

## **Mobile banking - Issues & security challenges**

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**Abstract** – Mobile banking is an electronic system and tool that provides many basic services available in daily, traditional banking, but does so using a mobile communication device, usually a smart phone with the ease of mobile smart phones and their wide variety of applications today, it's not surprising the mobile banking is now coming into full vogue. However, the concept and ability is not a new concept.

Now a day's mobile phone is a common technology device today that became part of every individual in the information era. Mobile Banking is an emerging alternate channel for providing banking services. India is the second largest telecom market in the world, which is having high potential for expanding banking services using mobile.

This study plays an important role in identifying the key factors and issues that help in the adoption of mobile banking. This research paper defines many issues and challenges which are facing in use of mobile banking.

This paper is classified into following categories: m-banking overview, Features & Benefits of Mobile Banking, issues & security challenges and suggestions for improving issues and security.

This paper mainly focuses on the mobile banking issues and security of mobile banking. Mobile banking is attractive because it is a convenient approach to perform but there are security shortfalls in the present mobile banking implementations. This paper discusses some of these issues in mobile banking Security.

**Keywords** -Mobile Banking, Privacy, Security, Challenges & Trust.

**Introduction**

Financial services and transactions by using the mobile device are called Mobile banking. Mobile banking has come to occupy a significant position in banking in a very short span of time and is expected to provide much needed platform for taking banking to the unbanked masses.

Mobile banking certainly seems to be one of the biggest innovations in the field of banking. Mobile banking communications represents that mobile phones are growingly accepted with banks as advice for following purposes like online payments, account management, risk management, information, marketing and other services offered by it.

Mobile banking is not only providing banking facilities to customers anytime or anywhere but as well as mobile banking significantly decreasing service costs also. The mobile banking is unique in terms of ease of use, fastness in transactions, time spent in query solving and transaction as a whole. Day by day users are continuously increasing and using the mobile banking services for improving the financial services like savings, insurance, money deposits, etc. without wasting time.

But in mobile banking there is some security issues & challenges due to this customers are don't like to use mobile banking because they don't trust on mobile banking facility and security. So to make mobile banking secure the first challenge is -

- (a) To improve mobile banking security and make trust among the customer
- (b) Second problem is to make it user friendly by which user can understand.

We have to mainly concentrate on two point first one is security, privacy and trust on mobile banking because customer due to the lack of security and awareness about mobile banking technique they not want to use it in financial system because they not trust and feel risk on mobile banking so we have to make secure and make trust on customer.

Second one is make it user friendly means make it easy to use by which any customer can use it easily without any training they can use it easy and trustfully.

**Objectives and Methodology**

The objectives/purpose behind this research paper are as follows –

- (1) To, study what is mobile banking.

- (2) To, study the features and benefits of mobile banking.
- (3) To understand the issues involved in using mobile-banking.
- (4) To, understand the security challenges involved in using mobile-banking
- (5) To, suggest the tips for improving the issues and security of Mobile Banking.

**Methodology** – Methodology for this research paper are as follows -

- (a) The nature of study is descriptive.
- (b) In this paper the secondary data has been consulted for the purpose of study.

**Secondary data** - Secondary data was collected from -  
Various research papers, websites, various articles and journals.

**Limitations of Study** – The limitations of this study are as follows –

- (1) Time Consuming.
- (2) This study used secondary data so it may be less reliable.

### **Review of Literature**

#### **V. Devadevan (2013)**

This research defines the Issues and Challenges of mobile banking in India. This Research explores the opportunity of technology make possible services to provide better customer experience and convenience. India is the second largest telecom market in the world, which analyze the security issues in Mobile banking among the banking customers in India.

#### **Bahl, Sarita (2012)**

This study defines that privacy and security factors are the big issue in mobile banking. According to this study if security and privacy factors or issues are recognized then forthcoming mobile banking system would be great successful.

**Gamoorthy Avinaya, Sha and Sankar .C, Sangeeta.M, 2012, “Mobile Banking –An Analysis”,**

This study focus on m-banking performance. Paper also explains mobile technology issue in security and suggests possible solution. The services offered by mobile banking included getting information regarding account , transferring of funds, sending the request of check book ,managing deposits, checking transactions and so on. This paper also describes mobile banking models.

