

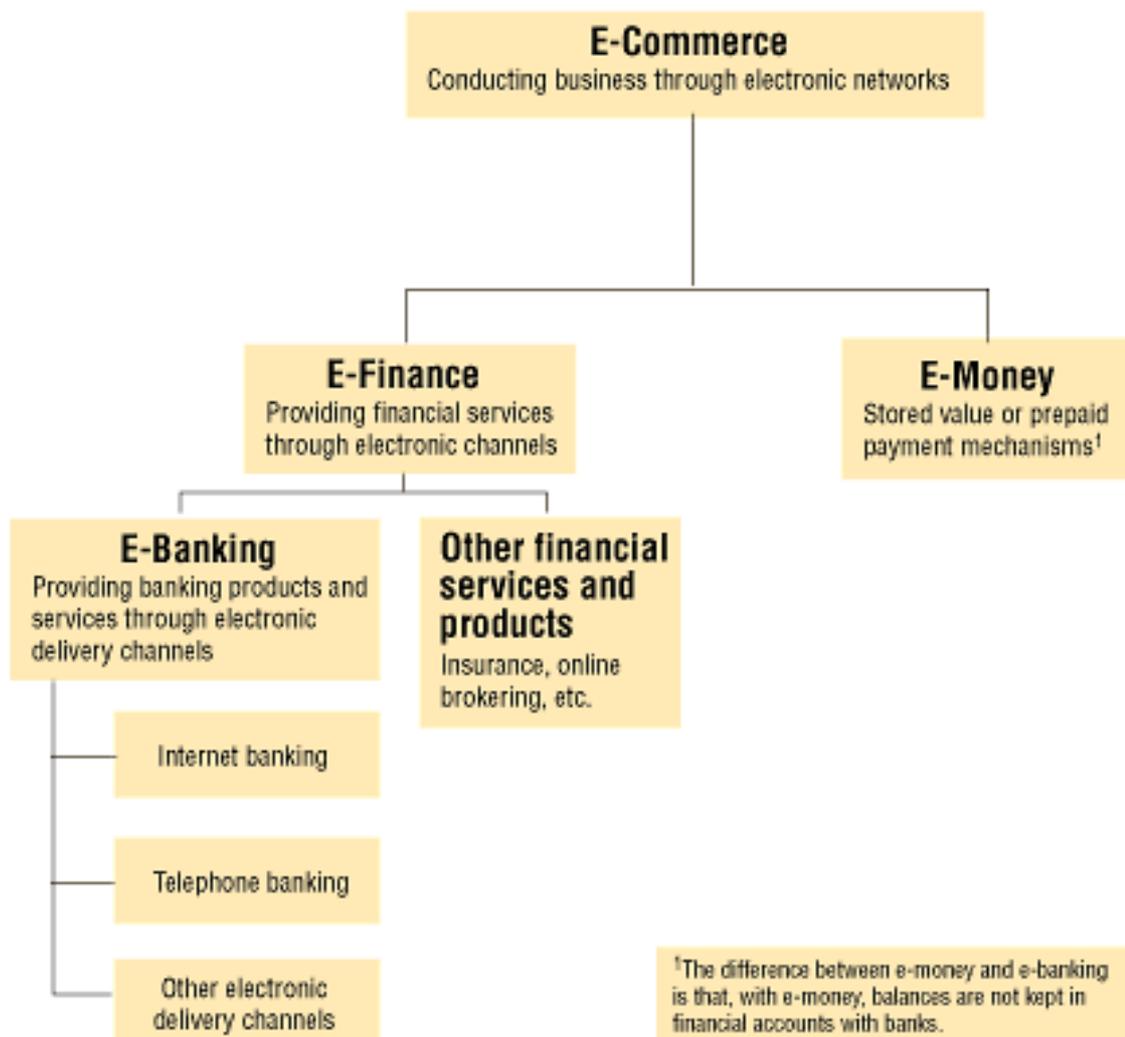
DEFINITION OF E-BANKING

Electronic banking, also known as electronic funds transfer (EFT), is simply the use of electronic means to transfer funds directly from one account to another, rather than by cheque or cash. You can use electronic funds transfer to:

- Have your paycheck deposited directly into your bank or credit union checking account.
- Withdraw money from your checking account from an ATM machine with a personal identification number (PIN), at your convenience, day or night.
- Instruct your bank or credit union to automatically pay certain monthly bills from your account, such as your auto loan or your mortgage payment.
- Have the bank or credit union transfer funds each month from your checking account to your mutual fund account.
- Have your government social security benefits check or your tax refund deposited directly into your checking account.
- Buy groceries, gasoline and other purchases at the point-of-sale, using a check card rather than cash, credit or a personal check.

- Use a smart card with a prepaid amount of money embedded in it for use instead of cash at a pay phone, expressway road toll, or on college campuses at the library's photocopy machine or bookstores.
- Use your computer and personal finance software to coordinate your total personal financial management process, integrating data and activities related to your income, spending, saving, investing, recordkeeping, bill-paying and taxes, along with basic financial analysis and decision making.

What is electronic banking?



VARIOUS FORMS OF E-BANKING:

INTERNET BANKING:

Internet Banking lets you handle many banking transactions via your personal computer. For instance, you may use your computer to view your account balance, request transfers between accounts, and pay bills electronically.

Internet banking system and method in which a personal computer is connected by a network service provider directly to a host computer system of a bank such that customer service requests can be processed automatically without need for intervention by customer service representatives. The system is capable of distinguishing between those customer service requests which are capable of automated fulfillment and those requests which require handling by a customer service representative. The system is integrated with the host computer system of the bank so that the remote banking customer can access other automated services of the bank. The method of the invention includes the steps of inputting a customer banking request from among a menu of banking requests at a remote personnel computer; transmitting the banking requests to a host computer over a network; receiving the request at the host computer; identifying the type of customer banking request received; automatic logging of the service request, comparing the received request to a stored table of request types, each of the request types having an attribute to indicate whether the request

type is capable of being fulfilled by a customer service representative or by an automated system; and, depending upon the attribute, directing the request either to a queue for handling by a customer service representative or to a queue for processing by an automated system.

AUTOMATED TELLER MACHINES (ATM):

An unattended electronic machine in a public place, connected to a data system and related equipment and activated by a bank customer to obtain cash withdrawals and other banking services. Also called *automatic teller machine*, *cash machine*; Also called *money machine*.

An **automated teller machine** or **automatic teller machine (ATM)** is an electronic computerized telecommunications device that allows a financial institution's customers to directly use a secure method of communication to access their bank accounts, order or make cash withdrawals (or cash advances using a credit card) and check their account balances without the need for a human bank teller (or *cashier* in the UK). Many ATMs also allow people to deposit cash or cheques, transfer money between their bank accounts, top up their mobile phones' pre-paid accounts or even buy postage stamps.

On most modern ATMs, the customer identifies him or herself by inserting a plastic card with a magnetic stripe or a plastic smartcard with a chip, that contains his or her account number.

The customer then verifies their identity by entering a passcode, often referred to as a **PIN** (**P**ersonal **I**dentification **N**umber) of four or more digits. Upon successful entry of the PIN, the customer may perform a transaction.

If the number is entered incorrectly several times in a row (usually three attempts per card insertion), some ATMs will attempt retain the card as a security precaution to prevent an unauthorised user from discovering the PIN by guesswork. Captured cards are often destroyed if the ATM owner is not the card issuing bank, as non-customer's identities cannot be reliably confirmed.

The Indian market today has approximately more than 17,000 ATM's.

TELE BANKING:

Undertaking a host of banking related services including financial transactions from the convenience of customers chosen place anywhere across the GLOBE and any time of date and night has now been made possible by introducing on-line Telebanking services. By dialing the given Telebanking number through a landline or a mobile from anywhere, the customer can access his account and by following the user-friendly menu, entire banking can be done through Interactive Voice Response (IVR) system. With sufficient numbers of hunting lines made available, customer call will hardly fail. The system is bi-lingual and has following facilities offered

- Automatic balance voice out for the default account.
- Balance inquiry and transaction inquiry in all
- Inquiry of all term deposit account
- Statement of account by Fax, e-mail or ordinary mail.
- Cheque book request
- Stop payment which is on-line and instantaneous
- Transfer of funds with CBS which is automatic and instantaneous
- Utility Bill Payments
- Renewal of term deposit which is automatic and instantaneous
- Voice out of last five transactions.

