

E-Banking in India: Bankers' Problems Perspective

¹Dr. Dhiraj Sharma, ²Ms. Namita Singla

¹School of Management Studies, Punjabi University, Patiala, Punjab, India

²Research Scholar, School of Management Studies, Punjabi University, Patiala, Punjab, India

Abstract

In the era of deregulation, privatisation and globalisation, the Indian public banks are now looking at the technology route to stay ahead in the competition. So far the private banks have been the winners but now the public sector banks are rapidly catching up with the technology adoption. India is formulating regulatory and technological standards to make banking a secure and pleasant experience. But Indian public banks have a long way to go. In India, very few banks have been successful in developing effective strategies for fully exploiting the opportunities offered by the electronic channels. For public banks to define what niche markets to serve and decide what products/services to offer, there is a need for a clear and e-business strategy. The findings clearly indicate that public banks are plagued by infrastructure problems, poor PC penetration, poor telecommunication network policies and slow paced regulatory initiatives. However, the banks are optimistic that these would be taken care of and in the near future large numbers would start using Internet for banking purposes.

Keywords

E-banking, Internet Banking, Banking Technology, Public Sector Banks, Private sector Banks.

I. Introduction

Worldwide, the field of banking has made considerable progress and the use of Internet technology has become a very powerful force changing the very core of traditional banking (Kobrin, 2001). Internet Banking is giving competitive advantage to banks by providing them an unlimited distribution network. The future holds wide vistas in terms of what technology can do. Banks through technology are now able to provide services electronically and such services are lowering transaction costs and adding value to the customer-banker relationship. Internet enables banks to offer low cost, high value added financial services. Finally the banks are finding that a comprehensive online banking strategy is essential for success in the increasingly competitive financial services market. Competition and changes in technology and lifestyles have changed the face of banking and banks in the present environment are seeking alternative way to provide and differentiate their services (Jeevan, 2000).

In India, the banking industry has been undergoing rapid changes, reflecting a number of underlying developments. In spite of the great benefits of the E-banking, it is extremely essential that banks regard the risks associated with it. One significant step that banks must take before going through any transformation is to insure the proper handling of E-banking risk. But it is very difficult for both the customers and the banks to determine the best approach to use of E-banking. A particular risk arises with trying to integrate new channels with existing channels (Brar et al., 2014).

A combination of regulatory and competitive reasons have led to increasing importance of Total Banking Automation in the Indian Banking Industry. Entry of new generation banks has resulted in a paradigm shift in the ways of banking in India. IT has introduced new business standards and is increasingly playing a significant role in improving the services in the banking industry. Internet, wireless technology and global straight-through processing have

created a paradigm shift in the banking industry - from brick-and-mortar banks to virtual banking across time zones, geographical locations, access points and delivery channels. Another key impetus for change has been the increasing competition among a broad range of local and global institutions in providing banking and related financial services. In addition, financial activity has become larger relative to overall economic activity in most economies (Pareek, 2003).

Without doubt, technology is the single biggest strategic issue in banking that has also created challenges for the regulatory framework of E-banking (Kobrin, 2001). In this high-tech environment, it is important for governments to keep their regulatory system under review. Many countries are responding to the changes in financial markets by rationalizing their regulatory systems. In today's highly mobile financial markets, countries, which do not ensure that their regulatory systems remain up to date, may pay a serious cost in the form of lost business (Davies, 2000).

In addition to this, banks as well as consumers view the security threat as perhaps the most serious threat. The security of Internet access to client account is the biggest challenge facing banks. Security policy should include management commitment, technological support and effective disseminations of the policy and the security awareness of all users (Denny, 2000). The implementation of SET, the standard for Secure Electronic Transactions on the Internet and its widespread adoption including security measures like encryption, digital authentication, and verification of on-line identity, increase consumer confidence (Cronin, 1998). As in any new venture there are setbacks in terms of issue of security and associated costs. As a consequence banks are working towards remedying these shortcomings so as to take full advantage of the digital revolution (Vignesén, Perumal and Bala, Shanmugam, 2000).

