

THE PRAGMATIC REVIEW ON INTERNET BANKING AND ASSOCIATED SERVICES IN INDIA

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ABSTRACT

Online banking is an electronic payment system that enables customers of a financial institution to conduct financial transactions on a website operated by the institution, such as a retail bank, virtual bank, credit union or building society. Online banking is also referred as Internet banking, e-banking, virtual banking and by other terms. To access a financial institution's online banking facility, a customer with Internet access would need to register with the institution for the service, and set up some password (under various names) for customer verification. The password for online banking is normally not the same as for telephone banking. Financial institutions now routinely allocate customers numbers (also under various names), whether or not customers have indicated an intention to access their online banking facility. Customers' numbers are normally not the same as account numbers, because a number of customer accounts can be linked to the one customer number. The customer can link to the customer number any account which the customer controls, which may be cheque, savings, loan, credit card and

other accounts. Customer numbers will also not be the same as any debit or credit card issued by the financial institution to the customer. To access online banking, a customer would go to the financial institution's secured website, and enter the online banking facility using the customer number and password previously setup. Some financial institutions have set up additional security steps for access to online banking, but there is no consistency to the approach adopted. This manuscript underlines various aspects of e-banking and related aspects in the global scenario.

Keywords - Internet Banking, E-Banking, Impact of Online Bank Services

PREAMBLE

Online banking facilities offered by various financial institutions have many features and capabilities in common, but also have some that are application specific.

The common features fall broadly into several categories:

- A bank customer can perform non-transactional tasks through online banking, including -
 - viewing account balances
 - viewing recent transactions
 - downloading bank statements, for example in PDF format
 - viewing images of paid cheques
 - ordering cheque books
 - download periodic account statements
 - Downloading applications for M-banking, E-banking etc.
- Bank customers can transact banking tasks through online banking, including -
 - Funds transfers between the customer's linked accounts
 - Paying third parties, including bill payments (see, e.g., BPAY) and third party fund transfers(see, e.g., FAST)
 - Investment purchase or sale
 - Loan applications and transactions, such as repayments of enrollments
 - Credit card applications
 - Register utility billers and make bill payments
- Financial institution administration
- Management of multiple users having varying levels of authority
- Transaction approval process
- the process of banking has become much faster

Some financial institutions offer unique Internet banking services, for example:

- Personal financial management support, such as importing data into personal accounting software. Some online banking platforms support account aggregation to allow the customers to monitor all of their accounts in one place whether they are with their main bank or with other institutions.

HISTORICAL ASPECTS

The precursor for the modern home online banking services were the distance banking services over electronic media from the early 1980s. The term online became popular in the late '80s and referred to the use of a terminal, keyboard and TV (or monitor) to access the banking system using a phone line. 'Home banking' can also refer to the use of a numeric keypad to send tones down a phone line with instructions to the bank. Online services started in New York in 1981 when four of the city's major banks (Citibank, Chase Manhattan, Chemical and Manufacturers Hanover) offered home banking services. using the videotex system. Because of the commercial failure of videotex these banking services never became popular except in France where the use of videotex (Minitel) was subsidised by the telecom provider and the UK, where the Prestel system was used.

When the clicks-and-bricks euphoria hit in the late 1990s, many banks began to view Web-based banking as a strategic imperative. The attraction of

banks to online banking are fairly obvious: diminished transaction costs, easier integration of services, interactive marketing capabilities, and other benefits that boost customer lists and profit margins. Additionally, Web banking services allow institutions to bundle more services into single packages, thereby luring customers and minimizing overhead.

A mergers-and-acquisitions wave swept the financial industries in the mid-and late 1998s, greatly expanding banks' customer bases. Following this, banks looked to the Web as a way of maintaining their customers and building loyalty. A number of different factors are causing bankers to shift more of their business to the virtual realm.