SMART CARD:

A smart card usually contains an embedded 8-bit microprocessor (a kind of computer chip). The microprocessor is under a contact pad on one side of the card. Think of the microprocessor as replacing the usual magnetic stripe present on a credit card or debit card.

The microprocessor on the smart card is there for security. The host computer and card reader actually "talk" to the

microprocessor. The microprocessor enforces access to the data on the card.

The chips in these cards are capable of many kinds of transactions. For example, a person could make purchases from their credit account, debit account or from a stored account value that's reload able. The enhanced memory and processing capacity of the smart card is many times that of traditional magnetic-stripe cards and can accommodate several different applications on a single card. It can also hold identification information, which means no more shuffling through cards in the wallet to find the right one -- the Smart Card will be the only one needed.

Smart cards can also be used with a smart card reader attachment to a personal computer to authenticate a user.

Smart cards are much more popular in Europe than in the U.S. In Europe the health insurance and banking industries use smart cards extensively. Every German citizen has a smart card for health insurance. Even though smart cards have been around in their modern form for at least a decade, they are just starting to take off in the U.S.

DEBIT CARD:

Debit cards are also known as check cards. Debit cards look like credit cards or ATM (automated teller machine) cards, but operate like cash or a personal check. Debit cards are different from credit

cards. While a credit card is a way to "pay later," a debit card is a way to "pay now." When you use a debit card, your money is quickly deducted from your checking or savings account.

Debit cards are accepted at many locations, including grocery stores, retail stores, gasoline stations, and restaurants. You can use your card anywhere merchants display your card's brand name or logo. They offer an alternative to carrying a checkbook or cash.

E-CHEQUE:

- An e-Cheque is the electronic version or representation of paper cheque.
- The Information and Legal Framework on the E-Cheque is the same as that of the paper cheque's.
- It can now be used in place of paper cheques to do any and all remote transactions.

- An E-cheque work the same way a cheque does, the cheque writer "writes" the e-Cheque using one of many types of electronic devices and "gives" the e-Cheque to the payee electronically. The payee "deposits" the Electronic Cheque receives credit, and the payee's bank "clears" the e-Cheque to

the paying bank. The paying bank validates the e-Cheque and then "charges" the check writer's account for the check

OTHER FORMS OF ELECTRONIC BANKING

- Direct Deposit
- Electronic Bill Payment
- Electronic Check Conversion
- Cash Value Stored, Etc.

BENEFITS/CONCERNS OF E-BANKING

BENEFITS OF E-BANKING

For Banks:

Price- In the long run a bank can save on money by not paying for tellers or for managing branches. Plus, it's cheaper to make transactions over the Internet.

Customer Base- The Internet allows banks to reach a whole new market- and a well off one too, because there are no geographic boundaries with the Internet. The Internet also provides a level playing field for small banks who want to add to their customer base.

Efficiency- Banks can become more efficient than they already are by providing Internet access for their customers. The Internet provides the bank with an almost paper less system.

Customer Service and Satisfaction- Banking on the Internet not only allow the customer to have a full range of services available to them but it also allows them some services not offered at any of the branches. The person does not have to go to a branch where that service may or may not be offer. A person can print of information, forms, and applications via the Internet and be able to

search for information efficiently instead of waiting in line and asking a teller. With more better and faster options a bank will surely be able to create better customer relations and satisfaction.

Image- A bank seems more state of the art to a customer if they offer Internet access. A person may not want to use Internet banking but having the service available gives a person the feeling that their bank is on the cutting image.

For Customers:

Bill Pay: Bill Pay is a service offered through Internet banking that allows the customer to set up bill payments to just about anyone. Customer can select the person or company whom he wants to make a payment and Bill Pay will withdraw the money from his account and send the payee a paper check or an electronic payment

Other Important Facilities: E- banking gives customer the control over nearly every aspect of managing his bank accounts. Besides the Customers can, Buy and Sell Securities, Check Stock Market Information, Check Currency Rates, Check Balances, See which checks are cleared, Transfer Money, View Transaction History and avoid going to an actual bank. The best benefit is that Internet banking is free. At many banks the customer doesn't have to maintain a required minimum balance. The second big benefit is better interest rates for the customer.

CONCERNS WITH E-BANKING

As with any new technology new problems are faced.

Customer support - banks will have to create a whole new customer relations department to help customers. Banks have to make sure that the customers receive assistance quickly if they need help. Any major problems or disastrous can destroy the banks reputation quickly and easily. By showing the customer that the Internet is reliable you are able to get the customer to trust online banking more and more.

Laws - While Internet banking does not have national or state boundaries, the law does. Companies will have to make sure that they have software in place software market, creating a monopoly.

Security: customer always worries about their protection and security or accuracy. There are always question whether or not something took place.

Other challenges: lack of knowledge from customers end, sit changes by the banks, etc

E-BANKING GLOBAL PERSPECTIVE

The advent of Internet has initiated an electronic revolution in the global banking sector. The dynamic and flexible nature of this communication channel as well as its ubiquitous reach has helped in leveraging a variety of banking activities. New banking intermediaries offering entirely new types of banking services have emerged as a result of innovative e-business models. The Internet has emerged as one of the major distribution channels of banking products and services, for the banks in US and in the European countries.

Initially, banks promoted their core capabilities i.e., products, services and advice through Internet. Then, they entered the e-commerce market as providers/distributors of their own products and services. More recently, due to advances in Internet security and the advent of relevant protocols, banks have discovered that they can play their primary role as financial intermediators and facilitators of complete commercial transactions via electronic networks especially through the Internet. Some banks have chosen a route of establishing a direct web presence while others have opted for either being an owner of financial services centric electronic marketplace or being participants of a non-financial services centric electronic marketplace.

The trend towards electronic delivery of banking products and services is occurring partly as a result of consumer demand and partly because of the increasing competitive environment in the

global banking industry. The Internet has changed the customers' behaviors who are demanding more customized products/services at a lower price. Moreover, new competition from pure online banks has put the profitability of even established brick and mortar banks under pressure. However, very few banks have been successful in developing effective strategies for fully exploiting the opportunities offered by the Internet. For traditional banks to define what niche markets to serve and decide what products/services to offer there is a need for a clear and concise Internet commerce strategy.

Banking transactions had already started taking place through the Internet way back in 1995. The Internet promised an ideal platform for commercial exchange, helping banks to achieve new levels of efficiency in financial transactions by strengthening customer relationship, promoting price discovery and spend aggregation and increasing the reach. Electronic finance offered considerable opportunities for banks to expand their client base and rationalize their business while the customers received value in the form of savings in time and money.

Global E-banking industry is covered by the following four sections:

- **E-banking Scenario:** It discusses the actual state, prospects, and issues related to E-banking in Asia with a focus on India, US and Europe. It also deals with the impact of E-banking on the banking industry structure.

- **E-banking Strategies:** It reveals the key strategies that banks must implement to derive maximum value through the online channel. It also brings guidance for those banks, which are planning to build online businesses.

- **E-banking Transactions:** It discusses how Internet has radically transformed banking transactions. The section focuses on cross border transactions, B2B transactions, electronic bill payment and presentment and mobile payments. In spite of all the hype, E-banking has been a non-starter in several countries.

- **E-banking Trends:** It discusses the innovation of new technologies in banks.

E-BANKING SCENARIO:

The banking industry is expected to be a leading player in E-business. While the banks in developed countries are working primarily via Internet as non-branch banks, banks in the developing countries use the Internet as an information delivery tool to improve relationship with customers.

In early 2001, approximately 60 percent of E-business in UK was concentrated in the financial services sector, and with the expected 10-fold increase of the British E-business market by 2005, the share of the financial services will further increase. Around one fifth of Finish and Swedish bank customers are banking online, while in US, according to UNCTAD, online banking is growing at an annual rate of 60 percent and the number of online accounts has approximately reached 15 million by 2006.

Banks have established an Internet presence with various objectives. Most of them are using the Internet as a new distribution channel. Financial services, with the use of Internet, may be offered in an equivalent quantity with lower costs to the more potential customers. There may be contacts from each corner of the world at any time of day or night. This means that banks may enlarge their market without opening new branches. The banks in US are using the Web to reach opportunities in three different categories i.e., to market information, to deliver banking products and services, and to improve customer relationship.