II. Growth of E-Banking in India

India is still in the early stages of Internet banking growth and development. Until the advent of automatic teller machines (ATMs), people were unaware or not directly affected by the technological revolutions happening in the banking sector. ATMs became the major revelation for customers for it offered the facility to avoid the long queues in front of the cashier in a bank. It also provided them the flexibility of withdrawing money-anytime, anywhere (Jayadev, 2001). The software packages for banking applications in India had their beginnings in the early 1980s, when the Banks started computerising the branches in a limited manner. This set the pace for computerisation and mechanisation, following the formation of the Rangarajan Committee, (Mishra, 2001) which had a mandate to develop a phased plan over 1985-89 to automate banking processes and was supported by the growth of branch banking and the easy availability of PCs. The second Rangarajan Committee which was formed in 1988, drew up a comprehensive plan to computerise the banks and for an extension of automation to other areas like funds transfer, SWIFT, ATMs etc. (Mishra, 2001). Towards the end of the 1980s, the deregulation process gained momentum with the growth in high-tech sector in India. The deregulation became an important mechanism for

generating competition in the banking system in many developing countries (Baumik and Sarkar, 1996).

The early 1990s saw the plummeting hardware prices and advent of cheap and inexpensive but high-powered PCs and servers and banks went in for what was called Total Branch Automation (TBA) Packages. The Narasimham Committee report in 1992 introduced new reforms, followed by the Banking Regulations Act in 1993, enabled new private banks to enter the arena. In 1996, full foreign investment was allowed. In 1997, the Tarapore Committee report on capital account convertibility launched a new mandate to support the full convertibility of the rupee by the turn of 2000. These developments were supported by the growing levels of expertise in information technology, venture capitalism and increasing amounts of foreign investment (Reddy, 2000). Thus, the middle and late 1990s witnessed the tornado of financial reforms, deregulation, globalisation etc coupled with rapid revolution in communication technologies and evolution of novel concept of 'convergence' of computer and communication technologies, like Internet, mobile / cell phones etc (Khanna, 2003). In India, banks as well as other financial entities entered the world of information technology and with Indian Financial Net (INFINET). INFINET, a wide area satellite based network (WAN) using VSAT (Very Small Aperture Terminals) technology, was jointly set up by the Reserve Bank and Institute for Development and Research in Banking Technology (IDRBT) in June 1999.

III. Bankers' Problems

The new private sector banks that entered the field in 1994 started with a clean balance sheet and used technology as the means of improving efficiency and reach. In the last few years the private sector banks have come a long way though they have not achieved the potential in terms of deposit growth and on many fronts their size and share is insignificant when compared to traditional public sector banks.

The public banks have remained laggards in the race for adopting Internet banking practices. There are very few nationalised banks like State Bank of India, Punjab National Bank, Bank of Baroda, Allahabad Bank, Syndicate Bank and Bank of India that offer Internet banking services. SBI's Internet banking initiative, launched in July 2001, is in fact doing quite well. One can only imagine the complexities involved in deploying a core banking solution for an entity the size of State Bank of India. With more than 13,600 branches spread across the length and breadth of the country, the project was huge in size and complicated in its implementation. Another public sector giant Punjab National Bank's (PNB's) has also come a long way since March 2000, when IT systems were deployed only at 500 branches, and were very inadequate. Only 35 percent of the bank's business was computerized and a number of small software packages ran on standalone PCs. 97 per cent of Bank's business is captured through computers. Core Banking Solutions (CBS) has been implemented in 504 Service Outlets (SOLs) covering 101 centres of country. The bank implemented Structured Financial Messaging Solutions (SFMS) for funds transfer from any of the CBS branches at 101 centres.

But despite positive news like these, public sector banks still have a lot of catching up to do on the Internet banking services front. So far, there are three distinct milestones that Indian banks have achieved on their e-drive. At the first level, banks offer information about their products and services. Most public sector banks in India are still lingering at this level. Some, who have managed to cross the initial cost and technology hurdles,

afford interaction between banks and customers. Here the services include electronic mail, balance enquiry and loan applications. And, at a higher level, some private Indian and foreign banks have enabled transactional banking where customers make utility payments for telephone and electricity bills, municipal taxes and so on. Though full-scale transfer of funds across all banks is yet to start, most banks allow transfer of funds to another account-holder in the same bank (Prayag, Anjali and Vageesh, N.S., 2004). 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 (Jayadev, 2001).

