

TRENDS, CHALLENGES AND FUTURE FUNCTIONALITIES IN MOBILE BANKING

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ABSTARCT:

Mobile banking is a revolution that is driven by the world's one of the fastest growing sectors mobile communication technology. Like in any emerging technology, there exist barriers to the adoption of mobile banking services. Mobile banking is one of the alternatives channels available to customer for quick and efficient service at anytime and anywhere. In order to achieve the goals of business, various channel of communications to customers have to be developed through technology. In the present day banking, total automation of banking operation and is an imperative for all banks to attract more customers, provide efficient service and survive the competition apart from achieving the profit, which is the main goals of the business. Banks can also use unable banking for increasing the efficiency of their staff create a platform for better customer service and improve relationship with their customers. This study explores the trends, Challenges, and Future functionalities in mobile banking perceived critical for adoption by both mobile banking users as well as non-users, and also identified certain Challenges, mobile handset operability, security/privacy and standardization of services are the Challenges. Although the research has its limitations, the implications of the results provide practical recommendations to the all concerned parties.

Keywords: Mobile Banking; SMS Services; Application of Mobile Phone.

1. INTRODUCTION

After the success of online banking, mobile banking is the next revolutionary step which has attracted huge customers from all over the country. With this service you can perform all the banking actions such as money transfer, credit card payment, bill payment, account updates and other transactions. Mobile banking is an application of mobile computing which provides customers with the support needed to be able to bank anywhere, anytime using a mobile handheld device and a mobile service such as Short Message Service (SMS). Mobile banking facility removes the space and time limitations from banking activities such as checking account balances or transferring money from one account to another and time saving when we go to bank and doing some banking activities. Further all the other information related to your account can be accessed via your mobile phone within a span of few seconds. Internet Banking helps give the customer's anytime access to their banks. Customer's could check out their account details, get their bank statements, perform transactions like transferring money to other accounts and pay their bills sitting in the comfort of their homes and offices. But the biggest limitation of Internet banking is the requirement of a Personal Computer with an Internet connection, but definitely a big barrier if we consider most of the developing countries of Asia like India. Mobile banking addresses this fundamental limitation of Internet Banking, as it reduces the customer requirement to just a mobile phone. Mobile usage has seen an explosive Mobile banking system that allows customers of a financial institution to conduct a number of financial transactions through a mobile device such as a mobile phone or assistant. Mobile banking differs from mobile payments, which involve the use of a mobile device to pay for goods or services either at the point of sale or remotely, analogously to the use of a debit or credit card to effect an EFTPOS payment. The earliest mobile banking services were offered over SMS, a service known as SMS banking. With the introduction of smart phones with WAP support enabling the use of the mobile web in 1999, the first European banks started to offer mobile banking on this platform to their customers. Mobile banking has until recently (2010) most often been performed via SMS or the mobile web. Apple's initial success with phone and the rapid growth of phones based on Google's Android (operating system) have led to increasing

use of special client programs, called apps, downloaded to the mobile device. With that said, advancements in web technologies such as HTML5, CSS3 and JavaScript have seen more banks launching mobile web based services to complement native applications. A recent study (May 2012) by Mapa Research suggests that over a third of banks have mobile device detection upon visiting the banks' main website. A number of things can happen on mobile detection such as redirecting to an app store, redirection to a mobile banking specific website or providing a menu of mobile banking options for the user to choose desired option.

2. MOBILE BANKING IN THE WORLD

Mobile banking is used in many parts of the world with little or no infrastructure, especially remote and rural areas. This aspect of mobile commerce is also popular in countries where most of their population is unbanked. In most of these places, banks can only be found in big cities, and customers have to travel hundreds of miles to the nearest bank. In Iran, banks such as Parsian, Tejarat, Mellat, Saderat, Sepah, Edbi, and Bankmelli offer the service. Banco Industrial provides the service in Guatemala. Citizens of Mexico can access mobile banking with Omnilife, Bancomer and MPower Venture. Kenya's Safaricom (part of the odVafone Group) has the M-Pesa Service, which is mainly used to transfer limited amounts of money, but increasingly used to pay utility bills as well. In 2009, Zain launched their own mobile money transfer business, known as ZAP, in Kenya and other African countries. In Somalia, the many telecom companies provide mobile banking, the most prominent being Hormuud Telecom and its ZAAD service. Telenor Pakistan has also launched a mobile banking solution, in coordination with Taameer Bank, under the label Easy Paisa, which was begun in Q4 2009.