**Singh Preeti, Bamoriya Sharma Prerna, 2011”Issues and Challenges in Mobile Banking in India: A Customer’s Perspective”,**

This paper identifies challenges of m-banking in India .Customers are facing many problems in using m-banking and in mobile handset operability and also various issues regarding security in m-banking transaction. Paper focus on issue and challenges in m-banking in India form customer’s perspective. The study identified certain issues to banks, mobile handsets and telecom operators’ viz mobile handset operability, security /privacy etc. Privacy and security are another critical issue for customers.

**Uppal R.K, 2011,”Mobile Banking in India: An empirical Analysis”,**

This paper focuses on adoption and usage of m-banking services & includes the challenges and difficulties of m –banking services like high charges, slow data transmission and in security.

Due to this difficulties customer do not prefer m-banking.

**Bamoriya and Singh (2011)**

Found that the mobile banking has the issues and challenges like mobile handset compatibility, standardizing, software downloading, privacy & security.

**Sharma and Singh (2009)** Found that the users of Indian mobile banking are specially concern with the following security issues like financial frauds, misuse of account and user friendliness issue - difficulty in remembering the different codes for various types of transaction, application software installation & updation due to lack of standardization.

**Mobile banking**

Today, the profitability of the banking sector depends on the best relationship with the customers. And nowadays today’s consumer banking needs are getting more and more complex and demands are for more innovative products. So give them better services banks have

introduced a new profitable technology called MOBILE BANKING. And many more like internet banking, ATM, debit card, credit card etc.

Mobile banking was introduced in the late 1990s and the beginning of 2000s. Mobile banking is a service which provides the banking facilities with help of mobile phone.

**According to (Barnes & Corbett, 2003)**

Mobile banking (M-Banking or m-banking) is defined as “a channel whereby the customer interacts with a bank via a mobile device, such as a mobile phone or personal digital assistant (PDA).

Mobile banking can be define as the ability to conduct bank transactions via a mobile phone or more broadly – to conduct financial transactions via a mobile terminal **(Drexelius & herzig, 2001)**

Mobile banking services allow the customers to check the account balances, transfer funds between accounts and order for electronic bill payments. There is a vast market potential for mobile banking due to its always-on functionality and the option to bank virtually anytime and anywhere **(Kleijnen et al, 2004; Herzberg, 2003; Rivari, 2006; Laukkanen, 2007).**

Mobile banking is a technological innovation, evolving much faster than Internet banking enables customers to do banking transactions via mobile or handheld devices operating in a wireless environment **(Herzberg, 2003; Laukkanen, 2007a; Kleijnen et al, 2004; Laukkanen, 2007b)**

With mobile banking technology, banks can offer a wide range of services to their customer. M-banking gives ability to customer to control their cash outflows anytime, anywhere, without having to connect to internet.

ICICI bank pioneered in mobile banking service in India. Among public bank, Union bank of India was first to introduce mobile banking (Ali et al.2010)

According to the mobile banking services it can be divide on two types -

- (a) First one is SMS banking,
- (b) Application based banking

SMS banking refers to provide the information related to accounts through the SMS whenever you use transaction from your account it alert about your transaction

Application based banking this is refers to provide the banking facility through mobile with the help of mobile application this facilities are available in smart mobile phone by downloading application of banking services we can use it.

Mobile Banking is an emerging alternate channel for providing banking services. India is the second largest telecom market in the world, which is having high potential for expanding mobile banking services.

The bank provides mobile banking services to their customers, wishing to increase their customer share by removing all the obstacles in the way of adoption of mobile banking services.

Transactions of mobile banking can be broadly divided into two types:-

**(a) Push type**

**(b) Pull type.**

Push type is a one-way transaction where our bank sends us information pertaining to our account through Short messaging service.

Pull type is a two-way transaction, where we send a request and the bank replies.

RBI (Reserve Bank of India) sets up the operational guidelines for banks for mobile banking Transactions in October 2008 under the Payments and Settlements Act 2007 with fewer Revisions and clarifications in further releases.

