.
- **Efficiency and speed:** Electronic funds transfer, bill payments on the Internet.
- **Aggregation:** Consolidated view of customer accounts across the bank.
- **Relationship banking:** CRM and e-CRM.
- **Security:** Privacy and security in electronic transactions and payment systems.
To be able to meet these customer demands, banks must put in place a reliable network of computer systems and solutions across the bank. The software architecture for bank-wide computer systems and solutions should be robust and efficient to withstand growing demands and volumes of transactions, data storage, decision support, etc. At this juncture, banks need to take a relook at their own applications, reengineer their software architecture requirements and upgrade their technology infrastructure accordingly.

Customers are no longer prepared to wait for information/service. They want their banking information and services at their fingertips, via their chosen delivery channel. This creates a problem for many banks/financial institutions. They are now expected to provide a wider choice of delivery channels and to integrate them as well. Integration means that the bank's channels (the branch, ATM), phone and Internet, must come together, creating a merged knowledge base that allows a consistent view of and for the customer.

The emergence of anytime, anywhere banking necessitates ready availability and mobility of customer data. The key attributes that banks require in a 24/7/365 environment are high availability, quality and mobility of data. All these attributes imply system uptime and real time availability, totally independent of end-of-day operations, without duplication of data.

The technology used should be saleable, flexible and interoperable in order to address market changes. As net banking and opening up of financial markets begins to blur geographical boundaries, solutions deployed need to address multi-currency and multi-lingual transaction processing. Thus, online real-time transactions for anytime, anywhere and anyhow banking should be feasible. New market factors such as e-commerce and banking channel
proliferation are now requiring banks to re-evaluate their existing systems architecture and infrastructure.

The rapid shift toward electronic transactions in the form of ATMs, debit cards and home and wireless banking has made real-time core banking systems a requirement to support up-to-the-minute balance reporting requirements that the older batch-oriented legacy systems were not capable of supporting. Use of real-time processing allows customers to receive instant feedback that their transactions have been successfully completed.

Scientifically tested and workable policies for disaster recovery systems and business continuity plans should be incorporated in the IT policy document. Online mirroring of data, off-site storage of backups, selection of a disaster recovery site located in a different geographical area (preferably a safe-seismic zone), hardware redundancies, business continuity plans in the case of major disasters, natural calamities etc., should all be thought of comprehensively and planned for.

In a rapidly evolving electronic transaction environment, the banking system’s exposure to several new avenues of risk is increasing every day. To keep intact the trust of the common man in the banking system, banks need to create a comprehensive security profile and a dynamic security policy. Security is as much a managerial concern as a technological one. Management’s commitment to security is essential to motivate information resource owners/users and to provide the visibility needed by the security team of information systems to ensure the support of business units.

Banks need to be prepared for several intra-bank applications and inter-bank transactions on the Indian Financial Network (INFINET) through Structured Financial Messaging System (SFMS), Centralized Funds Management System (CFMS).
Negotiated Dealing System (NDS) of the Public Debt Office and Real Time Gross Settlements System (RTGS). SFMS is a solution that enables banks to send secured multi-tiered financial and non-financial messages across the INFINET. The INFINET itself is a closed user group network that uses Very Small Aperture Terminals (VSATs) and high-bandwidth terrestrial leased line communication links to provide a secure, reliable and nation-wide communication backbone for the exclusive use of banks and financial institutions in India. Banks and financial institutions will use the designated messages for a wide range of applications – simple messaging, EFT (retail, RTGS), ECS, electronic debit, online trading in government securities, centralized funds query, anywhere/anytime banking, inter-branch reconciliation, etc.) through INFINET. INFINET is being managed by the Institute for Development and Research in Banking Technology (IDRBT), Hyderabad.

3.4.1 IT Vision Document: 2011-17

A High Level Committee (Chairman: Dr. K. C. Chakrabarty) and members from IIT, IIM, IDRBT, Banks, and the Reserve Bank prepared the “IT Vision Document – 2011-17”, for the Reserve Bank and banks, which provides an indicative road map for enhanced usage of IT in the banking sector.

