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REVIEW OF TREND IN MOBILE BANKING AND MOBILE PAYMENTS

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ABSTRACT: *Banking services using mobile phones (M-banking) have been available in developing as well as developed countries for several years, but it is not until recently new modalities of applying M-banking have started to diffuse rapidly to previously unbanked people. The main driver for the rapid development is the new M-banking services that are less expensive and have a geographical footprint defined by the reach of mobile networks in contrast to services offered by traditional retail bank branches that are out of reach for many people in rural areas from both an economic and geographical perspective. The main benefits to rural users are affordable, fast and secure transactions. The topic is interesting as M-banking access amongst previously unbanked groups is believed to have a direct, positive effect on users, positively affect a transition from informal to formal transactions and hence alleviate poverty and add lubricant to the overall economic development machinery.*

KEYWORD: Banking, Mobile Banking, Payment, Mobile Payment

INTRODUCTION

Mobile banking (also known as M-Banking, mbanking) is a term used for performing balance checks, account transactions, payments, credit applications and other banking transactions through a mobile device such as a mobile phone or Personal Digital Assistant (PDA) or Mobile banking, or M-banking, is the term we use to describe financial services delivered via mobile networks using mobile phones.

Mobile banking and Mobile payments are often, incorrectly, used interchangeably. The two terms are differentiated by their service provider-to-consumer relationship; financial institution-to-consumer versus commercial institution-to-consumer for mobile banking and payments, respectively. Mobile Banking involves using mobile devices gain to access financial services or it refers to platforms that enable customers to access financial service such as transfers, bill payment, balance information and investment options. Mobile payments on the other hand may be defined as the use of mobile devices to pay for goods or services either at the point of purchase or remotely. [1] Bill payment is not considered a form of mobile payment because it does not occur in real time.

The earliest mobile banking services were offered over SMS, a service known as SMS banking. With the introduction of the first primitive 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.[2]

Mobile banking has until recently (2010) most often been performed via SMS or the Mobile Web. Apple's initial success with iPhone 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.

A MOBILE BANKING CONCEPTUAL MODEL

Mobile banking is defined as:"Mobile Banking refers to provision and availment of banking- and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions, to administer accounts and to access customized information."According to this model Mobile Banking can be said to consist of three inter-related concepts:

- Mobile Accounting
- Mobile Brokerage
- Mobile Financial Information Services

Most services in the categories designated Accounting and Brokerage are transaction-based. The non-transaction-based services of an informational nature are however essential for conducting transactions - for instance, balance inquiries might be needed before committing a money remittance.

The accounting and brokerage services are therefore offered invariably in combination with information services. Information services, on the other hand, may be offered as an independent module. The lifespan of all good ideas can be broken into five phases: concept, prototype, pilot, pre-production, commercial deployment. Few ideas ever reach the stage of commercial deployment, because they are just not viable, or have been ill conceived or badly deployed. For some or other reason, mobile banking has been over-saturated with concepts and to some degree with prototypes. The idea of utilizing the phone for financial transactions are so obvious that every man and his dog have developed a new concept or have submitted a patent somewhere.

Everyone of them believing that they have stumbled on the ultimate approach. The reality is that very few of these ever progress past the rudimentary prototype stage. And it is actually quite easy to demonstrate simple mobile banking functionality in a prototype environment. Some of the challenges that often have not even been identified and hence solved are issues related to integration, regulatory/legal and usability. These are sometimes addressed in the few prototypes that migrate to pilot. A pilot usually consists of a few hundred, maybe thousands of subscribers performing transactions in a controlled environment with limited functionality.

Even if pilots work, they often don't address important aspects like scalability and system responses to unpredicted actions or break-downs. What happens in the case of transactions that have been lost and how does the system respond to situations where a component is not available. Important legal aspects are also often not addressed yet at this stage. Pilots seldom uncover the real system challenges and at best highlights key elements regarding user experience. During the pre-production stage business processes and system reliability and robustness should be attended to. Many different business processes are required if a system is to be deployed in a production environment. This should include registration, dispute resolutions, service activation to name only a few. In examples that we have seen in the market some deployment shave neglected key processes leading to very difficult deployments and disillusioned clients. What looked easy during pilot now turns out to be a nightmare of realities.

It is only when a solution is deployed commercially that they most important element of any idea is tested: Can it make money? Mobile banking solutions that are not profitable will fail ultimately. And this is where we at Fundamo can really contribute to making a difference in deploying successful mobile payment/banking solutions. We have seen what works and what does not. We have built powerful business modeling tools and have helped many customers to culminate with commercially successful deployments of novel ideas. We have seen many competing products fail because they were not commercially viable

TRENDS IN MOBILE BANKING

The advent of the Internet has revolutionized the way the financial services industry conducts business, empowering organizations with new business models and new ways to offer 24/7 accessibility to their customers.