The key points are as follows –

- (a) Only those banks which are licensed and have a physical presence in India can offer mobile Banking services to its customers.
- (b) Banks, which implemented core banking solutions (CBS), can provide mobile banking.
- (c) Mobile banking services should be offered through any mobile phone independent of the network operator. Etc.
- (d) Only INR based transactions allowed, and cross border inward and outward transfers are prohibited.
- (e) The services are restricted to banking customers and debit/credit holders issued as per RBI guidelines.

Through M-banking banks provides several services to customers. These services are as follows

- (1) Enquiries of mini statement, account balance

- (2) Payment of bill, mobile recharging
- (3) Alert on minimum balance, balance checkin
- (4) Request for cheque book.
- (5) Blocking of lost and stolen cards, Information related to interest rates etc.
  
- (6) General information like weather updates, news.
- (7) Monitoring of term deposits.

### **Features & benefits**

The features of mobile banking are as follows –

- (a) Simplicity and usability
- (b) Mobile banking ensure easy accessibility, it hardly matters whether you are present at that particular place where your bank is situated. You can make the transaction from any place.
- (c) Secure login is one of the main features of mobile banking.
- (d) Mobile banking insures all the time availability.
- (e) No need to have your statement updated physically at a branch anymore. Access your account history through your Mobile Banking app with a single click. With the m passbook you can access your account history anytime.
- (f) Mobile banking is more economical.
- (g) Mobile banking application must be available globally word-wide.

### **The general benefits/advantages of mobile banking are as follows-**

- (1) **Cost Reduction** - The biggest advantage of mobile banking offers to banks is that drastically reduced the costs of providing service to the customers.
- (2) **Speed:-** With the help of 4G technology, the customers make their banking transaction through mobile in the fraction of second.
- (3) **Economical:-** mobile banking is very less expensive or cost effective and banks provides this services in low cost or free of cost to customers.
- (4) **Convenient:** Mobile banking provides the customers to anyplace, anywhere and any time banking transaction with the help of services. This service is very fast, easy and convenient by

each mobile or smart phone users. The ability to access bank accounts, make payments, and even track investments regardless of where you are can be a big advantage.

(5) **Save time**: mobile banking save a lot of time. Instead of allocating time to walk into a bank, you can check balances related to accounts, schedule and receive the payments, transfer the money and organize your accounts when you're on the go.

(6) **Secure** - Good mobile banking apps have a security guarantee. Mobile banking is said to be even more secure in comparison to online/internet banking.

(7) **Availability** - Mobile banking is available round the clock 24/7/365, it is easy and convenient and an ideal choice.

**Advantages of mobile banking**, from both the perspective of the bank and customer, include: -

#### **To customers**

Benefits to customers includes –

(A) Customer has no need/requirement to stand on bank counters for enquiries.

(B) Customers can pay his utility bills in time & saves the penalties.

(C) Give information at anytime and anywhere.

(D) For customers mobile banking reduces cost and save their precious time.

(E) Customer can save his valuable time in banking transaction and save in travel cost reaching the bank branch.

(F) Mobile Banking gives you the privilege of anytime and anywhere banking.

#### **To the Bankers**

This includes the following –

(A) Decreased infrastructure costs.

(B) Banks can utilize the time saved for expansion of business, marketing and sales activity by channel migration of customers to mobile banking.

(c) Mobile phones now often include face-recognition technology, fingerprint scanners, and even iris scanners.

This biometric data helps the bank ensure the “customer” is actually who they claim to be, and this biometric data provides more security and protection for customers than simple telephone banking passwords or requests for birth-date confirmations can provide..

(D) Mobile banking enables banks to decrease costs of courier, communication and paper works etc.

(E) Efficient utilization of experts and human capital.

(F) Mobile banking can increase banks outreach to rural areas while reducing costs.

(G) Document sharing and assistance with other digital banking services.

(H) Banks providing mobile banking services can have competitive advantage on those banks, which are not providing these services.

### **Mobile banking issues**

The issues in mobile banking are as follows –

(a) **Lack of Awareness** – Because of the lack of knowledge and awareness about mobile banking is also a reason for distrust in mobile banking services and it is also another reason for risk and security issue in mobile banking because this is new technology in banking and financial system so all banking customer are not aware about it and feel risk to adopt it so it is also a big issue in front of mobile banking services.

