Internet Banking Systems in India: Analysis of Security Issues

Deepshikha Jamwal & Devanand Padha
Research Scholar & Head of Department
jamwal.shivani@gmail.com, dpadha@rediffmail.com
Department of Computer Science & IT
University of Jammu

ABSTRACT
When people use the Internet, they except confidentiality and data integrity. Network security is becoming more and more crucial as the volume of data being exchanged on the Internet increases. Internet banking which is a security-based system, their are various risks issues and Internet fraud that can affect the customer’s view of the service quality provided by the banks. The wireless Internet is a recent trend followed by the banking systems in India. There has been a sharp rise in the Internet banking over the last decade globally and this trend is also following up in India due to the significant rise in banks offering various banking services through Internet [1, 2].

A research shows that a large urban population use Internet for gathering information about different financial products like personal loan, credit card, insurance etc., thus reducing cost of printing, promotion and distribution. The paper aims to protect customer’s privacy and protect against fraud at providing a specific focus to identify the security issues in Indian banking system also the impact of demographics in influencing Indian Internet users in consuming different services online.

KEY WORDS: Internet Security, Internet banking and risk.

1. INTRODUCTION

Rapid growth of a technology where the main concerns are related to security and cost – Internet banking – suggests that these concerns can be solved for digital signers and electronic signatures as well. In the Internet banking, (a) the risks are (like the web browsers) provide simple and user-friendly interface to customers. The role of Internet is becoming inevitable in society. The Internet banking is changing the banking industry and is having the major effects on banking relationships. Wireless Internet banking involves use of Internet for delivery of banking products & services. It falls into four main categories, from Level 1 - minimum functionality sites that offer only access to deposit account data - to Level 4 sites - highly sophisticated offerings enabling integrated sales of additional products and access to other financial services - such as investment and insurance. The Internet motivated many companies to use the Internet to sell products/services online services the Internet users intend to buy. In other words a successful Internet banking solution offers.

· Exceptional rates on Savings, CDs, and IRAs.
· Checking with no monthly fee, free bill payment and rebates on ATM surcharges.
· Credit cards with low rates.
· Easy online applications for all accounts, including personal loans and mortgages.
· 24 hour account access.
· Quality customer service with personal attention [6].

Banks increasingly use Internet as a channel for receiving instructions and delivering their products and services to their customers. This form of banking is generally referred to as Internet Banking.

The paper aims to protect customer’s privacy and protect against fraud at providing a specific focus to identify the security issues in Indian banking system also the impact of demographics in influencing Indian Internet users in consuming different services online. [3]

In a survey conducted by the Online Banking Association, member institutions rated security as the important issue of online banking. There is a dual requirement to protect customers’ privacy and protect against fraud. A multi-layered security architecture comprising firewalls, filtering routers, encryption and digital certification ensures that your account information is protected from unauthorized access.

According to the survey conducted by the Internet and Mobile Association of India (IAMAI) there are estimated 4.6 million Internet users who are banking online now, and this number is expected to grow to 16 million plus by 2007-08.

Some basic information on the transmission of confidential data is presented in Security and Encryption on the Web. PC Magazine Online also offers a primer: How Encryption Works. There are some key areas in banking where technology has contributed the most are: Product Development, Market Infrastructure, Risk Control and Market Research [14, 15].
1.1 TYPES OF INTERNET BANKING
Currently, there are three basic kinds of Internet banking that are being employed in the marketplace are:
- Information
- Communication
- Transaction