While financial institutions took steps to implement e-banking services in the mid-1990s, many consumers were hesitant to conduct monetary transactions over the web. It took widespread adoption of electronic commerce, based on trailblazing companies such as America Online, Amazon.com and eBay, to make the idea of paying for items online widespread. By 2000, 80 percent of U.S. banks offered e-banking. Customer use grew slowly. At Bank of America, for example, it took 10 years to acquire 2 million e-banking customers. However, a significant cultural change took place after the Y2K scare ended. In 2001, Bank of America became the first bank to top 3 million online banking customers, more than 20 percent of its customer base. In comparison, larger national institutions, such as Citigroup claimed 2.2 million online relationships globally, while J.P. Morgan Chase estimated it had

more than 750,000 online banking customers. Wells Fargo had 2.5 million online banking customers, including small businesses. Online customers proved more loyal and profitable than regular customers. In October 2001, Bank of America customers executed a record 3.1 million electronic bill payments, totaling more than \$1 billion. In 2009, a report by Gartner Group estimated that 47 percent of U.S. adults and 30 percent in the United Kingdom bank online.

The UK's first home online banking services known as Homelink was set up by Bank of Scotland for customers of the Nottingham Building Society (NBS) in 1983. The system used was based on the UK's Prestel viewlink system and used a computer, such as the BBC Micro, or keyboard (Tandata Td1400) connected to the telephone system and television set. The system allowed on-line viewing of statements, bank transfers and bill payments. In order to make bank transfers and bill payments, a written instruction giving details of the intended recipient had to be sent to the NBS who set the details up on the Homelink system. Typical recipients were gas, electricity and telephone companies and accounts with other banks. Details of payments to be made were input into the NBS system by the account holder via Prestel. A cheque was then sent by NBS to the payee and an advice giving details of the payment was sent to the account holder. BACS was later used to transfer the payment directly.

Stanford Federal Credit Union was the first financial institution to offer online internet banking services to all of its members in October 1994.

Today, many banks are internet only banks. Unlike their predecessors, these internet only banks do not maintain brick and mortar bank branches. Instead, they typically differentiate themselves by offering better interest rates and more extensive online banking features.

According to "Banking and Finance on the Internet," edited by Mary J. Cronin, online banking was first introduced in the early 1980s in New York. Four major banks--Citibank, Chase Manhattan, Chemical and Manufacturers Hanover--offered home banking services. Chemical introduced its Pronto services for individuals and small businesses in 1983. It allowed individual and small-business clients to maintain electronic checkbook registers, see account balances, and transfer funds between checking and savings accounts. Pronto failed to attract enough customers to break even and was abandoned in 1989. Other banks had a similar experience.

Online banking in the U.K.

Almost simultaneously with the United States, online banking arrived in the United Kingdom. It was the Nottingham Building Society that in 1983 introduced Britain's first electronic home banking service through a joint venture with Prestel, a computerized information service owned by British Telecom.

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In the 1990s, banks realized that the rising popularity of the World Wide Web gave them an added opportunity to advertise their services. Initially, they used the Web as another brochure, without interaction with the customer. Early sites featured pictures of the bank's officers or buildings, and

provided customers with maps of branches and ATM locations, phone numbers to call for further information and simple listings of products.

Interactive banking on the Web

Wells Fargo was the first U.S. bank to add account services to its website, in 1995. Other banks quickly followed suit. That same year Presidential became the first bank in the United States to open bank accounts over the Internet. According to research by Online Banking Report, by the end of 1999, less than 0.4% of households in the U.S. were using online banking. At the beginning of 2004, some 33 million U.S. households (31% of the market) were using one form or another of online banking. Five years later, 47% of Americans were banking online, according to a survey by Gartner Group.

Regulations

Since its inception, online banking in the US has been federally governed by the Electronic Funds Transfer Act of 1978.

SECURITY ASPECTS

Security of a customer's financial information is very important, without which online banking could not operate. Financial institutions have set up various security processes to reduce the risk of unauthorized online access to a customer's records, but there is no consistency to the various approaches adopted.

The use of a secure website has become almost universally adopted.

Though single password authentication is still in use, it by itself is not considered secure enough for online banking in some countries. Basically there are two different security methods in use for online banking.

- The PIN/TAN system where the PIN represents a password, used for the login and TANs representing one-time passwords to authenticate transactions. TANs can be distributed in different ways, the most popular one is to send a list of TANs to the online banking user by postal letter. Another way of using TANs is to generate them by need using a security token. These token generated TANs depend on the time and a unique secret, stored in the security token (two-factor authentication or 2FA).