In a year of 2010, mobile banking users soared over 100 percent in Kenya, China, Brazil and USA with 200 percent, 150 percent, 110 percent and 100 percent respectively. Dutch Bangla Bank launched the very first mobile banking service in Bangladesh on 31 March 2011. This service is launched with 'Agent' and Network' support mobile operators, Banglalink and Citycell. Sybase 365, a subsidiary of Sybase, Inc. has provided software solution with their local partner Neurosoft Technologies Ltd. There are around 160 million people in Bangladesh, of which, only 13 per cent have bank accounts. With this solution, Dutch-Bangla Bank can now reach out to the rural and unbanked population, of which, 45 per cent are mobile phone users. Under the service, any mobile handset with subscription to any of the six existing mobile operators of Bangladesh would be able to utilize the service. Under the mobile banking services, bank-nominated 'Agents' perform banking activities on behalf of the banks, like opening mobile banking account, providing cash services (receipts and payments) and dealing with small credits. Cash withdrawal from a mobile account can also be done from an ATM validating each transaction by 'mobile phone & PIN' instead of 'card & PIN'. Other services that are being delivered through mobile banking system are person-to-person (e.g. fund transfer), person-to-business (e.g. merchant payment, utility bill payment), business-to-person (e.g. salary/commission disbursement), government-to-person (disbursement of government allowance) transactions.

In May 2012, Laxmi Bank Limited launched the very first mobile banking in Nepal with its product Mobile Khata. Mobile Khata runs on a third-party platform called Hello Paisa that is interoperable with all the telecoms in Nepal viz. Nepal Telecom, NCell, Smart Tel and UTL, and is also interoperable with various banks in the country. The initial joining members to the platform after Laxmi Bank Limited were Siddhartha Bank, Bank of Kathmandu, Commerz and Trust Bank Nepal and International Leasing and Finance Company. Currently, the users of Hello Paisa can Buy movie tickets, shop online, buy mobile recharge, pay bills (for services such as ADSL, DTH service, landline phone, postpaid mobile), make merchant payments, transfer money etc. On June 2013, one of the leading money transfer service provider in Nepal, "Prabhu Money Transfer", joined Hello Paisa to offer its Financial Services through Hello Paisa network. Prabhu Money Transfer will add 3500 agents across the nation to the Hello Paisa network. Hello Paisa platform is interoperable between multiple banks and multiple telecoms, and is the first of its kind in the world of Mobile Banking so far. The platform was nominated as one of the top three innovators of the year 2012 by SIDA in IAP program. Barclays offers a service called Barclays Ping it, which allows transfer of money from the United Kingdom to many parts of the world with a mobile phone.

3. MOBILE BANKING IN INDIA

having the second largest mobile subscriptions in the world, experts believe that there is no stopping Mobile banking is finally gaining traction in India. With a sizeable unbanked population and the country India from being a prime market for mobile banking. According to a recent survey, nearly 17.75 million customers are on mobile screen. The leading banks in this sector are ICICI bank; HDFC and SBI. Some of the other key players in mobile banking are Axis Bank, Syndicate Bank, Canara Bank and Bank of Baroda. . Eko India Financial Services, the business correspondent of State Bank of India (SBI) and ICICI Bank, provides bank accounts, deposit, withdrawal and remittance services, micro-insurance, and micro-finance facilities to its customers (nearly 80% of whom are migrants or the unbanked section of the population) through mobile banking.

As per the latest RBI data, the volume of mobile banking transactions nearly doubled by the end of 2012 reaching 5.22 million from 2.67 million in 2011. Today, nearly 70 per cent banks in the country offer mobile banking services. Until now, the country is estimated to have around 25 million registered mobile banking customers and this number will grow manifold in the next 2-3 years, believe experts. There are more people using a mobile phone than a bank account in India. And setting up bank branches is not only expensive but time consuming. According to some studies it could easily take more than two decades for bank branches to reach the entire 1.2 billion population.