In Asia, the major factor restricting growth of E-banking is security, in spite of several countries being well connected via Internet. Access to high-quality E-banking products is an issue as well. Majority of the banks in Asia are just offering basic services compared with those of developed countries. Still, E-banking seems to have a future in Asia. It is considered that E-banking will succeed if the basic features, especially bill payment, are handled well. Bill payment was the most popular feature, cited by 40 percent of respondents of the survey. However, providing this service would be difficult for banks in Asia because it requires a high level of security and involves arranging transactions with a variety of players.

In 2001, over 50 percent of the banks in the US were offering E-banking services. However, large banks appeared to have a clear advantage over small banks in the range of services they offered. Some banks in US were targeting their Internet strategies towards business customers. Apart from affecting the way customers received banking services; E-banking was expected to influence the banking industry structure. The economics of E-banking was expected to favor large banks because of economies of scale and scope, and the ability to advertise heavily. Moreover, E-banking offered entry and expansion opportunities that small banks traditionally lacked.

In Europe, the Internet is accelerating the reconfiguration of the banking industry into three separate businesses: production,

distribution and advice. This reconfiguration is being further driven by the Internet, due to the combined impact of:

- The emergence of new and more focused business models
- New technological capabilities that reduces the banking relationship and transaction costs.
- High degree of uncertainty over the impact that new entrants will have on current business models.

Though E-banking in Europe is still in the evolutionary stage, it is very clear that it is having a significant impact on traditional banking activities. Unlike in the US, though large banks in the Europe have a competitive edge due to their ability to invest heavily in new technologies, they are still not ready to embrace E-banking. Hence, medium-sized banks and start-ups have an important role to play on the E-banking front if they can take concrete measures quickly and effectively.

E-BANKING STRATEGIES:

Though E-banking offers vast opportunities, yet even less than one in three banks have an E-banking strategy in place. According to a study, less than 15 percent of banks with transactional websites will realize profits directly attributable to those sites. Hence, banks must recognize the seriousness of the challenge ahead and develop a strategy that will enable them to leverage the opportunities presented by the Internet.

No single E-banking strategy is right for every banking company. But whether they adopt an offensive or a defensive posture, they must constantly re-evaluate their strategy. In the fast-paced e-economy, banks have to keep up with the constantly evolving business models and technology innovations of the Internet space. Early e-business adopter like Wells Fargo not only entered the E-banking industry first but also showed flexibility to change as the market developed. Not many banks have been as e-business-savvy. But the pressure is now building for all banks to develop sound e-business strategies that will attract and retain increasingly discriminating customers.

The major problem with the banks, which have already invested huge amounts in their online initiatives, is that their online offerings remain unprofitable. Though banks have enrolled some existing customers in their online programs, they are not getting customers in large numbers. This has made banks wonder whether there is any value in the online channel. Just enrolling customers for online

banking may not be sufficient until and unless they use the site actively. Banks must make efforts to increase their site usage by customers and effectively co-ordinate the online channel with branches and call centers. Then only they will be able to derive maximum value that includes cost reduction, cross-selling opportunities, and higher customer retention.

Customers have some rational reasons for staying offline. Some of these reasons include usability features of the site, concerns about security and frequent complaints that signing up is complicated and time-consuming. Banks can solve these problems by refocusing investment on improving the site's basic functionality and user-friendliness, and avoiding advanced features that most customers neither understand nor value. Developing advanced features that appeal to a relatively small numbers of customers, creates far less value than strengthening core capabilities and getting customers to use them. Banks must make efforts to familiarize customers with their sites and show them how easy and efficient the online channel is to use.

Integrating the online channel with the rest of the bank is another important issue that banks must focus upon. This is important because nearly all the value of the online channel is realized offline _ in cross sales completed in other channels and in cost reductions. An actively used online channel should also serve as a medium to sell banking services for the branch staff, the call center, and the relationship manager. Integrated channels working

together are far more effective than a group of channels working without any coordination.

To facilitate this integration, banks must formulate paths that people in various customer segments are likely to take among the channels. The interactions in each channel can then be worked around these paths. For example, a call center representative must work out which channel(s) the customer used before coming to her, and which channel(s) the customer is likely to visit next. Each channel must have entry and exit points that must welcome customers and then send to other channels. Hence, the overall goal of banks is to create a seamless multichannel experience.

On the other hand, those banks that are planning to build their online businesses will have to understand several strategic issues like do they have the right business model for E-banking? How should they price their E-banking products and services? Bankers planning to move into E-banking have to explore different options, make investments and have to develop a variety of partnerships. They have to put their time and efforts to identify the best opportunities. In the case of traditional banks, if they are too aggressive in using price incentives to build their e-business, they risk the profitability of their traditional business. However, if they do not offer sufficient price incentives for customers to bank online, their efforts to build a sound e- banking business may not fructify.

Banks have to be creative in rethinking organizational structures and management processes. Traditional banks that are

conservative in nature may find it difficult to attract and retain online talent. Moreover, getting people in the traditional business to help build an e-enterprise would not be an easy task. To make all this happen, requires a major revision of incentive systems, planning and budgeting processes, and management roles. Banks can exploit the opportunities provided by the Internet if they demonstrate courage, use their imagination, and take decisive action.

While most of the banks have started focusing on E-banking activities, a new challenge in the form of mobile banking has emerged. M-Banking is both an additional opportunity for banks to offer their online services and an additional channel from which to access new customers and cross-sell to existing customers. Rapidly changing lifestyles of customers and their demand for more speed and convenience has subdued the role of branch banking to a certain extent. With the proliferation of new technologies, disintermediation of traditional channels is being witnessed. Banks can go beyond their traditional role as a channel for banking/financial services and can become providers of personalized information. They can successfully leverage m-banking to:

- Provide personalized products and services to specific customers and thus increase customer loyalty.
- Exploit additional sources of revenue from subscriptions, transactions and third-party referrals.

M-Banking gives banks the opportunity to significantly expand their customer relationships provided they position themselves effectively. To leverage these opportunities, they must form structured alliances with service affiliates, and acquire competitive advantage in collecting, processing and deploying customer information

E-BANKING TRANSACTIONS:

The introduction of new technologies has radically transformed banking transactions. In the past, customers had to come physically into the bank branch to do banking transactions including transfers, deposits and withdrawals. Banks had to employ several tellers to physically make all those transactions. Automatic Teller Machines (ATMs) were then introduced which allowed people to do their banking on their own, practically anytime and anywhere. This helped the banks cut down on the number of tellers and focus on managing money. The Internet then brought another venue with which customers could do banking, reducing the need for ATMs. Online banking allowed customers to do financial transactions from their PCs at home via Internet. Now, with the emergence of Wireless Application Protocol (WAP) technology, banks can use the infrastructure and applications developed for the Internet and move it to mobile phones. Now people no longer have to be tied to a desktop PC to do their banking. The WAP interface is much faster and convenient than the Internet, allowing customers to see account details, transaction details, make bill payments, and even check credit card balance.

The cost of the average payment transaction on the Internet is minimum. Several studies found that the estimated transaction cost through mobile phone is 16 cents, a fully computerized bank using its own software is 26 cents, a telephone bank is 54 cents, a

bank branch, \$1.27, an ATM, 27 cents, and on the Internet it costs just 13 cents. As a result, the use of the Internet for commercial transactions started to gain momentum in 1995. More than 2,000 banks in the world now have transactional websites and the growth of online lending solutions is making them more cost efficient. Recent developments are now encouraging banks to target small businesses as a separate lending category online.

Banks are increasingly building payment infrastructure with various security mechanisms (SSL, SET) because there is tremendous potential for profit, as more and more payments will pass through the Internet. However, the challenge for banks is to offer a payments back-bone system that will be open enough to support multiple payment instruments (credit cards, debit cards, direct debit to accounts, e-checks, digital money etc.) and scalable enough to allow for a stable service regardless of the workload.