1.2 THE ROLE OF BANKS IN THE INTERNET WORLD:
As per survey throughout the country, the Internet Banking is in the nascent stage of development (only 50 banks are offering varied kind of Internet banking services). In general, these Internet sites offer only the most basic services. 55% are so called 'entry level' sites, offering little more than company information and basic marketing materials. Only 8% offer 'advanced transactions' such as online funds transfer, transactions & cash management services. Initially, banks promoted their core capabilities, being products, channels and advice, through the Internet. Then, they entered internet commerce market as providers / distributors of their own products and services. "The trend toward electronic delivery of products and services is occurring dramatically in the financial service industry (something we call "e-Finance") where the shift is partly a result of consumer demand, but also of a ruthlessly competitive environment" [Geyer 1997]. More recently, due to advances in Internet security and the advent of relevant protocols (e.g. Integration, OFX, SET etc.), banks discovered that they can play again their primary role as financial intermediates and facilitators of complete commercial transactions via electronic networks and especially via the Internet. However, "financial service organizations are implementing multiple styles of electronic financial services" [Schiller 1997]. Some have chosen a 'direct web presence'; others have opted either for 'owners of a financial services organization-centric electronic marketplace', or for 'participants in a non-financial services organization-centric electronic marketplace' [Schiller 1997]. However, this scheme is very abstract and vague and does not support any decision-making process for the banking institutions to define a niche market for them to invest on and compare with their rivalries. [16]

A Research carried by Global Finance has announced list of World’s best internet banks in Europe and the country wise winners include:
- Austria: RZB, Belgium: Citigroup, Germany: Citigroup, Greece: Citigroup, Poland: Bank Millennium, Portugal: Millennium BCP, Russia: ZAO Raiffeisen bank Austria, Spain: BBVA, Turkey: Garanti Bank, United Kingdom: Citigroup.
- City South Africa has won the Global Finance Best Corporate Internet Bank Award 2008. It has won the Global Finance Best Corporate/Institutional Internet Bank Award 2008 in 68 countries around the world, including in Cameroon, Congo, Cote d'Ivoire, Gabon, Nigeria, Senegal, South Africa, Tanzania, Uganda and Zambia [18].

1.3 INTERNET BANKING IN INDIA
The banking industry in India [3] is facing unprecedented competition from non-traditional banking institutions, which now offer banking and financial services over the Internet. Indian banks are going for the retail banking in a big way. However, much is still to be achieved. This study which was conducted by students of IIML shows some interesting facts:· Throughout the country, the Internet Banking is in the nascent stage of development (only 50 banks are offering varied kind of Internet banking services).
- In general, these Internet sites offer only the most basic services. 55% are so called 'entry level' sites, offering little more than company information and basic marketing materials. Only 8% offer 'advanced transactions' such as online funds transfer, transactions & cash management services.
- Foreign & Private Banks are much advanced in terms of the number of sites & their level of development. [6]. Internet Banking is the new generation of banking in India. Most private and MNC banks have already setup an elaborate Internet banking infrastructure.

2. METHODOLOGY
2.1 ANALYSIS
In order to achieve the objective i.e. the extent of Issues in Internet Banking we have collected the data related to Internet Banking from the different banks. In order to understand the trend, we have also collected some other secondary data from other sources like government, research papers periodicals, journals, authentic websites (official, private), published reports of Internet Banking etc. The data thus collected was analyzed using certain statically techniques.

![Image: Cost of Internet banking over other mode of Banking (Source: IBM global services consulting group).]
As per the recent survey in Fig 1, traditional banks spend 60% of the revenue generated to run a branch. Whereas the cost of providing same services via Internet comes out to be only 15% this is a huge savings for banks and consumer.

Fig II: Growth in Internet Banking (Millions) *(Source: International Data Corporation, epaynews.com)*

Fig II analysis that the growth of Internet banking has been very encouraging and consequently financial institutions are actively pursuing not only in the industrial nations but also in developing countries like India.

Fig III: Interest in Internet Banking by Segments *(Source: BAI, JP Morgan interviews)*

Figure III as shown below, depicts that person between the age of 18-49 with a household income ranging between "$41,000-$59,000+" showed high interest on Internet banking. On the contrary the older respondents (65+) showed very low interest in Internet banking.

From Fig IV it is estimated that by the year 2005, Internet P2P (person to person) payments in the U.S will grow to more than 4 billion transactions per annum.