Rajeeb Chatterjee, Senior VP of ATM and mobile banking at HDFC Bank says in a recent interview to The Banker that mobile banking volumes have picked up tremendously in India over the past two years. He states HDFC Bank is among the five banks that cumulatively account for more than 80 per cent of the country's mobile banking volumes. Other banks include State Bank of India, ICICI Bank, Axis Bank and Citibank. Several telecom providers are also gearing up to serve this space. For example, Vodafone has recently launched M-Pesa, a mobile banking solution in India to cater to the unbanked population. The bank has tied up with ICICI Bank and is rolling out the solution in phased manner starting with the eastern part of India where mobile banking usage is the lowest. "For millions of people in India, a mobile phone is a bank account, a front door to a micro-business or a lifeline to people in the remotest areas," says Marten Pieters, managing director and CEO of Vodafone India. Recently Corporation Bank in Mangalore launched a mobile banking app on Android and iOS through which customers can access various facilities using net banking user ID and password.

While mobile banking is gaining traction, some in the industry are concerned whether this will send death signals to online banking, which took a while to mature. According to sources, the ratio of mobile banking to internet banking users at HDFC Bank has grown from 1:20 in 2008 to 1:6 in 2013. Chatterjee mentions in the interview that in the next 2 years, the number of mobile banking customers will equal online banking customers and will thereafter surpass the latter.

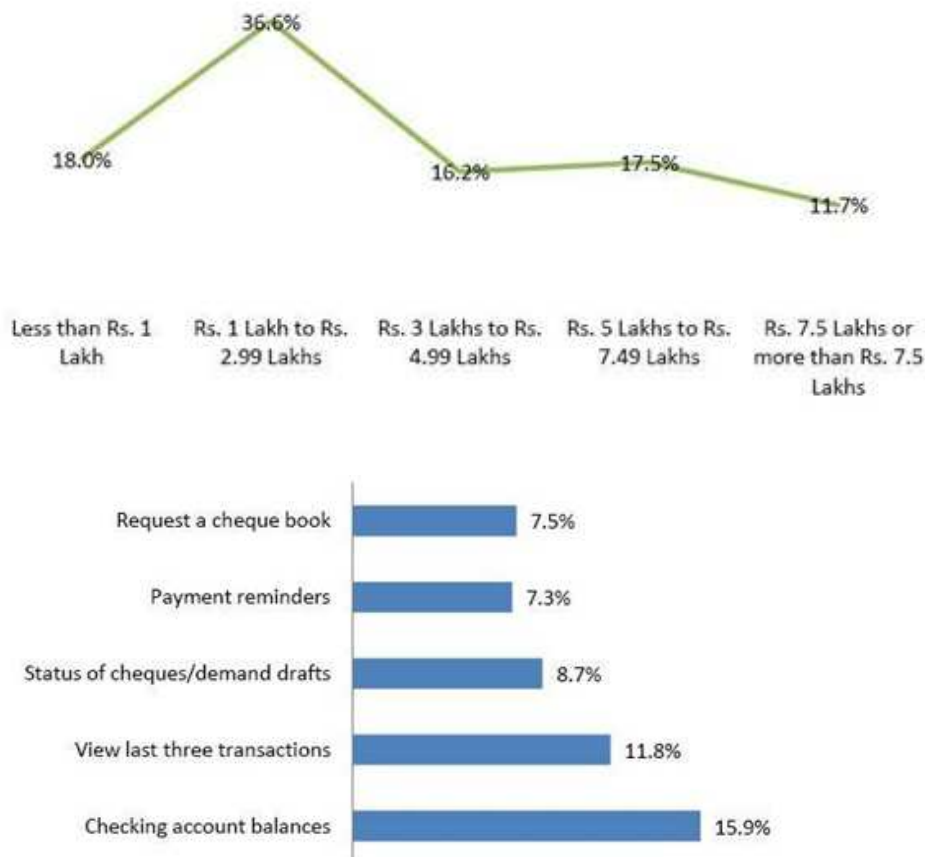
His prediction matches that of a recent IDC report that also forecasts that mobile banking will surpass the online banking channel in usage by the end of 2014 worldwide and especially in countries with a greater number of mobile subscriptions such as China, India and USA. Checking account information, balance available, credit/debit card information, cheque status, setting alerts, payment reminders, locating ATMs and bank branches, accessing mini statement, accessing loan and equity statements, insurance policy management, placing orders for cheque books etc via mobile phones are some of the services offered in mobile banking. With multiple access channels such as SMS, downloadable client, mobile Internet (WAP) mobile banking is encouraging mobile users more to explain the service.

