

## A Study of E-Banking and its Authentication Process

Anil M. Tirkar

( Assistant Professor)

Smt. L.R.T. College of Commerce, Akola.

e-mail : [aniltirkar@rediffmail.com](mailto:aniltirkar@rediffmail.com)

Mobile : 09850702132

### Abstract :

Internet banking is changing the banking industry, having the major effects on banking relationships. Banking is now no longer confined to the branches where one has to approach the branch in person, to withdraw cash or deposit a cheque or request a statement of accounts. In true Internet banking, any inquiry or transaction is processed online without any reference to the branch (anywhere banking) at any time. Providing Internet banking is increasingly becoming a "need to have" than a "nice to have" service. But lots of risk is found in case of internet banking as customer is not stand in front of authorized bank officer during accessing the different services of e-banking. That's why the authentication process is very important in e-banking so that we are going to see different authentication factor to provide more reliability to e-bank customer.

### Keywords :

E-Banking, Services, Authentication, Mutual Authentication, Multi Factor Authentication.

### I. INTRODUCTION :

Internet banking, sometimes called online banking, is an outgrowth of PC banking. Services which uses the Internet as the delivery channel by which to conduct banking. All the services that the bank has permitted on the internet are displayed in menu. Once the branch offices of bank are interconnected through terrestrial or satellite links, there would be no physical identity for any branch. It would be a borderless entity permitting anytime, anywhere and anyhow banking. Internet banks are also known as virtual, cyber, net, interactive, or web banks.

In all these new delivery channels the most important requirement pertains to the need for identifying the customer who would no longer be visiting the branch premises but would be accessing services of the bank through the new delivery channels. Authentication plays a vital role especially in the cases where the customer is not present in front of the banker or its authorized representative. This assumes more significance in online banking as well, where a public medium of access such as the Internet is used as the means of accessing the bank's IT systems (and thus ultimately the funds too, by the customer). Selecting the right technologies for identifying the correct user is the need of each bank during providing the various online services to the customer.

### II. OBJECTIVES :

- a) To study aspect of e-banking its services.
- b) To study need of authentication in e-banking process.

### III. E-BANKING SERVICES :

#### 1) Opening an account :

Most banks that provide Internet services allow customers to open new accounts by accessing the bank website, logging in, filling in the application online and either submitting it online or printing it and handing it to a teller at the branch.

#### 2) Accessing account information :

This service allows customers to obtain information about other services available online such as opening and closing accounts, checking account balances, discovering and checking the latest updates and inquires (transactions that are taking place) that affect their accounts and transactions.

#### 3) Electronic Check conversion :

Through this service, customers can convert a paper check to an electronic payment. This service allows customers to take an amount from their account and put a hold on it until the other party receives the check and withdraws it. The benefit is that normal checks take longer time to be processed.

#### 4) Transfer funds :

Customers can easily to log in to their accounts, check their balances, and transfer funds in between their accounts to cover any shortages in their accounts.

#### 5) Bank statement :

This service is a bank document that customers can access through their accounts to check the record of their transactions. This service allows customers to go over the previous year's transactions. This

document could be printed online or saved as a word or PDF document on their computers for future evidence. Banks vary by the number of months they allow their customers to review..

**6) Purchase bank products :**

This service allows its customers to purchase products electronically. Products are different from banks to banks but they vary such as cars, gold, mortgage, land, silver, etc.

**7) Download account information :**

This is a service that enables customers to download any documentation of the services available and account information.

**8) Pay bills :**

Customers have the ability to go to their accounts, log in, check their balances and check any required payments they wish to make for their credit cards, or other bill payments that are registered on their account. They can pay all their bills online safely, easily, and quickly.

**9) Order check or deposit book :**

An order check or a deposit book is a booklet of blank checks which enables a bank account holder to draw money from his/her checking account deposits by paying bills, paying companies, etc. Internet banking has allowed their customers to order these checks online. Banks will send them to the customers by mail.

**10) Cheque reconciliation :**

This is the process of matching and comparing figures from accounting records against those presented on a bank statement. Bank reconciliation allows companies or individuals to compare their account records to the bank's records of their account balance in order to uncover any possible discrepancies. Internet banking moves this service online to make customers be more comfortable and secure in use of bank services, which will increase the usage of these services and customers' satisfaction with them.

**11) Make IRD payments :**

IRD is income you which is not receivable during the lifetime. IRD is subject to both income and estate taxes, and if possible to -skip taxes, too. The most common source of IRD is an IRA or other retirement plans. Since IRD is not received before death, it is not included on the final income tax return. However, the estate will have to pay federal estate tax, and state death tax. However, This is a service that banks have made it available online to clarified their customers of the process needed to complete such service. Rather than going to a bank, Internet banking has simplified it to be processed electronically.

**12) Change passwords :**

This service is a security issue that allows account holders to ensure that their accounts are safe from fraud or intruders. They can change their personal passwords as many times as they want. This service requires the customer to answer some questions, to enter their old password, and to the new one, to verify their identity, then allowing them to change their personal password.