3.4.2 Automated Data Flow (ADF) and New Generation RTGS (NG-RTGS)

As indicated in the Annual Monetary Policy Statement for 2010-11, a Working Group comprising representatives from the Reserve Bank and select commercial banks was constituted for preparing an approach for implementation of next generation RTGS. The Group submitted its report in August 2010, which has since been accepted. The Group has suggested several new feature in the new generation RTGS (NG-RTGS), such as advanced liquidity management facility, extensible mark-up language-based
messaging system, real time information and transaction monitoring. In order to improve the quality and efficiency of regulatory reporting, a project on straight through flow of data (ADF) from banks to the Reserve Bank has been taken up. Banks have been advised to submit a roadmap indicating returns which can be sourced directly from their systems to a centralized repository for submission to the Reserve Bank.

3.5 Technological Upgradations

In order to examine the various issues pertaining to technology upgradation in the banking sector and to suggest steps that facilitate implementation of the spirit of the recommendations of the Narasimham Committee–II, in this regard in a time-bound manner, the Reserve Bank of India appointed, in September 1998, a 'Committee on Technology Upgradation in the Banking Sector' having representation from the Government, Reserve Bank of India, banks and academic institutions associated with information technology.

The terms of reference for the Committee on Technology Upgradation are as follows:

To suggest necessary legislative changes for implementation of electronic funds transfer, with, inter alia, emphasis on:

- Encryption of Public Switching Telephone Network (PSTN) lines;
- Admission of electronic files as evidence;
- Treating Electronic Funds Transfers on par with crossed cheques / drafts for purposes of Income Tax etc.;
- Record keeping;
- To recommend approaches for development of Intra-bank/Intra city communication network to facilitate connectivity with VSATs;
- To suggest ways to bring about computerization of Government accounts in an expeditious and efficient manner.
➢ To work out modalities necessary for development and optimal utilization of a secure, robust Wide Area Network (WAN) based on satellite with the necessary security systems, by banks and other financial institutions, to ultimately develop a sound and efficient payments system

➢ To examine methods by which technological upgradation in banks and financial institutions could be effected and in the context study the feasibility of establishment of standards, designing payments system backbone and standards relating to security levels, messages and smart cards by IDRBT.

➢ To make recommendations for development of data warehousing and data mining, with a view to creating opportunities for development of efficient Management Information System (MIS) in near future

➢ To recommend guidelines for outsourcing of programs development and implementation work, and

➢ To make recommendations on any other related issues.

Six sub-groups were formed to focus on terms of references and recommend measures to accomplish them. These subgroups were

Sub-Group on Legislative framework for electronic banking
Sub-Group on Outsourcing of services and technology by banking sector
Sub-Group on strategy for intra-bank / intra-city networking
Sub-Group on Computerization of Government Transactions
Sub-Group on standardization and application development for VSAT network
Sub-Group on Data warehousing and MIS for banking sector
3.6 Business Intelligence (BI) and Customer Relationship Management (CRM)

CRM and BI form an integral part of a bank’s strategy. BI allows banks to pull together usable information from disparate systems. CRM and BI tools provide the bank with the ability to look at customer data and use it to drive business. Integrating BI capabilities into applications is important.

Banks are choosing to implement data warehousing solutions to consolidate data from diverse sources into one easy-to-use database to facilitate time critical decision support. Banks can track and respond to business trends and analyze data in the light of business perspectives.

Banks can utilize BI to focus on:-
- Customer acquisitions/profitable accounts
- Track customer needs
- Identify cross-selling opportunities
- Provide customer satisfaction at levels hitherto not even dreamt of.

CRM can be an effective method by which banks can woo new customers and retain existing customers. It involves reorienting bank operations around the needs of the most profitable customers. CRM enables banks to Segment customer bases Tailor appropriate products for different segments Add personalized services.