The market for Electronic Bill Presentment and Payment (EBPP) is growing. According to a study, 18 million households in the US are expected to pay their bills online by 2003 compared to 2 million households in 2001. As more number of bill payers are getting online, several banks are making efforts to find ways to meet the growing needs of EBPP. Established banks can emerge as key online integrators of customer bills and can capitalize on this high potential market. Growing with the popularity of EBPP is also the paying of multiple bills at a single site known as bill aggregation. Offering online bill payment and aggregation will increase the

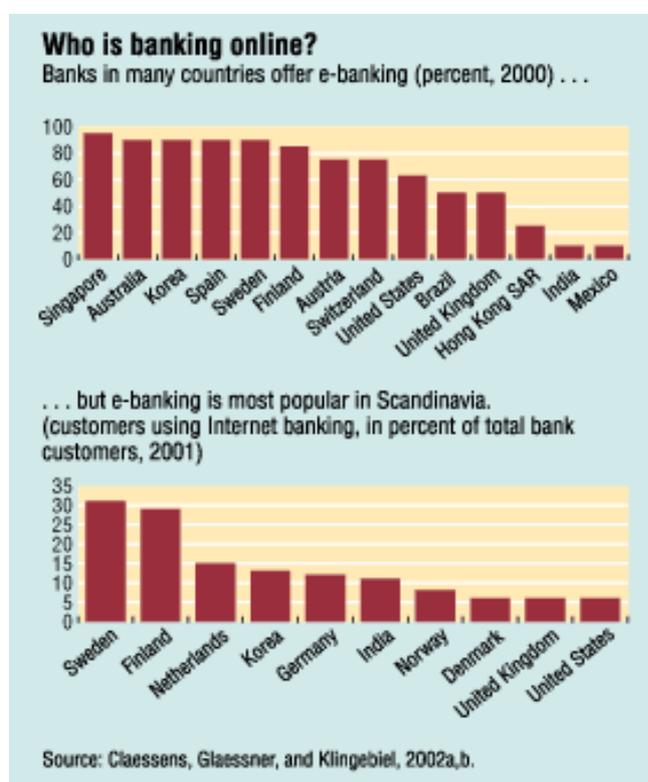
competitiveness and attractiveness of E-banking services and will allow banks to generate service-fee income from the billers.

In the B2B segment, the customer value proposition for online bill payment is more compelling. B2B e-commerce is expected to grow from \$406 bn in 2000 to \$2.7 tn by 2004, and more than half of all transactions will be routed through online B2B marketplaces. There is a need for automated payment systems to reduce cost and human error, and enhance cash-flow management. To meet this need, a group of banks and non-financial institutions led by Citibank and Wells Fargo have formed a company called FinancialSettlementsMatrix (FSMx). It provides business buyers and sellers with access to secure payment processing, invoicing and other services that participating financial services firms offer.

A B2B marketplace would provide minimum value to its customers if it just matches buyers and sellers, leaving the financial aspects of transactions to be handled through traditional non-Internet channels. Hence, the marketplace must be capable of providing the payments processing, treasury management services, payables/receivables data flows, and credit solutions to complete the full cycle of a commercial transaction on the Internet. The web-based B2B e-commerce offers tremendous opportunities for banks, payment technology vendors and e-commerce companies to form strategic alliances. This new form of collaboration between partners with complementary core competencies may prove to be an effective business model for e-business.

E-BANKING TREND:

Internet banking is gaining ground. Banks increasingly operate websites through which customers are able not only to inquire about account balances and interest and exchange rates but also to conduct a range of transactions. Unfortunately, data on Internet banking are scarce, and differences in definitions make cross-country comparisons difficult. Even so, one finds that Internet banking is particularly widespread in Austria, Korea, the Scandinavian countries, Singapore, Spain, and Switzerland, where more than 75 percent of all banks offer such services (see chart). The Scandinavian countries have the largest number of Internet users, with up to one-third of bank customers in Finland and Sweden taking advantage of E-banking.



In the United States, Internet banking is still concentrated in the largest banks. In mid-2001, 44 percent of national banks maintained transactional websites, almost double the number in the third quarter of 1999. These banks account for over 90 percent of national banking system assets. The larger banks tend to offer a wider array of electronic banking services, including loan applications and brokerage services. While most U.S. consumers have accounts with banks that offer Internet services, only about 6 percent of them use these services.

To date, most banks have combined the new electronic delivery channels with traditional brick and mortar branches ("brick and click" banks), but a small number have emerged that offer their products and services predominantly, or only, through electronic distribution channels. These "virtual" or Internet-only banks do not have a branch network but might have a physical presence, for example, an administrative office or nonbranch facilities like kiosks or automatic teller machines. The United States has about 30 virtual banks; Asia has 2, launched in 2000 and 2001; and the European Union has several—either as separately licensed entities or as subsidiaries or branches of brick and mortar banks.

THE INDIAN EXPERIENCE

India is still in the early stages of E-banking growth and development. Competition and changes in technology and lifestyle in the last five years have changed the face of banking. The changes that have taken place impose on banks tough standards of competition and compliance. The issue here is – 'Where does India stand in the scheme of Ebanking.' E-banking is likely to bring a host of opportunities as well as unprecedented risks to the fundamental nature of banking in India.

The impact of E- Banking in India is not yet apparent. Many global research companies believe that Ebanking adoption in India in the near future would be slow compared to other major Asian countries. Indian E-banking is still nascent, although it is fast becoming a strategic necessity for most commercial banks, as competition increases from private banks and non banking financial institutions.

Despite the global economic challenges facing the IT software and services sector, the outlook for the Indian industry remains optimistic.

The Reserve Bank of India has also set up a "Working Group on E-banking to examine different aspects of E-banking. The group focused on three major areas of E-banking i.e. (1) Technology and

Security issues (2) Legal issues and (3) Regulatory and Supervisory issues. RBI has accepted the guidelines of the group and they provide a good insight into the security requirements of E-banking.

The importance of the impact of technology and information security cannot be doubted. Technological developments have been one of the key drivers of the global economy and represent an instrument that if exploited well can boost the efficiency and competitiveness of the banking sector. However, the rapid growth of the Internet has introduced a completely new level of security related problems. The problem here is that since the Internet is not a regulated technology and it is readily accessible to millions of people, there will always be people who want to use it to make illicit gains. The security issue can be addressed at three levels. The first is the security of customer information as it is sent from the customer's PC to the Web server. The second is the security of the environment in which the Internet banking server and customer information database reside. Third, security measures must be in place to prevent unauthorized users from attempting to log into the online banking section of the website.

From a legal perspective, security procedure adopted by banks for authenticating users needs to be recognized by law as a substitute for signature. In India, the Information Technology Act, 2000, in section 3(2) provides for a particular technology (viz., the asymmetric crypto system and hash function) as a means of

authenticating electronic record. Any other method used by banks for authentication should be recognized as a source of legal risk..

Regarding the regulatory and supervisory issues, only such banks which are licensed and supervised and have a physical presence in India will be permitted to offer E-banking products to residents of India. With institutions becoming more and more global and complex, the nature of risks in the international financial system has changed. The Regulators themselves who will now be paying much more attention to the qualitative aspects of risk management have recognized this.

Though the Indian Government has announced cyber laws, most corporate are not clear about them, and feel they are insufficient for the growth of E-commerce. Lack of consumer protection laws is another issue that needs to be tackled, if people have to feel more comfortable about transacting online.

Taxation of E-commerce transaction has been one of the most debated issues that are yet to be resolved by India and most other countries. The explosive growth of e-commerce has led many executives to question how their companies can properly administer taxes on Internet sales. Without sales tax, online sellers get a price advantage over brick and mortar companies. While e-commerce has been causing loss of tax revenues to the Government, many politicians continue to insist that the Net must

remain tax-free to ensure continued growth, and that collecting sales taxes on Net commerce could restrict its expansion.

A permanent ban on custom duties on electronic transmissions, international tax rules that are neutral, simple and certain and simplification of state and local sales taxes. The Central Board of Direct Taxes, which submitted its report in September 2001, recommended that e-commerce transaction should be taxed just like traditional commerce.

Also RBI is about to become the first Government owned digital signature Certifying Authority (CA) in India. The move is expected to initiate the electronic transaction process in the banking sector and will have farreaching results in terms of cost and speed of transactions between government- owned banks.

Thus efficiency, growth and the need to satisfy a growing tech-survey consumer base are three clear rationales for implementing E-banking in India. The four forces-customers, technology, convergence and globalization have the most important effect on the Indian financial sector and these changes are forcing banks to redefine their business models and integrate technology into all aspect of operation.