4. MOBILE BANKING SERVICES-INSIGHT SAND REPORTS

Based on data gathered in April 2009 for Feb/March mobile banking urban Indian customers checking account balance is the most frequently cited reason for using mobile banking. 40 million Urban Indians used their mobile phones to check their bank account balances followed by viewing last three transactions. ICICI bank

continues to maintain its leadership extending in mobile space, 42% of all mobile banking users bank with ICICI, followed by HDFC (25.3%).

4.1. Most popular services and income profile (Two month ended March 2009, Urban Indian Mobile Phone Users)



Filtering the data further to understand which income groups in urban India use mobile banking more. As depicted in the chart below, mobile banking is most used by subscribers falling in Rs. 1 Lakh to Rs. 2.99 Lakhs income bracket followed by less than Rs 1 Lakh income bracket. Therefore it is observed, mobile banking is more popular among low income group of mobile users than higher income group of mobile users.

Many believe that mobile users have just started to fully utilize data capabilities in their mobile phones. Service providers are every day coming up with new services, providing methods to make the solution more easy to use, implementing techniques to improve security, launch of 3G is providing higher data transfer rate and invention of new phones more frequently is driving mobile users towards subscribing to mobile banking services. In India,

Fig. 2. Mobile banking report , Statistics on most popular mobile banking services

where mobile subscribers far exceed fixed line subscribers because of better mobile infrastructure in comparison to fixed line infrastructure has made mobile banking much more appealing in India today. Various players

involved in providing mobile banking services (banks, financial institutions, service providers, operators etc) are therefore expecting a potential growth in mobile banking industry in India.

5. OBJECTIVES OF THE STUDY

The Main objective of Mobile Banking service is penetrating new regions and geographies without having to invest in expensive infrastructure of bank branches and ATMs. The banks customers can manage many transactions from their mobile handsets without having to visit a bank branch or ATM except when they need to deposit or withdraw cash. Deposits and withdrawals via retail agents can also be automated and managed, by deploying the Estel Micro Banking module. The other Objectives were as under

1. To enriches customer experience, convenience, engagement and interaction with the bank and improves service quality perception
2. To self service empowerment to the customers and thus reduces the dependency of bank's staff to facilitate the services. The number of transactions managed by a Mobile Banking platform is many folds higher that what can be achieved through staff or ATM based delivery.

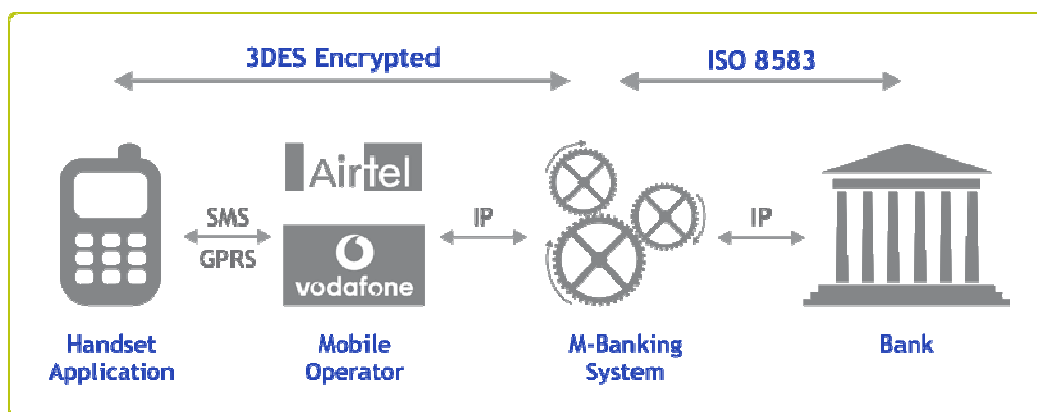
Fig.3. Mobile banking report, Mobile Banking Operating System

3 To offer quick, easy and secure deployment of different back-end hosts. Estel offers a highly secure and robust Mobile Banking platform to the banking industry, which can be integrated with existing banking infrastructure, mobile networks, pre-paid / post paid billing systems & payment gateways.