**13) Alerts :**

This is reminder or a notification for customers to inform them of any new or processed transactions have occurred. This service also informs customers about balance issues, new products that have been initiated, and about transactions that have been completed.

**14) Find locations and ATM :**

This service informs bank customers about the locations of the bank's ATMs. This service is most beneficial when people travel or when some ATMs are out of service or under maintenance.

**15) Request a credit card or debit card :**

By using the Internet and accessing the bank website, customers are allowed to purchase or request a new or second debit or credit card. These days many people are using debit and credit cards, so there is no need to go and stand a line to request such service.

**16) Request a loan and check status :**

Customers can log in, and request a loan by filling in a form that requires them to enter their personal information and loan requirements. They submit the form and receive an answer online after the bank processes the application. Some banks prefer to respond by email, while others call the customers and explain the reasons for denying or accepting the loan request.

**17) Housing mortgage :**

This is a service that the bank offers by loaning money to their customers who have good credit histories to finance the purchase of real estate, usually with specified payment periods and interest rates. The borrower (mortgagor) gives the lender (mortgagee) a lien on the property as collateral for the loan. Internet banking is offering this service for the customers by requiring them to fill the online application. While the online request if processing, the bankers are fulfilling their requirements to ensure the customers fulfill all the bank requirements.

**18) Stock information :**

This service informs customers about the stock market. It sorts stock information in different ways, such as old price, new price, etc. This service is available at most banks, but how it is presented to customers is what differentiates this service among the banks.

#### **19) Tax documents and information :**

Banks help their customers complete many tax tasks by offering them tax documents online, helping them to complete and submit these forms online. Banks have become places where an account holder can go ask questions and resolve difficulties they are facing with their taxes.

#### **20) Exchange and prime rates :**

Customers can be all kind of nationalities. Therefore, banks offer all kind of currencies to allow their customers and account holders to find the best exchange rate so they won't lose money while converting currencies. By offering this type of service, the bank is showing how important their customers are to them. For Example, a website that I have found converts 164 currencies. This website which have being accessed daily (<http://www.oanda.com/convert/classic>).

#### **21) Digital Signature :**

This is an electronic signature that can be used to authenticate the identity of the sender of a message or the signer of a document, and possibly to ensure that the original content of the message or document that has been sent is unchanged. Digital signatures are easily transportable, cannot be imitated by someone else, and can be automatically time-stamped. This service applies the ability to ensure that the original signed message arrived means that the sender cannot easily repudiate it later. This service is a secure approach that gives the customers the safety and security they need.

### **IV. NEED OF AUTHENTICATION :**

We already seen that the retail customers of banks have perhaps benefited most by the use of technology based systems such as Core Banking, Clustered systems, as well as delivery channels such as Automated Teller Machines, Internet banking and mobile banking, etc. In all these new delivery channels the most important requirement pertains to the need for identifying the customer who would no longer be visiting the branch premises but would be accessing services of the bank through the new delivery channels. Identification in the context of banks happens through a variety of means but the most important aspects which are checked pertain to the account number of the customer and the name of the customer. Once the identification process is completed, the next important factor to be validated pertains to authentication of the customer – to ensure that the person who claims to be the customer is indeed the one who is the customer.

Authentication plays a vital role especially in the cases where the customer is not present in front of the banker or its authorized representative. This assumes more significance in online banking as well, where a public medium of access such as the Internet is used as the means of accessing the bank's IT systems (and thus ultimately the funds too, by the customer). There are multiple ways through which banks can authenticate users. These range from the simple systems such as a combination of the username and password to complex systems such as biometric and / or one time usage based variable tokens. As technology continues to change, banks need to adapt their security systems to effectively combat threats posed by malafide intents, imposters, hackers, thieves, and the like. Selecting the right technologies for each organization cannot be generalized.

With the large scale usage of Internet banking, the attendant risks of Internet also began to surface thus exposing the bank as well as the customer to risks, Cases of malafide access to customer accounts, fraudulent withdrawal of funds, phishing, spamming and other such online frauds began to surface. Authentication has become one of the main factors in internet banking, for banks to provide secure and safe banking to the users. This prompted the Reserve Bank of India (RBI), as the regulator of the banking system in the country, to review the entire gamut of Internet Banking and come out with guidelines for authentication in respect of online banking. A similar approach was followed in the other countries of the world as well, with the Federal Financial Institutions Examination Council (FFIEC) in the US also issuing guidance for banks for single factor authentication in 2001 and two factor authentication in 2005 to prevent online fraud. It is interesting to note that on June 28, 2011, the FFIEC issued a Supplement to the Authentication in an Internet Banking Environment guidance first issued in Oct. 2005, while RBI issued guidelines for banks to implement two factor authentication for online banking in 2008 itself. These have, to some extent, mitigated the risks associated with Internet Banking.