Then there is the issue of the legacy systems. Since the public sector banks are still in the process of automating their processes, they need to run the manual processes for some time. Most of the IT initiative so far has meant automating the traditional paperwork to online process. Contrary to this, as late entrants in the banking sector, private banks had the benefit of working in a fully automated work environment right since their inception, and could compete with the foreign players in terms of technology. Nair (1999) observes that Indian Internet banking is still nascent, although it is fast becoming a strategic necessity for most commercial banks, as competition increases from private banks. The private banks were in a position from the very inception to leverage IT applications in their daily operations adopting new technology for the delivery of various financial products. ICICI Bank the second largest bank in the country after SBI in terms of asset size is the first Indian bank to offer Internet banking. ICICI Bank is a huge success in the financial sector and is India's first bank to launch a site and then follow up with Internet banking services. ICICI Bank kicked off online banking way back in 1996 and a host of other banks soon followed suit. The bank had launched the Internet banking service even before the RBI had formulated its guidelines. Since it was comparatively a new concept, the regulating authorities were extremely co-operative with the bank. After ICICI, Citibank, IndusInd Bank and HDFC Bank and Timesbank (now part of HDFC Bank), were the early ones to embrace the technology in 1999. HDFC Bank's vision was very clear, it was not enamoured by the concept of Internet banking but looked at it more as an add-on service which its customers should gradually adopt. In line with this strategy, initially the Net banking facility was provided in order to meet the information requirements of the customers and gradually it ventured into fund transfers and third party transfers (Glancy, S. and Padmanabhan, C., 2003).

But in case of public sector banks things are not that rosy. This raises the question as to why it's the private sector, which has been taking the initiative while the public sector keeps on watching its depleting market share. The public sector, which controls about 65% of the banking industry, is certainly aware of the implications. At the core of the problem is the model on which the public sector banks are based—the service model. As nationalized banks, they have certain social obligations, which require them to provide services throughout the country and it will take them time to mature to a different model. Moreover, branches spread across the entire country and a lack of national bandwidth have become a big constraint for the IT endeavors of public sector banks. Nevertheless, they are on the technology route, though there is less visibility about that (Varma, 2011).

The slow growth of technology in banks is not only due to the lethargy of Indian public sector banks, the average Indian customer is also responsible for this. The average customer of public sector bank is comfortable with the traditional banking system and is

not too keen on adopting an electronic model. Lack of skills in using an ATM, and inaccessibility have been identified as major causes for this slow uptake by the majority of banks. The average Indian citizen is yet to get comfortable with impersonal machines such as ATMs (Raj, 1996). The uptake of ATM usage is fairly low (Mishra, 2001) and is concentrated in urban areas. Personal attention is still required before the critical mass of the literate population is reached. Multiple branches spread across the country and lack of national bandwidth are major constraints, especially for public sector banks (Varma, 2011). The restrictions imposed by the IBA still exist to some extent. The IBA stipulates a certain deposit base and a particular number of vouchers, before a bank can install an ATM (Raj, 1996). But most PSU banks have the majority of their customer base in the smaller cities or towns and even in remote villages. Even in bigger cities, a large proportion of their customers are either senior citizens or at least in the age group of fifty plus who have a natural aversion towards adopting new technology. This is not the case with private or MNC banks, where the clientele is mostly urban-based falling in the 20-40 age group and who have a higher exposure to technology. Even the IDC survey seems to confirm this premise. Among the elite Internet banking users, that is, those customers who belong to Socio-Economic Class A1 (SEC A1) in the top five cities, it has been found that people access their account through the Internet once every week. Similarly users visit their ATM centre on an average of two times per week. The workplace happens to be the most favoured place to access Internet for banking purposes. The home comes a close second while cyber cafés take the third place. ATM in the close vicinity to the office is the most preferred place among users for banking. The users (24 percent) who access the ATM near their office mostly go during the first half of the day, between 9 AM to 12 PM, but most preferred time by all users (41 percent) is between 6-9 PM (Rajneesh De and Padmanabhan, C., 2002).