4. To building relationships, reducing cost, achieving new revenue stream will transform to enable customer and connect across entire customer life cycle

5 .To automated and manage the Deposits and withdrawals via retail agents, by deploying the Estel Micro Banking module.

6. MOBILE BANKING OPERATING SYSTEM



7. MOBILE BANKING SERVICES

Typical mobile banking services may include:

- Account history
- Monitoring of term deposits
- Access to card statements
- Mutual funds / equity statements
- Insurance policy management
- Domestic and international fund transfers

- Micro-payment handling
- Mobile & Direct to Home package
- Purchasing tickets for travel and entertainment
- Get notifications and alerts related to their accounts
- Commercial payment processing
- Bill payment processing
- Peer to Peer payments (e.g., Pop money, Isis)
- Withdrawal at banking agent
- Deposit at banking agent
- Cheque Status Enquiry.
- Cheque Book Requests.
- Credit/Debit Alerts.
- Minimum Balance Alerts.
- Bill Payment Alerts.
- Information Requests like Interest Rates/Exchange Rates.
- Cheque book & Stop Payment requests
- Transfer funds between own accounts and to accounts of others
- Withdrawal at ATMs without using debit cards
- Apply for loans and other service requests

8. TRENDS IN MOBILE BANKING

1. Integration, across delivery channels and across functionalities or lines of business. Integration across delivery channels will provide consumers with seamless access to services across desktop, mobile, car and television.
2. Unique mobile capabilities to provide differentiated service offerings. These will leverage capabilities such as voice, image capture and geo-location to provide easy to use and intuitive mobile products.
3. The combination of Smartphone adoption among the younger generation and the speed with which one can complete any complex banking transaction through mobile are making more customers luring to banks offering mobile banking.
4. Banks have mobile cheque deposits scheme, where customers can scan the front and back of a physical cheque and upload it directly to the bank site.
5. The biggest thing mobile banking could offer to customers is that it could be used as digital wallet. With 'digital wallets' consumers can pay anytime, anywhere using a Smartphone.
5. Bitcoin markets where regulations are often the biggest inhibitor to innovation in payments, having a currency that is fully predictable could be a big advantage. No-one can therefore be blamed to reach out to Bitcoin as the possible solution to roll-out digital payment solutions in markets.
6. There has been a drive to find solutions for using mobile to pay in a retail environment. These types of payments are mostly done in cash (and sometimes using traditional card solutions). While the existing solutions work well, they are still open to fraud and theft
7. Empowering women with Mobile Money. Mobile money have made big leaps and bounds in many markets, bringing this service to women has lagged because of specific constraints (like women not always owning phones or lack of education). They now get access to life-enhancing services such as savings, payments, health-care, education, and entrepreneurship.
8. Blackberry's BBM service is still very popular in many markets. One such market is Indonesia where Blackberry announced the imminent launch of BBM money in partnership with local It is likely that subscribers would send a BBM with some information to another subscriber, that will translate into an actual payment.
9. FSS Mobile Pay, leverages a single platform to enable customers, retail shop owners, and corporate to provide access to their banking services through SMS, GPRS, 3G, USSD, IVR, and WAP channels. both the parties involved, payer and payee, about the status of the committed transaction, FSS Mobile Pay keeps a check on all the events of the transaction to make it an easy, safe, secure, convenient, and affordable one. If you are

registered with FSS Mobile Pay, you will never be short of cash whenever you need it irrespective of wherever you are.

10. Recently in India there has been a phenomenal growth in the use of Mobile Banking applications, with leading banks adopting` Mobile Transaction Platform to meet the performance and reliability expectations of customers.