More advanced TAN generators (chipTAN) also include the transaction data into the TAN generation process after displaying it on their own screen to allow the user to discover man-in-the-middle attacks carried out by trojans trying to secretly manipulate the transaction data in the background of the PC.

Another way to provide TANs to an online banking user is to send the TAN of the current bank transaction to the user's (GSM) mobile phone via SMS. The SMS text usually quotes the transaction amount and details, the TAN is only valid for a short period of time. Especially in Germany, Austria and The Netherlands, many banks have adopted this "SMS TAN" service.

Usually online banking with PIN/TAN is done via a web browser using SSL secured connections, so that there is no additional encryption needed.

- Signature based online banking where all transactions are signed and encrypted digitally. The Keys for the signature generation and encryption can be stored on smartcards or any memory medium, depending on the concrete implementation. (see, e.g., the Spanish ID card DNI electrónico)

Attacks on online banking used today are based on deceiving the user to steal login data and valid TANs. Two well known examples for those attacks are phishing and pharming. Cross-site scripting and keylogger/Trojan horses can also be used to steal login information.

A method to attack signature based online banking methods is to manipulate the used software in a way, that correct transactions are shown on the screen and faked transactions are signed in the background.

A 2008 U.S. Federal Deposit Insurance Corporation Technology Incident Report, compiled from suspicious activity reports banks file quarterly, lists 536 cases of computer intrusion, with an average loss per incident of \$30,000. That adds up to a nearly \$16-million loss in the second quarter of 2007. Computer intrusions increased by 150 percent between the first quarter of 2007 and the second. In 80 percent of the cases, the source of the intrusion is unknown but it occurred during online banking, the report states.

Another kind of attack is the so-called Man in the Browser attack, where a Trojan horse permits a remote attacker to modify the destination account number and also the amount.

As a reaction to advanced security processes allowing the user to cross check the transaction data on a secure device there are also combined attacks using malware and social engineering to persuade the user himself to transfer money to the fraudsters on the ground of false claims (like the claim the bank would require a "test transfer" or the claim a company had falsely transferred money to the user's account and he should "send it back"). Users should therefore never perform bank transfers they have not initiated themselves.

COUNTERMEASURES

There exist several countermeasures which try to avoid attacks. Digital certificates are used against phishing and pharming, in signature based online banking variants (HBCI/FinTS) the use of "Secoder" card readers is a measurement to uncover software side manipulations of the transaction data. To protect their systems against Trojan horses, users should use virus scanners and be careful with downloaded software or e-mail attachments.

In 2001, the U.S. Federal Financial Institutions Examination Council issued guidance for multifactor authentication (MFA) and then required to be in place by the end of 2006.

In 2012, the European Union Agency for Network and Information Security advised all banks to

consider the PC systems of their users being infected by malware by default and therefore use security processes where the user can cross check the transaction data against manipulations like for example (provided the security of the mobile phone holds up) SMS TAN where the transaction data is send along with the TAN number or standalone smartcard readers with an own screen including the transaction data into the TAN generation process while displaying it beforehand to the user (see chipTAN) to counter man-in-the-middle attacks.

as per news reports of business standard, As many as 7% of account holders in the country are using the Internet for banking transactions, while branch banking has fallen by a full 15 percentage points, according to a report by global management consultancy McKinsey & Company.

"Use of the Internet for banking has seen a massive rise in the 2010-11 survey, taking the overall number of bank consumers who use the Net to close 7% of the total bank account holders -- a seven-fold jump since 2007 -- even as for the first time in the past 13 years, branch banking has come down by a full 15 percentage points during the same period," McKinsey & Company India partner and head of its retail banking services Renny Thomas said.

Thomas was talking to reporters after releasing a McKinsey India personal financial services survey 2011 here today. The percentage of online users of banking transactions was just about 1% in the agency's 2007 survey, Thomas added.

The survey is the result of one-on-ones with nearly 20,000 Asians covering the mass, mass-affluent and the affluent consumers across 13 markets, of which the largest survey pool was from India at 5,000 because of the sheer diversity of this market, Thomas said.

The survey is based on the number of times in a week respondents visited bank branches or used Internet for carrying out transactions.

In 2007, the number of times Indian respondents visited bank branch for doing transactions was 0.58 while the same in 2011 was 0.49, showing a fall of 15 percentage points.