The Indian public sector banks which constitute about 65% of the sector, are still plagued by union issues, inertia in the lower ranks and a general apathy towards technological innovations, especially the Internet (Varma, 2011). Foreign banks have a wider variety of e-banking services with their existing high technology linkages and infrastructure. However, the newly formed private banks seem to be pulling ahead of the foreign and public sector banks, especially in the e-banking sector. To start with, they did not have the issue of legacy systems and processes (Varma 2001) that plagued the public sector banks and therefore, did not have to restructure. As he observes, the private banks have had the benefit of being innovation leaders, supported by technology. The private banks have also been acquiring the older and weaker banks (Business Line, 2000), thus growing in size. In addition to this, the new generation of IT professionals demands innovative services, while supporting their growth.

However, the Public banks have taken to computerisation in the right earnest. Today most of them have their own in-house IT department which not only takes care of deployment and implementation issues but is also into developing specific and customised applications for the bank. From SBI to Canara Bank, every bank is expanding its IT division and making huge investments to develop the division as a profit centre by itself (Jayadev, 2001). The IT department, which was earlier probably restricted to procuring standard hardware and software and maintain connectivity, is now playing an important role in strategic decisions of the business, and the outlay towards IT is considered as a strategic investment.

Availability of access to the Internet is an essential prerequisite for the adoption of Internet banking. The more widespread the access to computers and the Internet, the greater the possibility of use of Internet banking. O'Connell identified lack of access to computers as one of the possible reasons for the slow adoption of Internet Banking (O'Connell, 1996). Current statistics show that less than 10 per cent of Indian banking customers use the Net for their banking needs. The services could range from checking balance history and requests for cheque books to slightly advanced interactive services such as paying utility bills and, at the highest level, executing transactions and transferring funds (Prayag et al., 2004). Moreover, overall for the banking industry, the correlation between financial productivity and the Technology induction is low and negative. The study shows that the effect of other factors is more than the effect of Technology on financial productivity. These factors may be liberalization of interest rates, managerial effectiveness, risk management, internal and external policies of the banks and so on. And it has been found that the effect of technology on financial productivity of banks is negative, though not much (Sharma, 2012).

When compared to other developed countries, India is still in the early stages of Internet banking growth and development. While it is plagued by infrastructure problems, slow uptake of Internet access and PCs, poor telecommunication network policies and slow paced regulatory initiatives. There is an estimated 2 million PCs for a population close to 1 billion and low telephone penetration of 19.1 million (Gupta and Storey, 1999). This is compounded by a poor telecommunications network, long delays in establishing connections, and extended power cuts. One of the reasons why Indian banks are lagging behind their counterparts in the west can be laid at the door of the government, since the infrastructure needed to speed the process remains lacking (Raj, 1996).

The rapidly growing software industry in India and ever increasing demand from the IT professionals have been promoting and supporting the online banking concept. The formerly 'information poor' nation is becoming a 'high-tech intellectual centre' enabling banks to capitalise on the brainpower available in the country. For IT enabled services, the competitive advantage is even higher. NASSCOM in a comparison of several factors such as workforce, market access, infrastructure, and cost across the Asia-Pacific region, has outlined that on average the best location is India.

Banking in the country is witnessing a sea change as the sector seeks new applications with the demand from and facilities provided by the growing info-tech professional sector (Varma, 2011). The Indian banking sector has undoubtedly been early adopter of technology. From computerisation to networking to ATMs and now E-banking, banks have moved up the value chain. Today, most of the banks are dependent on computers and IT for even basic functions (Jayadev, 2001). Thus, entry of IT enabled new generation private banks has resulted into a major shift in the ways of banking business in India. The growing competition and growing expectations have led to increased awareness amongst banks and customers on the role and importance of technology in banking. The future holds wide vistas in terms of what technology can do. The arrival of private banks with their IT enabled services have pushed Indian Public Sector Banks also to follow suit by going in for the latest technologies so as to meet the threat of competition and retain their customer base.