COMPUTERISATION OF BANKS INDIA - ISSUES & EVENTS

In the Eighteenth and Nineteenth Centuries the Industrial revolution brought profound changes in the life style of man. Many activities that were hitherto performed by man employing his hands and his finger skill came to be carried at great speed and efficiency by machines. Man continued to carry out only those functions that needed his thinking process to be involved.

The Industrial Revolution on account of mass production of goods and services brought large commercial and business organizations, transcending national boundaries that employed several thousands of persons for performing routine, repetitive clerical tasks, relating to record keeping, maintaining accounts, attending/answering correspondence, preparing vouchers, invoices, bills and multiple of such other functions. This created white-collar employment for educated persons by leaps and bounds.

Clerical task is defined as a routine and repetitive performance involving, adding, subtracting, multiplying, dividing numbers, and duplicating data/information from one source to another. The tools employed are "a pen, ink and paper", the knowledge of arithmetic tables, the basic knowledge of a language and minimum acquaintance with rules & procedures of the organisation that are followed day in day out and relevant to the job of the particular employee. Two plus two is four. It is always four. Should we need

an educated worker to compute this task again and again? A business needed human agents to attend to production, marketing, finance etc. depicting high-level tasks. But more and more people were employed for performing low level tasks.

However as time went on the internal chorus of record keeping multiplied geometrically as commerce and industry grew in size and volume. The civil services of the Government and service-based organizations came in the fore-front to inherit this overload of white-collar employment. To quote a concrete example a major nationalised bank in India, which employed merely 3000 workers in the Fifties (around the time I entered its service in 1957), came to engage over 70,000 employees towards the end of the century, i.e. year 1996-97, when I retired from service from that bank.

The Government of India and the States including government owned bodies employed as many as 100 lakh junior employees at the clerical and subordinate level. Such employees by virtue of their strength of numbers organise themselves into powerful trade unions, and aggressively utilise the bargaining power without reference to the input benefit the organization is deriving from them and the productivity they are providing.

In this world of human beings necessity is the mother of inventions. After 15 years of educational studies, an individual should not be employed for routine repetitive tasks. This makes him dull and feel the work monotonous without job satisfaction. He turns back and diverts his loyalty to an informal group i.e. the trade union. He feels happy once in a month on pay day, but on other

days his work leaves him nothing to rejoice. There are neither opportunities nor challenges to bring in his innovative or creative genius. As years pass the clerical employment results in the individual losing efficiency and productivity to progressively depict a trend of progress in reverse.

The advent of mechanical calculating devices and later electronic computing in the West heralded a new age, that dispensed with this white collar and white-elephant employment progressively. This evolved in the west three decades before, but the advent of this evolution in India is only now taking place.

To quote again a concrete example- the statistics of two banking institutions in India, the largest and the next large in size can be fruitfully compared. These are the State Bank of India, that was until recently employing 2.3 Lakh workers, for a turn over of Rs.36,000 Crores (Deposit 25000 + Advances 11000 Crores - latest).

ICICI bank has at present less than 1000 branches and around 10000 employees. It has a turnover of Rs.23000 Crores (Deposits 16 + Advances 7 thousand Crores). The bank started functioning from the year 1997 and has gained the No.2 position in status in India after SBI in volume of business turnover within 5 years of its operation. It will be interesting to know that CMD of ICICI Bank draws annual emoluments of Rs.150 Lakhs, while CMD of SBI around Rs.4 to 5 Lacs. ICICI is a new age high-tech and fully computerised bank, while SBI retained its manual operations in totality up to 1993 and maintained the work force of that time up to

2001, though it is partially computerised starting from the year 1993.

The per employee turnover for ICICI bank is Rs.2.3 Crores, that for SBI is Rs.1.56 Lakhs. The gap accounts for the difference between manual operations and high-tech banking.

If we project the future in respect of State owned banks, which employ presently nearly 10 Lakh employees, computerisation is destined to bring about rapid changes. By about the year 2010 the present turnover of commercial banks in India may double or even treble to around Rs.30 to 40 Lakh Crores, but these Banks will have no need of 75 percent (today 25 percent of the work force is subordinate staff, 50 percent is clerical staff and 25 percent is the officers) of the existing workforce by 2010. Only in very few hinterland rural pockets there may be a possibility of a need of the present structure of workforce. The objective of the recently administered VRS is to prepare for this reality of the first decade of the New Millennium, where banking will be more tech based and less people based.

Computerisation brings transparency, improves customer care and customer-service tremendously and reduces substantially scope for corruption or extending undue favour to particular constituents and uneven service to others.

CHALLENGES FACED IN COMPUTERISATION

Computerisation is expensive and needs huge investment in hardware and software and subsequent maintenance. The National Stock Exchange, India's No.1 user in computerised service has spent Rs.180 Crores to enable investors and brokers across the country to trade securities online. The rate of obsolescence in respect of both hardware and software is considerable. New and better products are emerging in the market, whose use would enable a rival organization to throw a challenge.

Computer crimes are committed widely in the West. India is no less potentially exposed to this risk, when turnover under Internet banking increases. It is easier to enforce security of information and accountability of performers in a manual system. But it needs elaborate steps to incorporate these features in the electronic system.

The structure of legal system is so far based on manual record keeping. It has to provide for electronic data to be accepted legally as evidence and in contracts.

Indian banking has accepted computerisation since 1993, more out of sheer compulsion and necessity to cope up increasing overload and incompatibility of the manual system to sustain further growth. The following pages you are presented a series of articles discussing the various facets of this momentous event and its far-reaching effects anticipated to unfold in the coming decade.

ROLE OF RBI IN COMPUTERISATION OF BANKS IN INDIA

Computerisation became popular in the western countries right from the Sixties. Main Frames were extensively used both by the Public Institutions and Major Private Organizations. In the Seventies Mini Computer became popular and Personal Computers in early Eighties, followed by introduction of several software products in high level language and simultaneous advancement in networking technology. This enabled the use of personal computers extensively in offices & commercial organisations for processing different kinds of data.

However in India organised Trade Unions were against introduction of computers in Public Offices. Computerisation was restricted to major scientific research organizations and Technical Institutes and defence organizations. Indian Railways first accepted computerisation for operational efficiency.

The Electronics Corporation of India Ltd. was set up in 1967 with the objective of research & development in the fields of Electronic Communication, Control, instrumentation, automation and Information Technology. CMC Ltd (Computer Maintenance Corporation of India Ltd.) was established in 1976 to look after maintenance operations of Main Frame Computers installed in several organisations in India, to serve the gap, when IBM left India, due to the directive of the then Central Government.

In the Private Sector the first major venture was TCS (Tata Consultancy Services) which started functioning from 1968. In the year 1980 a few batch-mates of IIT Delhi pioneered the effort to start a major education centre in India to impart training in Information Technology and their efforts resulted in the setting up of NIIT in 1981. Aptech Computer Education was established in 1986 following the experiment of NIIT.

Before large scale computerisation, computer education became popular in India and coveted by bright students, when several Engineering Colleges and Technical Institutes introducing Post Graduate Degree courses in Computer Engineering. The booming hardware and software industry in the West attracted Indian students and many of them migrated for better opportunities to the U.S.A. and settled there. We have today the paradox of India being one of the major powers possessing diverse talents in fields of software development, but at the same time, we are still a decade back to the using computerised service extensively in the country and bringing the facility to the realms of the common man.

Rapid development of business and industry brought manual operations of data, a saturation point. This acted as a overload on the growing banking operations. Government owned banks in general found the "house-keeping" unmanageable. Several heads of accounts in particular inter-bank clearing and inter-branch reconciliation of accounts went totally out of control.

Low productivity pushed cost of wages high and employees realised that unless they agreed for computerisation further improvement in their wage structure was not possible.

In the year 1993, the Employees' Unions of Banks signed an agreement with Bank Managements under the auspices of Indian Banks' Association (IBA). This agreement was a major breakthrough in the introduction of computerised applications and development of communication networks in Banks.

The first initiatives in the area of bank computerisation, however, stemmed out of the landmark report of the two committees headed by the former Governor of the Reserve Bank of India and currently Governor of Andhra Pradesh, His Excellency, Dr.C.Rangarajan. Both the reports had strongly recommended computerisation of banking operations at various levels and suggested appropriate architecture.