CRM is a key component of the bank’s growth strategy. Many banks are now participating in strategic partnerships with IT companies. These are not just limited to outsourcing initiatives. Banks are looking at partnerships to obtain timely and predictable returns on their IT investments. The benefits accruing to banks from strategic alliances include one-stop-shopping experience and procurement of best product/s, carefully integrated and fine-tuned.
3.7 **Intranet**

Banks need to seriously explore opportunities of sharing resources such as ATM networks and data centers to leverage economies of scale, reduce operating costs, widen their reach and enhance revenue. The emerging trend among many foreign banks is to share their ATM networks and offer customers free access to a second network of choice with a view to cutting down establishment costs. Banks have come to acknowledge the value of a corporate Intranet, more as an investment rather than a cost to the bank.

**Advantages of Intranet**

- Transform the way in which information is relayed between teams and employees across various units within the bank and fosters greater cohesion and synergy. Mail groups, bulletin boards, shared white boards and discussion forums go along way in improving the productivity of the workforce.

- Intranets are paper substitutes and allow the bank staff to access information across the organization using a knowledge management solution.

- Provides comprehensive online help for the bank's decentralized workplace systems.

- Can handle employee-related information (pay scales, promotions, service rules, training material, etc.) as well as bank specific information (circulars, policies, documents, guidelines, schemes, products, services etc…)

- Version control becomes easier as information can be actively linked across categories.

- The costs of producing, accessing and distributing information decrease while the level of accuracy and timeliness of information increases dramatically.
Banks need to be prepared for several intra-bank applications and inter-bank transactions on the Indian Financial Network (INFINET) through Structured Financial Messaging System (SFMS), Centralized Funds Management System (CFMS), Negotiated Dealing System (NDS) of the Public Debt Office and Real Time Gross Settlements System (RTGS).

SFMS is a solution that enables banks to send secured multi-tiered financial and non-financial messages across the INFINET. The INFINET itself is a closed user group network that uses Very Small Aperture Terminals (VSATs) and high-bandwidth terrestrial leased line communication links to provide a secure, reliable and nation-wide communication backbone for the exclusive use of banks and financial institutions in India.

Banks and financial institutions will use the designated messages for a wide range of applications – simple messaging, EFT (retail, RTGS), ECS, electronic debit, online trading in government securities, centralized funds query, anywhere/anytime banking, inter-branch reconciliation, etc.) through INFINET. INFINET is being managed by IDRBT, Hyderabad.

The last few years have witnessed an explosion of IT based initiatives which have brought about a sea change in the banking sector of the country. The Reserve Bank has been at the forefront of IT initiatives with broad directions outlined by its IT Vision Documents.

The Vision Document sets the priorities for commercial banks for moving forward from the core banking solutions to enhanced use of IT in areas like MIS, regulatory reporting, overall risk management, financial inclusion and customer relationship management. It also dwells on the possible operational risks arising out of adopting technology in the banking sector which could affect financial stability and emphasizes the need for internal controls, risk mitigation systems and business continuity plans.
Further, the Vision Document gives a bird’s eye view of the factors resulting in improved IT Governance, with specific strategies centered on effective project management, evolution of well defined information policies as well as information security frameworks, juxtaposed with better The process of collection of data from the source systems to be totally automated with the help of appropriate Extract, Transform and Load (ETL) tools. Over a period of time, it should be possible to move towards near real time aggregate information.

By using BI tools, the internal users at various levels to be provided interfaces for extracting key information and doing further analysis on the information.

For tracking trends and identifying outliers, appropriate dashboards to be built and made available on desktops.

With large volumes of data available in the data warehouse, there also arises a responsibility on the Reserve Bank to provide access to information to the general public that includes banks, researchers, analysts and others. The contents and interface of the public face of the data warehouse i.e. DBIE, may be reviewed and reworked on a periodical basis.