IV. Regulatory Issues and Problems

The rapid growth of the Internet has introduced a completely new

level of security related problems. From the legal perspective the challenges of Internet banking in India include information security and regulatory compliance (Ryder, 2000). Currently banks are carrying a more than reasonable share of risks and these risks are transferred to the customers. Internet banking in India is currently carried out in good faith but with a high level of ignorance. There is need for a Cyber Law Compliance Audit in all banks as well as proper guidance so that customers' interests are taken care of (Jayadev, 2001).

The problem in e-banking is that the Internet is not a regulated technology and it is readily accessible to millions of people, and there will always be people who can manipulate it to make illicit gains. With the evolution of delivery channels relating to fund-based services such as, Electronic Funds Transfer (EFT) and Electronic Clearing System (ECS), the security measures need to be developed adequately. EFT is the safest and fastest way to transfer money, regardless of bank, branch, or city. ECS enables deposit of dividends into the shareholder's account, if the bank account is given. In September 2000, the Institute of Development and Research in Banking Technology (IDBRT) implemented its long-awaited EFT and real-time gross settlement (RTGS) system, with services available throughout India (Mahabharat, 2000).

Various other concepts such as digital signatures, certification, storage of information in a secure and tamper-proof manner assume significance and will be part of the practices and procedures in the day-to-day functioning of banks in the future. With increased dependence on technology, the need for Information Systems Audit also assumes significance coupled with the availability of skilled personnel not only for implementing technology but also manning such technology based activities and conducting audit thereof. From a legal perspective, security procedure adopted by banks for authenticating users needs to be recognized by law as a substitute for signature. In this regard, 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 far-reaching results in terms of cost and speed of transactions between government-owned banks (RBI, 2013).

With institutions becoming more and more global and complex, the nature of risks in the international financial system has changed. Though the Indian Government has announced cyber laws, most corporate are not clear about them, and feel that they are insufficient for the growth of E-banking and 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 (Vij, 2000).

To facilitate the e-commerce and electronic governance (Statement of Objects and Reasons, Information Technology Act, 2000), the Information Technology Act 2000 was enacted with suitable amendments in Indian Penal Code, Indian Evidence Act, RBI Act 1934 and Banker's Books Evidence Act 1891. The enactment of the Information Technology Act 2000 provides for legal recognition for transactions carried out by means of Electronic Data Interchange (EDI) and other means of electronic communication which involve the use of alternatives to the methods of communication and storage of information, to facilitate electronic filling of documents with the government agencies and for matters connected therewith or incidental thereto. The Act governs the law relating to electronic contracts, electronic records, digital signatures certification authorities and the use of electronic records and signatures in Government records. It also regulates the activities of network service providers (Sharma, 2005).

V. Results and Discussion

India is still in the early stages of incorporating technology in banking. While private sector banks have been the early adopters, public sector banks have been doing a fast catch-up. Regulatory and technological standards are being formulated to making banking a secure and pleasant experience. On the whole, the winners have been the private players. However, with 65% of the banking still in control of the public sector banks, they too have an important role to play and the sooner they start incorporating technology into their overall business plan, the faster they can recover their lost market share. Banks have a key role to play in the emerging e-commerce market. A big opportunity lies in positioning as a co-developer in the e-commerce space. Though Indian private banks have taken a clear lead in this area, public sector banks too can grab some of the untapped opportunities by moving in quickly. Of late, public banks have come to realize that survival in the IT age 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.

In the era of deregulation, privatisation and globalisation, the Indian public banks are now looking at the technology route to stay ahead in the competition. Indian banks have 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. While private banks are deploying technology to cannibalize the public sector market share, the game has just started. Proper technology usage by public banks can still put them back in the same league with the private ones. But for this they immediately need to explore and exploit the technology to the fullest. They also need to look at international trends of Internet-only units supported with call centers and huge networks of ATMs. Timely measures in this direction will put them back in the same league as the private or foreign banks.