In the 'seventies, there was a four-fold increase in the number of branches, five-fold increase in advances and a six-fold increase in deposits'. Mechanisation was seen as the best solution to the "problems inherent in the manual system of operations, their adverse impact on customer services and the grave dangers to banks in the context of increasing incidence of frauds.

The first of these Committees, viz. the Committee on the Mechanization of the Banking Industry (1984) was set up for the first time to suggest a model for mechanisation of bank branches, regional / controlling offices and Head Office necessitated by the

explosive growth in the geographical spread of banking following nationalization of banks in 1969.

In the first phase of computerisation spanning the five years ending 1989, banks in India had installed 4776 ALPMs at the branch level, 233 mini computers at the Regional/Controlling office levels and trained over 2000 programmers/systems personnel and over 12000 Data Entry Terminal Operators. The Reserve Bank too had embarked upon an ambitious program to bring about state-of-the-art technology in the clearing process and had introduced MICR clearing at 4 centres and computerized clearing settlement at 9 centres.

Against this backdrop, the Committee on Computerisation in Banks was set up once again under Dr.Rangarajan's Chairmanship to draw up a perspective plan for computerisation in banks. In its report submitted in 1989, the Committee acknowledged the gains of the initial efforts and sought to move away from the stand-alone dedicated systems to an on-line transaction processing environment in branch banking. It recommended that the thrust of bank computerisation for the following 5 years should be to fully computerise the operations at both the front and back offices of large branches then numbering around 2500.

RECOMMENDATIONS OF COMMITTEE ON TECHNOLOGY UPGRADATION

The Reserve Bank continued to be involved in shaping the technology vision of the banking system. Following the recommendations of the Committee on Financial Sector Reforms, (which is popularly known as the second Narasimham committee), a Committee on Technology Upgradation was set up by the RBI for the Banking Sector in 1994. This committee has representation from banks, Government, technical institutions and the RBI. Among other things, this committee looked into issues relating to

- Encryption of Public Switching Telephone Network (PSTN) lines
- Admission of electronic files as evidence
- Record keeping
- Modalities for a satellite based WAN for banks and financial institutions with the necessary security systems by banks and other financial institutions, to ultimately develop a sound and an efficient payments system
- 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.

The Committee realised the urgent need for training, research and development activities in the Banking Technology area. Banks and Financial Institutions started setting up Technology based training centres and colleges. However, a need was felt for an apex level Institute which could be a Think-tank and Brain Trust for Banking Technology.

The committee recommended a variety of payment applications which can be implemented with appropriate technology upgradation and development of a reliable communication network. The committee also suggested setting up of an Information Technology Institute for the purpose of Research and Development as well as Consultancy in the application of technology to the Banking and Financial sector of the country. As recommended by the Committee, IDRBT was established by RBI in 1996 as an autonomous centre for Development and Research in Banking Technology at Hyderabad.

CASE STUDY – ICICI

ICICI is one of the leading private sector banks in India, which combines financial strength with a reputation for innovation and a universal culture that embraces change. On March 31, 2002 ICICI formally merged with ICICI bank and emerged as India's first Universal Bank. The strategy of ICICI bank after the merger with ICICI Ltd. is that of building a diversified portfolio. The merged entity will continue to be into project finance and the focus will be to tap the potential in retail financing.

ICICI bank offers a wide spectrum of domestic and international banking services to facilitate trade, investment, cross border business, treasury and foreign exchange services). ICICI bank has been quick to realize that E- banking has changed from a somewhat experimental delivery vehicle into an increasingly mainstream one for delivery of broad spectrum of banking products and services. Basic E- banking services are rapidly changing from competitive differentiator to competitive necessity.

The group has leveraged on a number of tie-ups to come up with its various offering. For its Internet banking offering the ICICI bank uses Infinity from Infosys, for its credit card business its uses Vision Plus from Pay Sys, USA, for WAP services the tie-up with cellular service providers Orange and Airtel helps reach out to these users, while the WAP technology is being implemented by

the in-house ICICI Infotech service. To leverage the Net for its marketing initiatives ICICI bank and Satyam Info way have jointly set up a "COM" company to promote banking products on the Net. The bank has also entered into agreements with leading corporate like BPL, Rediff.com., Usha Martin and Tata Communications for B to C solutions in a bid to further strengthen its Internet banking product offering and services. Also ICICI has joined hands with a consortium led by Compaq to take the lead in offering a solution to the Indian e-commerce community. This consortium offers a B2B and B2C ecommerce payment gateway within India.

The Bank has been offering phone banking free of charge and was first to launch an Internet Banking service in the country named Infinity. Infinity now provides a host of online banking solutions to retail as well as corporate customers. ICICI's constant endeavour in providing more value to the customers has resulted in Infinity being the front-runner amongst online banking offerings in the country. Also, in keeping with the customers need for increased security, Corporate Infinity now provides multiple levels of authentication besides user ID/ password and includes security tokens.

ICICI also strives to be a center for leading research on financial engineering in India, particularly in the area of valuation of securities, risk management and derivatives. By leveraging on the groups resources ICICI provides custom tailored solution that can support even the most complex business strategy.

ICICI is now moving all its operations into the era of 'virtual integration'. Not only has this drastically reduced costs, but it has also increased and improved its services to customers. 1488 Money 2 India offers a unique facility by ICICI of transferring funds to India. Additional modules were added-gifting and reminders to broaden its scope and enhance ICICI's relationship with customers.

The table below gives the SWOT analysis of ICICI.

SWOT ANALYSIS OF ICICI

Strengths	Weaknesses
<ul style="list-style-type: none"> ➤ Advanced Technology ➤ Providing innovative products & Services ➤ Leverage technology to satisfy customer demands. 	<ul style="list-style-type: none"> ➤ Too many subsidiaries ➤ High cost of funds
<ul style="list-style-type: none"> ➤ Add value to the shareholders 	
Opportunities	Threats
<ul style="list-style-type: none"> ➤ Higher capital base ➤ First mover advantages 	<ul style="list-style-type: none"> ➤ Competition from other industry rivals like HDFC. ➤ Concern over NPA despite provisioning

Thus, ICICI has been able to use technology to provide value-added service to its customers during the last few years. For ICICI, technology is an integral part of their business. However, their overall progress could have

CHALLENGES OF THE "E-BANKING REVOLUTION"

Electronic banking is the wave of the future. It provides enormous benefits to consumers in terms of the ease and cost of transactions. But it also poses new challenges for country authorities in regulating and supervising the financial system and in designing and implementing macroeconomic policy.

Electronic banking has been around for some time in the form of automatic teller machines and telephone transactions. More recently, it has been transformed by the Internet, a new delivery channel for banking services that benefits both customers and banks. Access is fast, convenient, and available around the clock, whatever the customer's location (see illustration above). Plus, banks can provide services more efficiently and at substantially lower costs. For example, a typical customer transaction costing about \$1 in a traditional "brick and mortar" bank branch or \$0.60 through a phone call costs only about \$0.02 online.

Electronic banking also makes it easier for customers to compare banks' services and products, can increase competition among banks, and allows banks to penetrate new markets and thus expand their geographical reach. Some even see electronic banking as an opportunity for countries with underdeveloped financial systems to leapfrog developmental stages. Customers in such countries can access services more easily from banks

abroad and through wireless communication systems, which are developing more rapidly than traditional "wired" communication networks.

The flip side of this technological boom is that electronic banking is not only susceptible to, but may exacerbate, some of the same risks—particularly governance, legal, operational, and reputational—inherent in traditional banking. In addition, it poses new challenges. In response, many national regulators have already modified their regulations to achieve their main objectives: ensuring the safety and soundness of the domestic banking system, promoting market discipline, and protecting customer rights and the public trust in the banking system. Policymakers are also becoming increasingly aware of the greater potential impact of macroeconomic policy on capital movements.

NEW CHALLENGES FOR REGULATORS

This changing financial landscape brings with it new challenges for bank management and regulatory and supervisory authorities. The major ones stem from increased cross-border transactions resulting from drastically lower transaction costs and the greater ease of banking activities, and from the reliance on technology to provide banking services with the necessary security.

Regulatory Risk: Because the Internet allows services to be provided from anywhere in the world, there is a danger that banks will try to avoid regulation and supervision. What can regulators do? They can require even banks that provide their services from

a remote location through the Internet to be licensed. Licensing would be particularly appropriate where supervision is weak and cooperation between a virtual bank and the home supervisor is not adequate. Licensing is the norm, for example, in the United States and most of the countries of the European Union. A virtual bank licensed outside these jurisdictions that wishes to offer electronic banking services and take deposits in these countries must first establish a licensed branch.