3.8 IT as a Strategic Resource

Technology is moving at a very fast pace and adoption cycles are short. Therefore, it is becoming difficult to keep pace with the rate of advancement. Quick adoption of developments in the field of IT is a challenge and a key component is the role which human capital will play in this regard. The steps to be taken in this direction are given below:
3.8.1 *Creation of Dedicated Pool of Human Resources*

There is an urgent need to train people across several levels to bridge the gap between the technological skill-sets required and skilled manpower available. There is also a need to ensure continuity for human capital by creating a dedicated pool of trained IT professionals with suitable aptitude. Towards this, a roster of dedicated resources in the following areas may be prepared:

- Infrastructure management
- IT project management
- Process engineering
- Data / information management
- Data warehousing and data mining
- Business continuity
- Information security management
- Business Intelligence and analytics

3.8.2 *Integrated IT Environment*

Implementation of IT based systems has quite often followed an Icelandic approach, whereby individual systems have been implemented to take care of a particular requirement or a felt need. The trend to migrate towards holistic systems is of recent origin. Such a move has distinct advantages from efficiency and management perspectives as well. It is, thus, of paramount importance to migrate towards the implementation of holistic systems by ensuring that the synergistic effects of integration are tapped for use in the IT environment as delineated below.

3.8.3 *Enterprise Architecture*

The buzz word in the current IT environment is enterprise architecture which refers to achieving flexibility in designing systems and integrating legacy systems. It refers to an enterprise-wide, integrated set of components
that incorporate strategic business thinking, and the technical infrastructure that promotes information sharing across the organization. In order to derive more

IT based solutions entail operational risks, for which banks have to put in place appropriate control mechanisms and mitigation techniques. As solutions become more technology dependent, business continuity plans and DR drills assume greater importance. With financial stability as an important target, the Reserve Bank assigns importance to mitigate IT related risks in the banking sector.

In today’s technology-driven world, IT plays a key role in enabling different business establishments, including banks, to run their business. As banks grow, reaching out to a larger customer base with innovative products through more channels, they increasingly rely on IT applications to nurture and grow their business. Given the importance of the banking sector today, banks have to meet regulatory requirements to ensure financial stability and customer satisfaction.

The last few years have witnessed an explosion of Information IT based initiatives which have brought about a sea change in the banking sector of the country. The Reserve Bank has been at the forefront of IT initiatives with broad directions outlined by its IT Vision Documents. The latest in this series is the Information Technology Vision Document, 2011-2017 which aims at providing a road map towards a transformation which is knowledge based and which has Information as its focal point.

The Vision Document discusses the stance of the Reserve Bank in positioning itself as a knowledge organization and the steps to be taken for harnessing human resource potential. In this journey, other facilitators would be the migration to enterprise architecture for IT systems and appropriate
business processing re-engineering. Factors resulting in the accomplishment of the objective of a knowledge based organization include the need for data to conform to internationally accepted standards and usage of business intelligence from data warehouse. This will form the basis for development of optimal Management Information Systems (MIS) with effective Decision Support Systems (DSS).

The Vision Document sets the priorities for commercial banks for moving forward from the core banking solutions to enhanced use of IT in areas like MIS, regulatory reporting, overall risk management, financial inclusion and customer relationship management. It also dwells on the possible operational risks arising out of adopting technology in the banking sector which could affect financial stability and emphasizes the need for internal controls, risk mitigation systems and business continuity plans.

Further, the Vision Document gives a bird’s eye view of the factors resulting in improved IT Governance, with specific strategies centered on effective project management, evolution of well defined information policies as well as information security frameworks, juxtaposed with better vendor management and outsourcing practices. Impetus would be provided to reviewing of IT processes aimed at holistic processing leading to better alignment between business objectives and IT.

Finally, the Vision Document focuses on adopting environmental friendly green IT.

IT Vision of Reserve Bank India - 2011-17

1. **Enhancing Enterprise Knowledge**

Knowledge emanates from information, which itself is based on data. The meaningful transformation of data to knowledge through information can be possible only when data is methodically collected, stored, processed, shared, disseminated and used. Enterprise knowledge can be enhanced by using relevant data and information effectively and applying knowledge either in the same context or in a new context (where new knowledge is created). It is for this reason that the need for enhancement of enterprise knowledge is gaining importance. Executing a knowledge-based strategy is not just about managing knowledge but about imparting knowledge to those who aspire for it.