In the near future, as it seems, the large scale switching to hi-tech banking by Indian public sector banks through the application of Information Technology and computerisation of banking operations, will revolutionise customer service. The age-old traditional methods and systems are over. Banks now will have more employees available for business development and customer service freed from the needs of book-keeping and for casting or tallying balances, as it was earlier.

VI. Conclusion

E-banking in India is in a nascent stage and people are still wary of the concept and its usage-the biggest inhibitors being security and user identification/authentication. When compared to other developed countries, India is still in the early stages of Internet banking growth and development. Public banks are plagued by infrastructure problems, slow uptake of Internet access and PCs, poor telecommunication network policies and slow paced regulatory initiatives. E-banking in India cannot be described in its present form a success at all. Not only this public sector banks are crippled with union issues, inertia in the lower ranks and a general

apathy towards technological innovations, especially the Internet. In India, very few banks have been successful in developing effective strategies for fully exploiting the opportunities offered by the Internet. For public banks to define what niche markets to serve and decide what products/services to offer, there is a need for a clear and concise e-commerce strategy. The technology concepts are gaining acceptance. Finally, the public sector banks should adopt this technology and reap the benefits of a global banking environment. Those taking a rigid approach in this regard could become non functional.

References

- [1] Annual Reports of various years of PNB, SBI, HDFC and ICICI Bank.
- [2] Bhaumik, S., Sarkar, J. (1996), "Entry Deregulation and Banking Market Competition: The Indian Experience", Indian Gandhi Institute of Development Accessed online. <http://ideas.uqam.ca/ideas/data/Papers/fthindgan131.html>
- [3] Brar, Tejinder Pal Singh, Sharma, Dhiraj and Khurmi, Sawtantar Singh (2014), 'Factors Influencing E-Banking Adoption in India: An Amalgamation of TAM and TPB', International Journal of Computer Science and Technology, Vol. 5, Issue -1,
- [4] Cronin, Mary J, "Defining Net Impact: The Realignment of banking and Finance on the Web, Banking and Finance on the Internet", John Wiley and Sons, New York, 2011.
- [5] Davies, Howard, "The uncertain but exciting future for banking", Vol. 8, No. 6, 2000.
- [6] Denny, Stephanie, "The Electronic Commerce Challenge", Journal of Internet Banking and Commerce, November, Vol. 3 No. 3, 2000.
- [7] Glancy, S., Padmanabhan, C., "Banking software firms ride the Indian IT wave", 4th August, Indian Express, Mumbai, 2003.
- [8] Gupta, S.D., Mani, R.N., "PNB's IT-enabling journey", Network Magazine, May Issue, Mumbai, 2003.
- [9] ICICI(2000) Internet Banking, <http://www.icici.com/icicibank>
- [10] Jayadev, K., "Money on the Move", Computers Today, June 1-15, 2001.
- [11] Jeevan MT (2000), "Only Banks – No Bricks, Voice and Data", November 11th, [Online] Available: <http://www.voicendata.com/content/convergence/trends/10011102.asp>
- [12] Khanna, Anurag, (2003), "Developments in Banking & Banking Technology", [Online] Available: <http://www.banknetindia.com>.
- [13] Kobrin, Stephen J., "Territoriality and the Governance of Cyberspace", Journal of International Business Studies, Vol. 32, No. 4, 2001.
- [14] Mahabharath, C.T. (2000), "India – banking improvements finally a reality", Newsbytes, The Washington Post Company, 20000905/Wires Online, Business, Asia, Accessed online <http://www.newsbytes.com/news/00/154721.html>
- [15] Mishra (2001) Internet Banking in India, Banknet India, [Online] Available: <http://www.banknetindia.com/banking/ibkg.htm>
- [16] Microsoft Corporation India (2002), HDFC Bank: Deriving Business Intelligence. [Online] Available: <http://www.microsoftindia.com>.
- [17] Nair, A. (1999) Indian Internet Banking still nascent, Asia Internet News, May 12th [Online] Available: http://www.asia.internet.com/asia-news/print/0,161_648221,00.html
- [18] NASSCOM Directory (2011), IT Enabled Service Providers, NASSCOM, New Delhi. [Online] Available: <http://www.nasscom.org>.
- [19] Neuman William L, "Social research methods: Qualitative and quantitative approaches", Allyn and Bacon, Boston, 1997.
- [20] O'Connell, B., "Australian banking on the Internet - fact or fiction?", The Australian Banker, December, pp. 212-214, 1996.
- [21] Pareek Deepak, (2003), "Wireless Technology: Future of Banking in India", [Online] Available: <http://www.researchandmarkets.com>
- [22] Prayag, Anjali, Vageesh, N.S., "What's your Net worth?", Business Line, Oct 30, 2004.
- [23] Rajneesh De, Padmanabhan, C., (2002), "Internet Opens New Vistas for Indian Banks", September 16. Indian Express. [Online] Available: <http://www.expresscomputeronline.com/20020916/indtrend1.shtml>
- [24] Raj, S. (1996), "On the road to virtual banking", Dataquest, Cybermedia India Limited", [Online] Available: <http://www.dqindia.com/dq/nov1596/index.html>
- [25] Reddy, Y.V. (2000), "Capital inflows and self reliance redefined", Twenty Seventh Frank Morass Lecture, July 17th Available online.
- [26] "Report on Internet Banking", Reserve Bank of India, Mumbai, 2013.
- [27] Sharma, Dhiraj, "Foundations of IT (Information Technology)", Excel Book P. Ltd, New Delhi, 2009.
- [28] Sharma, Dhiraj, "Does Technology Lead to Better Financial Performance? A Study of Indian Commercial Banks", Managing Global Transitions, Vol. 10, Issue 1, 2012.
- [29] Varma, "Banking: The network is the bank, Public Sector: Why the lag?", Dataquest, January 29th New Delhi, 2011.
- [30] Vignesen, Perumal, Bala, Shanmugam, "Internet Banking: Boon or Bane?", Journal of Internet Banking and Commerce", June, Vol. 5, No. 1, 2000.
- [31] Vij, Madhu, "E-Banking: An Emerging Perspective of the Regulatory and Taxation Issues", University of Delhi, India, 2000.