The ability to offer financial transactions online has also created new players in the financial services industry, such as online banks, online brokers and wealth managers who offer personalized services, although such players still account for a tiny percentage of the industry.

Over the last few years, the mobile and wireless market has been one of the fastest growing markets in the world and it is still growing at a rapid pace. According to the GSM Association and Ovum, the number of mobile subscribers exceeded 2 billion in September 2005, and now exceeds 2.5billion (of which more than 2 billion are GSM).

According to a study by financial consultancy Celent, 35% of onlinebanking households will be using mobile banking by 2010, up from less than1% today. Upwards of 70% of bank center call volume is projected to come from mobile phones. Mobile banking will eventually allow users to make payments at the physical point of sale. "Mobile contactless payments" will make up 10% of the contactless market by 2010.

Many believe that mobile users have just started to fully utilize the data capabilities in their mobile phones. In Asian countries like India, China, Bangladesh, Indonesia and Philippines, where mobile infrastructure is comparatively better than the fixed-line infrastructure, and in European countries, where mobile phone penetration is very high (at least 80% of consumers use a mobile phone), mobile banking is likely to appeal even more.

This opens up huge markets for financial institutions interested in offering value added services. With mobile technology, banks can offer a wide range of services to their customers such as doing funds transfer while travelling, receiving online updates of stock price or even performing stock trading while being stuck in traffic. According to the German mobile operator Mobilcom, mobile banking will be the "killer application" for the next generation of mobile technology.

Mobile devices, especially Smartphone's, are the most promising way to reach the masses and to create "stickiness" among current customers, due to their ability to provide services anytime, anywhere, high rate of penetration and potential to grow. According to Gartner, shipment of Smartphone's is growing fast, and should top 20 million units (of over 800million sold) in 2006 alone. In the last 4 years, banks across the globe have invested billions of dollars to build sophisticated internet banking capabilities. As the trend is shifting

to mobile banking, there is a challenge for CIOs and CTOs of these banks to decide on how to leverage their investment in internet banking and offer mobile banking, in the shortest possible time. The proliferation of the 3G (third generation of wireless) and widespread implementation expected for 2003–2007 will generate the development of more sophisticated services such as multimedia and links to m-commerce services.

Mobile Banking Services

Mobile banking can offer services such as the following:

Account Information

1. Mini-statements and checking of account history
2. Alerts on account activity or passing of set thresholds
3. Monitoring of term deposits4.Access to loan statements
5. Access to card statements
6. Mutual funds/ equity statements
7. Insurance policy management
8. Pension plan management
9. Status on cheque, stop payment on cheque
10. Ordering check books
11. Balance checking in the account
12. Recent transactions
13. Due date of payment (functionality for stop, change and deletingof payments)
14. PIN provision, Change of PIN and reminder over the Internet
15. Blocking of (lost, stolen) cards

Payments, Deposits, Withdrawals, and Transfers

1. Domestic and international fund transfers
2. Micro-payment handling
3. Mobile recharging
4. Commercial payment processing
5. Bill payment processing
6. Peer to Peer payments
7. Withdrawal at banking agent

8. Deposit at banking agent

Especially for clients in remote locations, it will be important to help them deposit and withdraw funds at banking agents, i.e., retail and postal outlets that turn cash into electronic funds and vice versa. The feasibility of such banking agents depends on local regulation which enables retail outlets to take deposits or not.

A specific sequence of SMS messages will enable the system to verify if the client has sufficient funds in his or her wallet and authorize a deposit or withdrawal transaction at the agent. When depositing money, the merchant receives cash and the system credits the client's bank account or mobile wallet. In the same way the client can also withdraw money at the merchant: through exchanging sms to provide authorization, the merchant hands theclient cash and debits the client's account.

Investments

1. Portfolio management services
2. Real-time stock quotes
3. Personalized alerts and notifications on security prices

Support

1. Status of requests for credit, including mortgage approval, andinsurance coverage
2. Check (cheque) book and card requests
3. Exchange of data messages and email, including complaint submission and tracking
4. ATM Location

Content Services

1. General information such as weather updates, news
2. Loyalty-related offers
3. Location-based services

Based on a survey conducted by Forrester, mobile banking will be attractive mainly to the younger, more "tech-savvy" customer segment. A third of mobile phone users say that they may consider performing some kind of financial transaction through their mobile phone. But most of the users are interested in performing basic transactions such as querying for account balance and making bill payment.