IT based solutions entail operational risks, for which banks have to put in place appropriate control mechanisms and mitigation techniques. As solutions become more technology dependent, business continuity plans and DR drills assume greater importance. With financial stability as an important target, the Reserve Bank assigns importance to mitigate IT related risks in the banking sector.

3.9 **IT Governance**

IT Governance refers to the framework for decision rights and accountability to encourage desirable behavior in the use of IT. Adoption of well structured IT Governance models would assist in enabling better alignment between IT and business, create efficiencies, enhance conformity to internationally accepted best practices and improve overall IT performance as also enable better control and security. IT Governance objectives may be translated effectively and efficiently into improved performance. IT Governance structure/framework is to be put in place as they play an important role in monitoring IT and banking business.
3.9.1 Business Continuity Management (BCM)

BCM is an organization-wide function comprising of a complete set of processes that identify potential threats which impact business processes in an organization. It provides a framework for building resilience for an effective response which safeguards the interests of key stakeholders, reputation, brand and value creating activities. BCM ensures continuity in operation to meet legal, regulatory and contractual obligations. It is inclusive of disaster recovery, business recovery, crisis management, incident management, emergency management, contingency planning as well as alternate planning.

3.9.2 Information Security Policy

Information Security Policy is a documented business rule for protecting information and the systems which store and process this information. Within an organization, the written policy document provides a high-level description of the various controls the organization will use to protect information. The strength of any system is no greater than its weakest link. Information should be based on the principles of integrity, reliability, and validity. Protecting confidential information is a business and legal requirement.

The existing IS policy would have to be reviewed and updated at periodical intervals. The IS Policy may detail principles for protecting information from unauthorized access, use, disclosure, disruption, modification or destruction. The information security policy should, inter alia, relate to policies such as firewall, email, network security, and password. The policy should also address issues relating to prevention of cyber attacks by deploying appropriate technologies such as two-factor authentication.

While following the above, legal aspects relating to the provisions of the Acts such as Payments and Settlement Act, 2007 and IT Act, 2000 may be strictly adhered to.
3.9.3 Audit of IT Processes and Infrastructure

In view of the critical importance of information security, there is a need to exercise constant vigilance for the safety of the IT systems. Well-defined, structured and documented security policies, standards and guidelines are significant for smooth and efficient operations. At the same time, there is also a need to audit IT systems and processes to ensure confidentiality, integrity, authenticity and timely availability of information. To ensure the above, various types of audits viz., organizational IT audit (management control over IT), technical IT audit (infrastructure, data centers, data communication), application IT audit (business/financial/operational), development/implementation IT audit (specification/requirements, design, development, and post-implementation phases), and compliance IT audit may be conducted at periodic intervals keeping in view the requirements of the organization. Audits may be conducted by both internal/external agencies adhering to national/ international standards.

3.9.4 Project Management

Managing IT resources, either for achieving the desired objectives or creating new resources for business or functional objectives, has become complex. Therefore, there is an overarching need for professionally managed projects. This may include Identification of business requirements, procedures and IT resources in terms of people, infrastructure, and technology. Projects are conceptualized, developed and implemented following internal prescriptions. In order to streamline the process of project management, standardized project management policies and methodologies need to be adopted.

3.10 IT vision document (2011-17)

A high level committee under the chairmanship of Dr. K.C.Chakrabarty and members from IIT, IIM, IDBRT, banks & RBI prepared
“IT vision document-2011-17” for RBI and other banks which is an indicative road map for enhanced usage of IT in banking sector.

3.10.1 Banking reforms

Reform in banking sector have changed the scenario of Indian banks in the last two decades. Changes like

- Deregulation
- Liberalization
- Migration from legacy system to core banking
- IT based systems
- Handling large volume of sensitive transactions online
- Managing critical financial data
- Due to these changes
- Data centers
- Network centers have been opened and
- Several new installations are done.