Dhiraj Sharma, PhD
Faculty, School of Management Studies, Punjabi University, Patiala, Punjab, INDIA.
Adjunct Faculty, Wilkes University, Pennsylvania, USA.
Principal Investigator, UGC Major Research Project on Adoption of Internet Banking in North India.

Dr. Dhiraj Sharma is currently working in the School of Management Studies at Punjabi University, Patiala. He is also Adjunct Faculty, Wilkes University, Pennsylvania, USA. He holds three masters in the area of Finance, Commerce and Business Administration respectively. He is a doctorate in the area of Banking Technology and has successfully supervised Five PhDs in the diverse areas of Banking, Insurance, Organizational Behavior, Corporate Governance and Information Technology. Presently, Nine doctoral students (including three International students) are registered with him and are pursuing their research work. Recently, he has completed a Major Research Project, approved and financed by UGC, on Internet Banking in North

India. He was also instrumental in the organization of the 'National e-Governance Plan (NeGP)', held during December, 2011 organized by Department of Information Technology, Ministry of Communications and Information Technology Govt. of India.

He has fourteen books and more than forty published research papers to his credit. Many of his books are serving as text and reference books for many post-graduate courses in Indian colleges and universities. He has independently developed many course books for several institutions notably among them are: Punjab University, Chandigarh; All India Management Association (AIMA), New Delhi; Indian Institute of Materials Management (IIMM), Mumbai; Bangalore University, Bengaluru.

He has worked as Managing Editor for a refereed national research journal for over a period of five years. He is also contributing as Reviewer for three International Journals. He has attended more than Fifty International and National conferences and seminars in which he actively participated and presented papers. He has also organized/session chaired many seminars and conferences. For the last eighteen years, he is actively involved in writing, teaching and research in the diverse areas of Business Management and Information Technology.



Ms. Namita Singla is presently working as Senior Manager (Operations) at HDFC Bank Limited at Patiala, Punjab. She has more than ten years of banking experience in which she has held diverse positions at various stations. Presently, she is pursuing her Doctoral Programme from Punjabi University, Patiala, Punjab, India.