Fig IV: U.S Internet P2P Payments

Fig V: shows EBPP estimates for the U.S

Fig V shows EBPP (Electronic Bill Presentment and Payment) estimates for the U.S. From the figures one can observe that approximately 25 million households in the U.S will be using EBPP by the year-end 2003 to pay about 13 percent of all their bills.

Fig VI: Showing the %age of Users with age and Sex In India.

The survey was conducted in December 2005. Nearly 43 per cent of the online banking users in the survey were in the 26-35 years age bracket. Nearly 83 per cent of the users were male. The survey said that about 60 per cent of the users had relationships with two or three banks.
3. ISSUES INVOLVE IN INTERNET BANKING

Reserve Bank of India had set up a ‘Working Group on Internet Banking’ to examine different aspects of Internet Banking (I-banking). The Group had focused on three major areas of I-banking, i.e., (i) technology and security issues, (ii) legal issues and (iii) regulatory and supervisory issues. A copy of the Group’s report is enclosed. RBI has accepted the recommendations of the Group to be implemented in a phased manner. Accordingly, the following guidelines are issued for implementation by banks. Banks are also advised that they may be guided by the original report, for a detailed guidance on different issues. [17] The Internet must be secure to achieve a high level of confidence with both consumers and businesses. So the issues that will help maintain a high level of public confidence in an open network environment include:

- Security
- Authentication
- Trust
- No repudiation
- Privacy
- Availability

4. RISKS INVOLVE IN INTERNET BANKING

Internet banking risks consists of risk associated with credit, interest rate, transaction, liquidity risk, Price risk, Transaction risk, etc. Some of the important risks involve in the Internet banking are:

4.2 INTEREST RATE RISK: Interest rate risk arises from differences between the timing of rate changes and the timing of cash flows reprising risk [12].

4.6 FOREIGN EXCHANGE RISK: Foreign exchange risk is present when a loan or portfolio of loans is denominated in a foreign currency or is funded by borrowings in another currency. [8]

4.7 COMPLIANCE RISK: Compliance risk is the risk to earnings or capital arising from violations of, or nonconformance with, laws, rules, regulations, prescribed practices, or ethical standards. [10].

4.8 STRATEGIC RISK: Strategic risk is the current and prospective impact on earnings or capital arising from adverse business decisions, improper implementation of decisions, or lack of responsiveness to industry changes [11].

4.9 REPUTATION RISK: Reputation risk is the current and prospective impact on earnings and capital arising from negative public opinion. [9].

4.10 TOTAL RELIABILITY RISK: As with most other Internet ventures, an exclusive reliance on virtual channels is probably not a very wise move. Figure 6 shows various banking transaction that are suitable for Internet banking and the expected level of physical contact [13].

5. CONCLUSION

The objective of the study is to analyze the current issues related to security in our Internet banking systems, like the data input on the computer can be stolen. By the year 2008, a large sophisticated and highly competitive Internet Banking Market will develop in a survey conducted by the Online Banking Association; member institutions rated security as the most important issue of online banking. Here we propose a multifactor authentication technique that is a digital signer device with biometric authentication that not only provides a tamper proof storage for the digital signature but also provides its own display and keyboard. The motivation of such a system is to escape the scalability and complexity problems that arise if a large-scale Public Key Infrastructure (PKI) is used. This system improves the security of smart cards by avoiding its dependence on the computer to interface with the user, making it immune to virus attacks and also aging factor of human being. We conclude that estimation of personal private keys is justified and further argue that this does not reduce the security.

6. LIMITATIONS

- Mostly Internet banking in not being used by general masses because of the lack of awareness among them, in general security becomes constraint to obtaining meaningful data and information.

- Further, it is very difficult to get data from banking sources due to security reasons.

7. FUTURE DIRECTIONS

We have been further working on the analysis of Internet banking in India particularly in J&K. Another aspect of our further work is analysis of latest sophisticated hardware and software being used to minimize the risk involved in Internet banking.

REFERENCES


Internet Banking Systems in India: Analysis of Security Issues