Determining when a bank's electronic services trigger the need for a license can be difficult, but indicators showing where banking services originate and where they are provided can help. For example, a virtual bank licensed in country X is not seen as taking deposits in country Y if customers make their deposits by posting checks to an address in country X. If a customer makes a deposit at an automatic teller machine in country Y, however, that transaction would most likely be considered deposit taking in country Y. Regulators need to establish guidelines to clarify the gray areas between these two cases.

Legal Risk: Electronic banking carries heightened legal risks for banks. Banks can potentially expand the geographical scope of their services faster through electronic banking than through traditional banks. In some cases, however, they might not be fully versed in a jurisdiction's local laws and regulations before they begin to offer services there, either with a license or without a license if one is not required. When a license is not required, a virtual bank—lacking contact with its host country supervisor—

may find it even more difficult to stay abreast of regulatory changes. As a consequence, virtual banks could unknowingly violate customer protection laws, including on data collection and privacy, and regulations on soliciting. In doing so, they expose themselves to losses through lawsuits or crimes that are not prosecuted because of jurisdictional disputes.

Money laundering is an age-old criminal activity that has been greatly facilitated by electronic banking because of the anonymity it affords. Once a customer opens an account, it is impossible for banks to identify whether the nominal account holder is conducting a transaction or even where the transaction is taking place. To combat money laundering, many countries have issued specific guidelines on identifying customers. They typically comprise recommendations for verifying an individual's identity and address before a customer account is opened and for monitoring online transactions, which requires great vigilance.

In a report issued in 2000, the Organization for Economic Cooperation and Development's Financial Action Task Force raised another concern. With electronic banking crossing national boundaries, whose regulatory authorities will investigate and pursue money laundering violations? The answer, according to the task force, lies in coordinating legislation and regulation internationally to avoid the creation of safe havens for criminal activities.

Operational Risk: The reliance on new technology to provide services makes security and system availability the central

operational risk of electronic banking. Security threats can come from inside or outside the system, so banking regulators and supervisors must ensure that banks have appropriate practices in place to guarantee the confidentiality of data, as well as the integrity of the system and the data. Banks' security practices should be regularly tested and reviewed by outside experts to analyze network vulnerabilities and recovery preparedness. Capacity planning to address increasing transaction volumes and new technological developments should take account of the budgetary impact of new investments, the ability to attract staff with the necessary expertise, and potential dependence on external service providers. Managing heightened operational risks needs to become an integral part of banks' overall management of risk, and supervisors need to include operational risks in their safety and soundness evaluations.

Reputational Risk: Breaches of security and disruptions to the system's availability can damage a bank's reputation. The more a bank relies on electronic delivery channels, the greater the potential for reputational risks. If one electronic bank encounters problems that cause customers to lose confidence in electronic delivery channels as a whole or to view bank failures as systemwide supervisory deficiencies, these problems can potentially affect other providers of electronic banking services. In many countries where electronic banking is becoming the trend, bank supervisors have put in place internal guidance notes for examiners, and many have released risk-management guidelines for banks.

Reputational risks also stem from customer misuse of security precautions or ignorance about the need for such precautions. Security risks can be amplified and may result in a loss of confidence in electronic delivery channels. The solution is consumer education—a process in which regulators and supervisors can assist. For example, some bank supervisors provide links on their websites allowing customers to identify online banks with legitimate charters and deposit insurance. They also issue tips on Internet banking, offer consumer help lines, and issue warnings about specific entities that may be conducting unauthorized banking operations in the country.

THE MACROECONOMIC CHALLENGES

But the challenges are not limited to regulators. As the advent of E-banking quickly changes the financial landscape and increases the potential for quick cross-border capital movements, macroeconomic policymakers face several difficult questions.

- If electronic banking does make national boundaries irrelevant by facilitating capital movements, what does this imply for macroeconomic management?
- How is monetary policy affected when, for example, the use of electronic means makes it easier for banks to avoid reserve requirements, or when business can be conducted in foreign currencies as easily as in domestic currency?

- When offshore banking and capital flight are potentially only a few mouse clicks away, does a government have any leeway for independent monetary or fiscal policy?
- How will the choice of the exchange rate regime be affected, and how will E-banking influence the targeted level of international reserves of a central bank?
- Can a government afford to make any mistakes? Will the spread of electronic banking impose harsh market discipline on governments as well as on businesses?

The answers to these questions fall into two emerging strands of thought. First, the technological revolution—particularly the expansion of electronic money but also, more broadly, electronic advances in banking practices—could result in a decoupling of households' and firms' decisions from the purely financial operations of the central bank. Thus, the ability of monetary policy to influence inflation and economic activity would be threatened.

Second, as electronic banking expands, financial transaction costs can decline significantly. The result would be tantamount to a reduction in the "sand in the wheels" of the financial sector machinery, making capital flows even easier to effect, with a potential erosion of the effectiveness of domestic monetary policy. In this regard, proponents of the Tobin tax—which would tax short-term capital flows to increase their cost and, thereby, the sand in the wheels—would feel that electronic banking makes an even more compelling case for introducing such a tax.

While electronic banking can provide a number of benefits for customers and new business opportunities for banks, it exacerbates traditional banking risks. Even though considerable work has been done in some countries in adapting banking and supervision regulations, continuous vigilance and revisions will be essential as the scope of E-banking increases. In particular, there is still a need to establish greater harmonization and coordination at the international level. Moreover, the ease with which capital can potentially be moved between banks and across borders in an electronic environment creates a greater sensitivity to economic policy management. To understand the impact of E-banking on the conduct of economic policy, policymakers need a solid analytical foundation. Without one, the markets will provide the answer, possibly at a high economic cost. Further research on policy-related issues in the period ahead is therefore critical.

RISK MANAGEMENT PRINCIPLES FOR ELECTRONIC BANKING BASEL COMMITTEE RECOMMENDATIONS

Continuing technological innovation and competition among existing banking organisations and new entrants have allowed for a much wider array of banking products and services to become accessible and delivered to retail and wholesale customers through an electronic distribution channel collectively referred to as E-banking. However, the rapid development of E-banking capabilities carries risks as well as benefits.

The Basel Committee on Banking Supervision expects such risks to be recognised, addressed and managed by banking institutions in a prudent manner according to the fundamental characteristics and challenges of E-banking services. These characteristics include the unprecedented speed of change related to technological and customer service innovation, the ubiquitous and global nature of open electronic networks, the integration of E-banking applications with legacy computer systems and the increasing dependence of banks on third parties that provide the necessary information technology. While not creating inherently new risks, the Committee noted that these characteristics increased and modified some of the traditional risks associated with banking activities, in particular strategic, operational, legal and reputational risks, thereby influencing the overall risk profile of banking.

Based on these conclusions, the Committee considers that while existing risk management principles remain applicable to E-banking activities, such principles must be tailored, adapted and, in some cases, expanded to address the specific risk management challenges created by the characteristics of E-banking activities. To this end, the Committee believes that it is incumbent upon the Boards of Directors and banks' senior management to take steps to ensure that their institutions have reviewed and modified where necessary their existing risk management policies and processes to cover their current or planned E-banking activities. The Committee also believes that the integration of E-banking applications with legacy systems implies an integrated risk management approach for all banking activities of a banking institution.

To facilitate these developments, the Committee has identified fourteen Risk Management Principles for Electronic Banking to help banking institutions expand their existing risk oversight policies and processes to cover their E-banking activities.

These Risk Management Principles are not put forth as absolute requirements or even "best practice." The Committee believes that setting detailed risk management requirements in the area of E-banking might be counter-productive, if only because these would be likely to become rapidly outdated because of the speed of change related to technological and customer service innovation. The Committee has therefore preferred to express supervisory expectations and guidance in the form of Risk Management

Principles in order to promote safety and soundness for E-banking activities, while preserving the necessary flexibility in implementation that derives in part from the speed of change in this area. Further, the Committee recognises that each bank's risk profile is different and requires a tailored risk mitigation approach appropriate for the scale of the E-banking operations, the materiality of the risks present, and the willingness and ability of the institution to manage these risks. This implies that a "one size fits all" approach to E-banking risk management issues may not be appropriate.