9. CHALLENGES FOR MOBILE BANKING SERVICE

Key challenges in developing a sophisticated mobile banking application are:

1. There are a large number of different mobile phone devices and it is a big challenge for banks to offer mobile banking solution on any type of device. Some of these devices support Java ME and others support SIM Application Toolkit, a WAP browser, or only SMS.
2. Initial interoperability issues however have been localized, with countries like India using portals like R-World to enable the limitations of low end java based phones
3. There is a myth that there is a challenge of interoperability between mobile banking applications due to perceived lack of common technology standards for mobile banking.
- 6 Money eco-systems (many participants, some behaving in unpredictable ways) makes it very difficult to ensure equilibrium.
7. Proliferation of access mechanisms to payment schemes, will dilute security, by allowing access to the payment system in many different ways. It also seems as if the proliferation of social media access, connecting in their own way, with their own hash-tags and special codes happens without clear design and architecture.
8. The customer may be sitting in any part of the world (true anytime, anywhere banking) and hence banks need to ensure that the systems are up and running in a true 24 x 7 fashion. Banks unable to meet the performance and reliability expectations may lose customer confidence.
9. India does possess some infrastructure in the forms of postal payments, reasonable transport and local governments. Therefore, any mobile banking must be inexpensive enough to be attractive for the end-customer over existing methods.
10. Although the RBI is supportive of mobile banking in India, there are many regulations t are being put into place that, only existing financial institutions and banks are allowed to offer mobile banking, all transactions must be done only in India's national currency and, only those having a valid bank account would be allowed mobile banking
11. India has 18 official languages which are spoken across the country. Additionally, two-thirds of the population in India is illiterate, creating difficulties in deployment of mobile banking solutions.

10. FUTURE FUNCTIONALITIES IN MOBILE BANKING

The following are the key functional trends possible in world of Mobile Banking.

- Communication enrichment: - Video Interaction with agents, advisors.
- Pervasive Transactions capabilities: - Comprehensive "Mobile wallet"
- Customer Education: - "Test drive" for demos of banking services
- Connect with new customer segment: - Connect with Gen Y – Gen Z using games and social network ambushed to surrogate bank's offerings
- Content monetization: - Micro level revenue themes such as music, e-book download
- Vertical positioning: - Positioning offerings over mobile banking specific industries
- Horizontal positioning: - Positioning offerings over mobile banking across all the industries
- Personalization of corporate banking services: - Personalization experience for multiple roles and hierarchies in corporate banking as against the vanilla based segment based enhancements in the current context.
- Build Brand: - Built the bank's brand while enhancing the "Mobile real estate".
- Nucleus Software is one of the few Indian IT companies to focus on products for the banking sector. Nucleus software CEO & MD Vishnu R Dusad says, he wants to take the company's flagship product, Finn

One to new markets and is also looking at the mobile banking business. Excerpts: There are many banking software vendors in India. Do you see a consolidation happening? The way global as well as Indian economy is booming, there is a lot of scope for growth for banking software...

- Mobile phone owners in the future will be allowed to transfer funds from their accounts to other mobile phone owners across networks and service providers. This is what the Reserve Bank of India's (RBI) draft operating guidelines for mobile payments aim to achieve. As per the draft, even those with the most basic mobile phones may be able to pay for transactions through their mobile in the future. RBI has permitted
- Several banks are introducing policies across a range of mobile banking developments including P2P transfer through IMPS, mobile wallet and USSD among others to enable mobile banking environment
- Building brand of the banking organization. Emerging technology and functionalities would enable to create new ways of lead generation, prospecting as well as developing deep customer relationship
- Mobile banking world would achieve superior customer experience with bi-directional communications. Among digital channels, mobile banking is a clear IT investment priority in 2013 as retail banks attempt to capitalize on the features unique to mobile, such as location-based services.
- The past few months have brought a flurry of mobile banking announcements from mobile banking vendors who are responding to growing demand from their customers and the recognition of their own powerful position in the mobile banking vendor ecosystem.