As we know about it that awareness of user’s is also an important factor and issue for mobile banking users. Due to lack of knowledge and awareness about mobile banking also have doubts about it. The mobile banking technology is new for current time users and consumers in financial processing over mobile system. In that case all banking users and consumers are not aware about it and feel risk to accept it and not feel free to using it on mobile system. So it is also a big factor or issue in front of mobile banking applications.

(b) **Virus & malware**- like in computer system there is also risk on virus and malware attack on mobile banking services. So it is also big issue in mobile banking services.

(c) **Authentication issue**- In mobile banking there is authentication risk at the login time. Another risk related to authentication in mobile banking as if mobile has stolen then attacker may get the password through the mobile and can access the account by using your id and password.

(d) **Handset operability** -There are a large number of different mobile phone devices and it is a big issue for banks to offer mobile banking solution on any type of device.

(e) **Scalability and reliability**-The customer may be sitting in any part of the world and these banks need to ensure that the system are up and running in a true. Customer will find mobile-banking more and more useful. Banks unable to meet the performance and expectation related to reliability may lose the confidence of customer.

(f) **Personalization**- It would be expected from the mobile application to support personalization such as: Language preference, format of date and timing, Amount format, Default transactions, Standard Beneficiary list Alerts etc.

(g) **Privacy Issue** - According to Chen (2006); Ashta (2010); Smith (2004); Bhatnagar et al Weber (2010); Stewart and Segars (2002); Suh and Han (2003); Wang et al. (2003); Ba and Pavlou (2002); Luarn and Lin (2005) privacy issue is one the critical issue in Mobile Banking.

Banzal (2010) stated that privacy issue deals with the risk of disclosure of personal and financial information, it also deals in unauthorized access to stored data, especially personal information and transaction history and location information that may target direct advertising and could also encroach on privacy rights of consumers.

### **Security challenges**

The security of mobile banking services is big issue and challenge. Security defines that how much secure mobile banking for users and consumers. In mobile banking for the security purpose Pin or Password is used which may be steal by the attacker or unauthorized user if mobile device has loss or steal so user have to aware about it. Security here refers to the security of the confidential information about customer bank account. There should be any chance for information leakage. Transaction is done by mistake there should be option to undo. The physical security of device is more important. User id /password authentication of banks customer. Encryption of the data that will be stored in device for later.

**Security challenges related to mobile banking are as follows –**

(1) **Mobile banking and Security issues with WAP** - WAP stands for wireless application protocol. For the purpose of communication between devices WAP is used. Through WAP customer can realize more functionality of internet banking. Encryption process is currently used for secure data transmission between bank and users but the problem is that this encryption process is not good enough for the protection of sensitive data. Because of advancement in technology, provide end-to-end security is now necessary but through WAP it is difficult to provide end to end security. The reason behind that the data is not encrypted at gateway during the switching of protocol process, which leads to security concern for mobile banking in WAP.

(2) **SMS based Mobile banking-** SMS based mobile banking is a convenient and easy way for accessing bank but there are end-to-end security problems. Today, most of the banks in the world offer SMS based mobile banking. In this scenario, the user sends PIN number to the bank's server and then the server is ready for accepting the requests. This approach is not fully secure because the data is transmitted and the network operator has full access to the data.

(3) **SMS Spoofing Attack** - The most dangerous attack in SMS banking is spoofing attack where attacker can send messages on network by manipulating sender's number. Due to spoofing attack, most of the organizations are not adopting mobile banking through SMS.

(4) **Virus Attacks** –Virus attacks in mobile banking is also one of the most security challenges in mobile banking. There are more than fifty thousand different types of computer viruses, internet malicious program and Trojans. Software like Trojan horses can easily take up password Zeus Trojan targeted mobile bank users. Gitmo has been used by attackers to defect SMS banking. Zeus is commonly used to steal mobile transaction authentication number or password.

(5) **Digital signature risk** – For the purpose of reducing hardware cost, designer may prefer digital signature. Because of efficiency in digital signature most of the companies are interested in digital signature for authentication. But it also not totally safe risk is also associated with this.