For a similar reason, the Risk Management Principles issued by the Committee do not attempt to set specific technical solutions or standards relating to E-banking. Technical solutions are to be addressed by institutions and standard setting bodies as technology evolves. However, this Report contains appendices that list some examples current and widespread risk mitigation practices in the E-banking area that are supportive of the Risk Management Principles.

Consequently, the Risk Management Principles and sound practices identified in this Report are expected to be used as tools by national supervisors and implemented with adaptations to reflect specific national requirements and individual risk profiles where necessary. In some areas, the Principles have been expressed by the Committee or by national supervisors in previous bank supervisory guidance. However, some issues, such as the management of outsourcing relationships, security controls and

legal and reputational risk management, warrant more detailed principles than those expressed to date due to the unique characteristics and implications of the Internet distribution channel.

The Risk Management Principles fall into three broad, and often overlapping, categories of issues that are grouped to provide clarity

1. Board and Management Oversight;
2. Security Controls; and
3. Legal and Reputational Risk Management.

REGULATORY TOOLS TO OVERCOME CHALLENGES

There are four key tools that regulators need to focus on to address the new challenges posed by the arrival of E-banking.

Adaptation: In light of how rapidly technology is changing and what the changes mean for banking activities, keeping regulations up to date has been, and continues to be, a far-reaching, time-consuming, and complex task. In May 2001, the Bank for International Settlements issued its "Risk Management Principles for Electronic Banking," which discusses how to extend, adapt, and tailor the existing risk-management framework to the electronic banking setting. For example, it recommends that a bank's board of directors and senior management review and approve the key aspects of the security control process, which should include measures to authenticate the identity and authorization of customers, promote nonrepudiation of transactions, protect data integrity, and ensure segregation of duties within E-banking systems, databases, and applications. Regulators and supervisors must also ensure that their staffs have the relevant technological expertise to assess potential changes in risks, which may require significant investment in training and in hardware and software.

Legalization: New methods for conducting transactions, new instruments, and new service providers will require legal definition,

recognition, and permission. For example, it will be essential to define an electronic signature and give it the same legal status as the handwritten signature. Existing legal definitions and permissions—such as the legal definition of a bank and the concept of a national border—will also need to be rethought.

Harmonization: International harmonization of electronic banking regulation must be a top priority. This means intensifying cross-border cooperation between supervisors and coordinating laws and regulatory practices internationally and domestically across different regulatory agencies. The problem of jurisdiction that arises from "borderless" transactions is, as of this writing, in limbo. For now, each country must decide who has jurisdiction over electronic banking involving its citizens. The task of international harmonization and cooperation can be viewed as the most daunting in addressing the challenges of electronic banking.

Integration: This is the process of including information technology issues and their accompanying operational risks in bank supervisors' safety and soundness evaluations. In addition to the issues of privacy and security, for example, bank examiners will want to know how well the bank's management has elaborated its business plan for electronic banking. A special challenge for regulators will be supervising the functions that are outsourced to third-party vendors.

LOOKING FORWARD

An old Chinese saying goes: ***If you don't know where you are going - you will never get there.*** Globally, the financial sector is metamorphosing under the impact of competitive, regulatory and technological forces. The banking sector is currently in a transition phase with re-alignment, mergers and entry of new players from different industry is becoming common. Many countries including India are de-regulating their banking sector and government policies no longer form an entry barrier to banks competitors. ICICI Bank, IDBI Bank, HDFC Bank and recently Kotak Mahindra Bank are prime examples of these.

Technology has leveled the playing field: the bargaining power of consumers is increasing, switching costs are becoming lower and consumer loyalties are harder to retain. Primary goal of the banking sector including every Bank is mainly to make profit, which in turn is ploughed back to increase business and reach, and pay dividends or share profits to the stakeholders. This is perfectly correct, yet generic goal. More over the product (schemes) differentiation is very difficult for banks as most of the products sold are constrained by legal or industry regulations. Now, if you are already thinking about Technology as a tool in Banking you could probably set some of these goals:

- Selling financial products and services
- Cutting operational costs

- Branding & Market recognition
- Keeping profitable customers

Every day more and more people are turning to the Technology for their personal banking. It is a safe, convenient way to shop for financial services, maintain bank accounts and conduct business 24 hours a day. Every one of us has always enjoyed a special relationship with their neighborhood bank. Why are so many people suddenly choosing their personal computers as the new way to view and manage their money? Quite simple - because it is a valuable option to have. Bank customers can save time by banking online. There is no need to stand in one more line to perform the most basic transactions when they can be done quickly from the desktop PC anytime, day or night. But even with more complicated transactions or investment decisions, people like having direct control over their finances themselves. They find it convenient to access all of their financial information in one place. Ease of use is one of the most important factors. Navigation through online banking should be simple and intuitive. Banks need to appeal to customers who may not be technologically sophisticated, and should not require an engineering degree to get started or use the service. Customers also choose banks whose online services are reliable. Most Banks now offers a comprehensive range of financial products and services, including a FREE checking account and internet bill paying services. In addition, an array of checking accounts are available in which you may also request a FREE check card.

Hence most Banks of following Electronic Banking or Internet Banking FREE have following services:

Get your balance details, Obtain your last 3 transaction details, Request a cheque book, Stop a cheque payment, Enquire cheque status, Request an account statement, Get Fixed Deposit details, Bill payment details for electricity, mobile phone and telephone services, Convenience of setting an operative account, Designate a particular account linked to your customer id as the operative account. Customer Service available 24 hours a day, 7 days a week E-banking Benefits

Benefits for the bank should always reflect benefits for the customer of banking services.

CUTTING OPERATIONAL COSTS

Cutting transaction costs results in higher profit margin for the banks. The enclosed chart clearly indicates the benefits of E-banking over traditional methods banking.

	Banking Method used	Cost per Transaction for Bank
1	Manual, personal	Rs. 40 – 100/- depending on Bank Higher for Foreign Banks, as salaries and overheads are higher
2	ATMs	Rs. 20-30/- only
3	Internet / PC	Rs. 8/- only
4	Telephone Banking	Rs. 15/- only

As every Bank wants to be profitable E-banking is becoming necessity for survival. Electronic banking provides enormous benefits to consumers in terms of the ease and cost of transactions

Taking over customers from competition

Banks seeking new customers can use advantages of new distribution channels and acquire most profitable customer from their competition. It is a fact that people using E-banking are the ones who consider time as money and are the one with loads of money. Majority of banks see 80% of their business coming just 20% of the client base. This 20% customer base is vulnerable if the bank does not appreciate their time.

Building stronger customer relations

Offering new services, results in improved customer experience and stronger customer retention.

Bigger share in customer's wallet

It is well known fact that customers tend to keep their finances in one place. Banks holding customer accounts therefore have opportunity to cross sell different products and services. Recent studies show that banks in the USA lost 20% of their most valuable customers in favor of non-bank FI flexible enough to offer diversified services and products.

Identifying profitable customers

Customers using E-banking services have higher balances than average branch teller customers. Investments are more than twice higher than the average.

Conclusion

From all of this, we have learnt that information technology has empowered customers and businesses with information needed to make better investment decisions. At the same time, technology is allowing banks to offer new products, operate more efficiently, raise productivity, expand geographically and compete globally. A more efficient, productive banking industry is providing services of greater quality and value.

E-banking has become a necessary survival weapon and is fundamentally changing the banking industry worldwide. To day, the click of the mouse offers customers banking services at a much lower cost and also empowers them with unprecedented freedom in choosing vendors for their financial service needs. No country today has a choice whether to implement E-banking or not given the global and competitive nature of the economy. The invasion of banking by technology has created an information age and commoditization of banking services. Banks have come to realize that survival in the new e-economy depends on delivering some or all of their banking services on the Internet while continuing to support their traditional infrastructure.

The rise of E-banking is redefining business relationships and the most successful banks will be those that can truly strengthen their relationship with their customers.

Without any doubt, the international scope of E-banking provides new growth perspectives and Internet business is a catalyst for new technologies and new business processes. With rapid advances in telecommunication systems and digital technology, E-banking has become a strategic weapon for banks to remain profitable. It has been transformed beyond what anyone could have foreseen 25 years ago.

Two years ago, E-banking was a strategic advantage, nowadays; it is a business reality, if not a necessity.