11. SECURITY

Security of financial transactions, being executed from some remote location and transmission of financial information over the air, are the most complicated challenges that need to be addressed jointly by mobile application developers, wireless network service providers and the banks' IT departments

Aspects addressed to offer a secure infrastructure for financial transaction over wireless network:

- Physical part of the hand-held device. If the bank is offering smart-card based security, the physical security of the device is more important.
- Security of any thick-client application running on the device. In case the device is stolen, the hacker should require at least an ID/Password to access the application.
- Authentication of the device with service provider before initiating a transaction. This would ensure that unauthorized devices are not connected to perform financial transactions.
- User ID / Password authentication of bank's customer.
- Encryption of the data being transmitted over the air.
- Encryption of the data that will be stored in device for later / off-line analysis by the customer.
- One-time password (OTPs) are requested by consumers to fight against cyber fraud in each time they want to perform transactions using the online or mobile banking interface. The password is expired once it has been used or once its scheduled life-cycle has expired.
- The provision of service level agreements (SLAs) is a requirement for this industry; it is necessary to give the bank customer delivery guarantees of all messages, as well as measurements on the speed of delivery, throughput, etc

Rolling out phones with, secure elements integrated into the phone, further implications, the end-user perception.

- Estel offers a highly secure and robust Mobile Banking platform to the banking industry, which can be integrated with existing banking infrastructure, mobile networks, pre-paid / post paid billing systems & payment gateways. It enables a bank's customers to access banking services securely and effortlessly using their mobile handset from anywhere, anytime, even while on the go.
- For safe mobile transactions it is always better to use alphanumeric password and do inculcate the habit of changing your password often. Further if you are doing large transactions, it is better to do it through the bank directly, rather than using mobile banking.

12. CONCLUSION

Mobile banking has evolved tremendously over the past years. As we move into 2013, there are a few key trends that we will see emerge and gain momentum. We believe that voice will be part of all enterprise class mobile applications in the next 3 to 5 years and will do more than just replace typing. Apple's personal voice assistant Sire is just the beginning, and soon we will see a of new speech-enabled uses and applications for the banking industry. Voice provides a much deeper interaction mechanism than just typing or going to a particular screen on your phone app or online. Humans use voice to communicate much more naturally than typing and have been doing so for several millennia. Virtusa believes that using voice offers a paradigm shift in user interaction. We categorize this in the following natural language queries: transaction by voice, customer care through voice, information retrieval by voice and navigation by voice. Natural language queries provide the ability to interact with your banking number app similar to your interactions with a teller or a customer care representative. We also believe that several exciting horizontal capability integrations, such as integrating with the car voice system are likely to be commonplace. We've said it over and over, but we can't ignore the continued role of mobile internet access when it comes to banking. We believe mobile devices have already displaced desktop-based internet access and will soon become the preferred vehicle for carrying out banking activities. According to research released by Google in January 2011, more consumers use smart phones to access Internet than through PCs. As such, the tipping point for smart phones has already arrived. However smart phones are predominately used for transactional or quick access, such as looking up restaurants, products or transit information. A consumer is more likely to use a tablet or a desktop for more analysis-based activity. Given this, we believe that desktop based internet access has already been replaced by I am fascinated by the massive growth in mobile phone penetration globally. This must be one of the biggest social changes that humans were ever submitted to. I am sure that this social phenomena, will eventually impact the way that we trade and pay as well. This is what I am writing about. In terms of banking, one can think of transactions being completed through mobile devices, but budgets or financial planning will still be done on desktops, potentially to be replaced by tablets. However the nature of banking activities that can be done depends on the facilities provided by your bank.

13. KEY FINDINGS IN THE STUDY

- 1) There has been a rapid growth in the adoption of banking by mobile phone in the last year: 9% of Consumers now claim to use some form of mobile banking compared to 4.3% in the autumn of 2008.
- 2) The growth in Smartphone adoption and innovation is one of several strategic factors that will result in the majority of Britons using mobile money within the next few years activities.
- 3) The recession has boosted the use of the mobile phone as a means of banking – the immediacy and control it offers are important benefits at a time when consumers are more aware of their spending
- 4) While users of mobile phone banking interact with their bank more frequently than the general population, they are using their mobiles for an increasing proportion of those interactions - mainly at the expense of branch visits and call-centre banking.
- 5) Majority of consumers who use mobile phone banking are interested in using their handset as a means of paying for goods and services.
- 6) Two thirds of the people who use mobile phone banking are interested in using their phone as a mean of organizing their finances.
- 7) Those people who use mobile phone banking like it – 57% report that they have used this channel more often during the last twelve months. More than two thirds have recommended, or will recommend, this type of banking to others.
- 8) More number of mobile phone banking users think that technology (including online and mobile phone banking) helps them manage their money more efficiently.

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