Branch usage has dropped by 27% on an average across Asia between 2007 and 2011, while usage of the Internet and mobile banking have increased by 28% and 83%, respectively, says the survey, which was also conducted across the Asia-Pacific region.

When it comes to digital banking, the survey said, "India leads growth in Asia in mobile and Internet usage for banking. While there was a 15% decline in branch usage here, the growth in usage of the Internet and mobile banking has almost tripled."

"For the first time since we started this survey in 1998, we see a marked shift away from using branches as a main channel for interaction in many markets. This is a fundamental shift in consumer behaviour, and has significant implications for banks.

The scale of branch network is a less decisive factor for capturing customers now," Thomas pointed out.

The survey also highlights a number of changes in consumer mindset when it comes to accessing financial services after the global financial crisis.

The worst casualty is loyalty as there is a full 40 percentage point drop in loyalty since 2007, though 95% are seemingly satisfied with their main banks, says associate partner Jatin Pant.

The average number of banking relationships across the country rose 19% from 1.4 in 2007 to 1.7 in 2011, while the average percentage of people willing to shop around rose 15, marking a greater willingness of consumers to vote with their feet and engage with a broader variety of financial institutions, the McKinsey survey said.

"While the consumers say they want to consolidate their banking relationships, they continue to shop around because banks are not delivering the products and services, such as frontline services, that can lock them in," it said.

When it comes to financial planning too, there is a marked progress with the percentage of consumers using financial planners soaring from 14% in 2007 to 43% in 2011, while the percentage of consumers willing to take risks on capital growth rose by 20% to 44%, up from 24%. At the same time, the survey says, dissatisfaction too rose with their financial planners.

"On an average, only 51% are satisfied with their financial planners in 2011, as compared to 73% in 2007," said Thomas.

NDTV - A majority of Indians prefer to use the Internet for banking and other financial services than shopping online, shows a new survey. Almost 57% of Indian respondents using the Internet prefer to bank online and use other financial services due to hassle-free easy access and time-saving features of online banking, according to the survey conducted by research firm Ipsos.

Checking information on products and services online comes a close second at 53%, while 50% shop for products online. Around 42% of respondents in India surfed online to look for jobs in the last three months, the survey said.

"Online banking has made things much easier for the people and it saves a lot of time. It has eliminated the hassle of the traditional way of banking where one had to stand in the queue and fill up several forms," Ipsos India head (marketing communication) Biswarup Banerjee said.

Most of the banks in India have introduced customer-friendly online banking facility with advanced security features to protect customers against cybercrime.

"The easy registration process for net banking has improved customers' access to several banking

products, increased customer loyalty, facilitated money transfer to any banks across India and has helped banks to attract new customers," he added.

The Indian results closely track the global trends as well. Conducted among 19,216 people from 24 countries, the survey showed banking and keeping track of finances, shopping and searching for jobs are the main tasks of Internet users around the globe.

Overall, 60% of people surveyed used the Web to check their bank account and other financial assets in the past 90 days, making it the most popular use of the internet, Ipsos said.

Globally, shopping was not too far behind at 48%, the survey showed, and 41% went online in search of a job. In terms of country preferences, almost 90% of the respondents in Sweden use e-banking. Online banking has also caught on in a big way in nations like France, Canada, Australia, Poland, South Africa and Belgium, the survey showed.

The Germans and British come on top for using online shopping with 74% of respondents in both countries having bought something online in the past three months. They are followed by 68% of respondents in Sweden, 65% in the US and 62% in South Korea.

The electronic revolution which has set the Banking sector in motion appears to be Internet banking. The tremendous advances in technology and the spread of information technology have brought in a paradigm

shift in banking operations. The Internet seems to be the new delivery channel in the banking sector which offers firms a new frontier of opportunities and challenges. Despite these possibilities, there are various psychological and behavioral issues such as trust, security of Internet transactions, reluctance to change and preference for human interface, which appear to impede the growth of Internet banking. This paper examines the factors that affect the adoption of Internet banking in India. It also highlights the major services of I-banking in India. A quantitative survey sheds more light on this research issue. The data was collected from online survey in the Northern region, which is probably one of the most developed regions of the country.

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