(6) **Authentication Risks and Issues** -Authentication method used in mobile banking is the login method. However PINS authentication method is an old method and many security issues such as password and id theft were discovered in this method. This results in customer's distrust on the security service company. The security mechanism adopted by the banks face many

security issues this loophole can be easily used by the unauthorized person and thus leading to loss of trust by customers.

### **Conclusion**

The main purpose/ aim of my paper is to review of research paper on mobile banking to analyze what is mobile banking , features and benefit & most importantly the issues and security challenges behind this and also the suggestions for improving the issues and security challenges . There are various factors which have played vital role in the Indian banking sector for adoption of technology. Hence the banking sector also adopted the uses of latest technology for the sake of better customer service.

The mobile banking is defined as “the provision of banking services to customers on their mobile devices”: specifically the operation of bank current and deposit or savings accounts.

RBI (Reserve Bank of India) sets up the operational guidelines for banks for mobile banking Transactions in October 2008 under the Payments and Settlements Act 2007 with fewer Revisions and clarifications in further releases.

Mobile banking plays vital role an increasing profitability of banks. And also maintain better customer relationship, increasing customer satisfaction level, improve loyalty. Through this service customer save their valuable time, cost and other expenses.

Mobile banking has a lot of advantages/benefits for both providers (Banks) and those who avail the services (Customers).

Customer enjoy anytime anywhere banking with the help of their mobile phones. Customer has no need/requirement to stand on bank counters for enquiries. Mobile banking enables banks to decreases costs of courier, communication and paper works etc. It is cost effective for both bankers as well as customers.

In despite of many benefits mobile banking system also involves some issues/hurdle and challenges that’s why users have no trust on this. The challenges /obstacle/issues in adoption of mobile banking are customer’s education and awareness, Virus attacks, Privacy issues, Wireless networks, Handset operability, reliability etc.

There is some security related risk and challenges like (security issue with WAP, SMS based banking, digital signature risk, authentication risk etc) may come to overcome these risk and challenges we have to improve our security system and improve the authentication system for secure services and make trust in customer to use of mobile banking services and can remove barrier in adoption of mobile banking services. For safety purpose the users or customers have to follow the security related considerations or precautions.

One of the major hurdles to overcome for successful consumer acceptance of mobile banking is financial systems security. The customers must be made to understand the system and explain its safety and make them overcome their fear.

So we have to provide better security options to improve the authentication process for secure services and increase trust in adoption of mobile banking services and applications for getting benefits.

### **Suggestions for improving the issues and security of Mobile Banking**

The suggestions are as follows for improving the mobile banking issues and security –

- (1) The users and customers are not aware about the mobile banking technology so because of unawareness they don't have trust on mobile banking. So for improving the issues and security of mobile banking its first to create awareness & education related to mobile banking in the minds of users/customers.
- (2) For privacy related issue the suggestion is that applications must be downloaded from a highly trustworthy website and sure about that these applications are tested for security. Another solution is that the users have all the knowledge related to mobile banking system.
- (3) The system of mobile banking using a wireless infrastructure for the transaction process due to lack of security there may be get a risk on the customer services so customers have to make available a high infrastructure and good security for the banking process because in these wireless infrastructure highly sensitive data and information are passed through wireless network.
- (4) For making your mobile banking transactions safe the following suggestions should be taken into consideration –

- (a) Locking down your mobile device with a PIN code or lengthier password (more secure, if you use a combination of letters, numbers, symbols and avoid using common words)
  - (b) Keeping your mobile banking app up to date.
  - (c) Never allowing any website or app to remember your login details.
  - (d) Download banking apps from official sources.
  - (e) If your bank offers a facility to send a text message whenever a transaction is actioned on your account, take advantage of it.
- (5) Protecting banking transactions from frauds and other threats, some preventive measures are suggested –
- (a) Use up-to-date virus protection software and a personal firewall.
  - (b) Never share personal information with stranger & Never store personal banking details in cell phones.
  - (c) While banking and shopping online, ensure the sites are https or shttp.
- (d) Install latest Anti Virus Software, and keep it updated & Use strong passwords to lock your cell phone.

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