### **V. AUTHENTICATION PROCESS – OVERVIEW :**

Authentication is the process of verifying a claim made by a subject that it should be allowed to act on behalf of a given person, computer, process, etc. Authentication process is preceded by Authorization, which in the banking context, is preceded by Identification. Authorization, involves verifying that an authenticated subject has permission to perform certain operations or access specific

resources. Authentication procedures are based on three factors related to the user – i.e. the person who is authenticating, say a transaction in Internet Banking.

They are

1. User knows
2. User possesses and
3. User is.

The following are the various options used under each of the three factors.

User knows	User possesses	User Is
Username Password PIN Card No. CVV 2 3D Secure/ VbV Identifiable picture	USB Token Smart Card OTP SMS/token Swipe cards Mobile Signature Fingerprint	Palm print IRIS Voice Vein pattern

**Table 1: Authentication Factors**

#### A. Types of Authentication :

Authentication mechanisms are of three kinds based on the authentication factors as shown in Table1. Those include

##### 1) Single Factor Authentication-

An authentication mechanism that utilizes any one of the factors is called single factor authentication. This is the basic authentication method. (For example, a User id and password comes under this category).

##### 2) Two Factor Authentication-

An authentication mechanism that utilizes a combination of two factors i.e. (User knows, User possesses). This method is used by various banks for authentication for online banking. E.g. User using a password as the first factor (User knows) and a One-Time Password (OTP) as the second factor (User possesses) to perform say, a funds transfer transaction.

##### 3) Multi Factor Authentication-

An authentication mechanism where two or more factors are used in which one of the factors is necessarily pertaining to 'the user is'. (For example, a large value transaction authorized in a bank by using a combination of the person's user id, a smart card and his biometric authentication factor).

#### B. Mutual Authentication :

Mutual authentication or two way authentication can be provided between the user and the Organization. It refers to two parties authenticating each other. When describing online authentication processes, mutual authentication is referred to as website-to-user authentication. By means of this authentication, the user knows that he/she is on the valid banking website. Mutual authentication can be implemented by providing some challenge questions. The customer selects the image (identifiable pictures), image title and a text phrase (optional) from a collection of images which are provided in the banking website at the time of enrollment. The customer can further change this image during his first login. Further when customer enters login id and before entering the password, the site randomly asks these challenge questions and when the user answers it, it displays the image, title and phrase. If the displayed image is correct then customer can enter the password and can login in. If not the customer can stop logging in and can contact the bank. This makes the customer to know whether it is a real banking website or fake website. This facility provides the customer and server to authenticate mutually so that we can reduce phishing attacks.

Identifiable pictures (images) are one of the authentication factors that can be used to provide website authentication. These identifiable pictures act as an extra layer of authentication to prevent unauthorized access to the accounts and assure that the customer is at the valid online banking site. Identifiable pictures used for web authentication can be stored in three different ways. They are

1. Images stored at server side (web server),
2. Images stored at client side, and
3. Images can be divided into two shares, storing one share at server side and the other share at client side and merging the two shares using visual cryptography.

#### C. Multi factor Authentication

Mutual authentication requires two or more of the three factors used for authenticating the user. Multi factor authentication provides users higher levels of protection for online banking fraud. Multi factor authentication includes biometrics (something the user is) as one factor; hence it improves security for online banking customers and reduces online fraud. This authentication can be provided for the

customers (corporate or individual customers) who make transactions beyond the threshold value that was set up by the bank.

## VI. CONCLUSION :

In this way we conclude that E-banking is a borderless entity permitting anytime, anywhere and anyhow banking. This facilitates us with all the functions and many advantages as compared to traditional banking services. We also seen that what are the different risk are found and how to authenticate the validate customer by the process of authentication. We studied that using multi factor authentication process is important to provide higher level of protection for online banking fraud.

## REFERENCES :

- 1) Bajaj Kamlesh k. (2003), "E-Commerce", Tata McGraw-Hill Publishing, New Delhi.
- 2) Christian Crumlish (2000), "The Internet", BPB Publication, New Delhi.
- 3) Gupta V.(2002), "Overview of E-banking", E-banking : A Global Perspective Bankers.
- 4) Rich, Jason R. (2000), "Starting an E-Commerce Business", IDG Books, New Delhi.5)
- 5) Samantha Shurety (2001), "E-business with Net Commerce", Addison Wesley, Singapore.
- 6) Sudalaimuthu S., S.Anthony Raj, "Computer Application in Business", Himalaya Publishing House.
- 7) Fraud Vulnerabilities in Site Key Security at Bank of America, Review draft to Bank of America/RSA: June 26, 2006, Cambridge, MA, July 18, 2006
- 8) "E-Banking In India – Major Development and Issues", by Sathya Swaroop Debashish and Bishnu Priya Mishra – Pranjana, vol. 6, no.1. Jan – July 2003.
- 9) X. Xu, Mark, Wikes, Siobhan, & H. Shah, Mahmood (2006). E-Banking Application And Issues In Abbey National PLC. E-Technologies, Retrieved 01-01-2009.