One way to classify these services depending on the originator of a service session is the ‘Push/Pull' nature. ‘Push' is when the bank sends out information based upon an agreed set of rules, for example your banks sends out an alert when your account balance goes below a threshold level. ‘Pull' is when the customer explicitly requests a service or information from the bank, so a request for your last five transactions statement is a Pull based offering.

The other way to categorize the mobile banking services, by the nature of the service, gives us two kind of services – Transaction based and Enquiry Based. So a request for your bank statement is an enquiry based service and a request for your fund's transfer to some other account is a transaction-based service. Transaction based services are also differentiated from enquiry based services in the sense that they require additional security across the channel from the mobile phone to the banks data servers.

The new generation of mobile phones offers the speedy GPRS, EDGE or 3Gdata transmission standards and has large, high-definition colour displays. Prices are coming down and services and features are now considerably easier to handle on the mobile. Mobile Banking, in particular, has finally become a fast, user-friendly and affordable service. India's leading telecom companies started their services for Mobile Banking; basically they use these services as a marketing tool to advertise their services on this basis. Here are few giants of telecom industries in India who are offering Mobile Banking in various states.

Mobile Banking Business Models

A wide spectrum of Mobile/branchless banking models is evolving. However, no matter what business model, if mobile banking is being used to attract low-income populations in often rural locations, the business model will depend on banking agents, i.e., retail or postal outlets that process financial transactions on behalf telecoms or banks. The banking agent is an important part of the mobile banking business model since customer care, service quality, and cash management will depend on them. Many telecoms will work through their local airtime resellers. However, banks in Colombia, Brazil, Peru, and other markets use pharmacies, bakeries, etc.

These models differ primarily on the question that who will establish the relationship (account opening, deposit taking, lending etc.) to the end customer, the Bank or the Non-Bank/Telecommunication Company (Telco). Another difference lies in the nature of agency agreement between bank and the Non-Bank. Models of branchless banking can be classified into three broad categories - Bank Focused, Bank-Led and Nonbank-Led.

Bank-Focused Model

The bank-focused model emerges when a traditional bank uses non-traditional low-cost delivery channels to provide banking services to its existing customers. Examples range from use of automatic teller machines (ATMs) to internet banking or mobile phone banking to provide certain limited banking services to banks' customers. This model is additive in nature and may be seen as a modest extension of conventional branch-based banking.

Bank-Led Model

The bank-led model offers a distinct alternative to conventional branch-based banking in that customer conducts financial transactions at a whole range of retail agents (or through mobile phone) instead of at bank branches or through bank employees. This model promises the potential to substantially increase the financial services outreach by using a different delivery channel (retailers/ mobile phones), a different trade partner (telco / chain store) having experience and target market distinct from traditional banks, and may be significantly cheaper than the bank-based alternatives. The bank-led model may be implemented by either

using correspondent arrangements or by creating a JV between Bank and Telco/non-bank. In this model customer account relationship rests with the bank

Non-Bank-Led Model

The non-bank-led model is where a bank has a limited role in the day-to-day account management. Typically its role in this model is limited to safe-keeping of funds. Account management functions are conducted by a non-bank (e.g. telco) who has direct contact with individual customers.

FUTURE FUNCTIONALITIES IN MOBILE BANKING

Based on the 'International Review of Business Research Papers' from World business Institute, Australia, following are the key functional trends possible in world of Mobile Banking.

With the advent of technology and increasing use of smartphone and tablet based devices, the use of Mobile Banking functionality would enable customer connect across entire customer life cycle much comprehensively than before. With this scenario, current mobile banking objectives of say building relationships, reducing cost, achieving new revenue stream will transform to enable new objectives targeting higher level goals such as 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 and mobile banking world would achieve superior customer experience with bi-directional communications.

Challenges for a Mobile Banking Solution

Key challenges in developing a sophisticated mobile banking application are:

Handset operability

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.

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, while focus on areas such as South Africa have defaulted to the USSD as a basis of communication achievable with any phone.

The desire for interoperability is largely dependent on the banks themselves, where installed applications (Java based or native) provide better security, are easier to use and allow development of more complex capabilities similar to those of internet banking while SMS can provide the basics but becomes difficult to operate with more complex transactions.

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. In practice it is too early in the service lifecycle for interoperability to be addressed within an individual country, as very few countries have more than one mobile banking service

provider. In practice, banking interfaces are well defined and money movements between banks follow the IS0-8583 standard. As mobile banking matures, money movements between service providers will naturally adopt the same standards as in the banking world.

On January 2009, Mobile Marketing Association (MMA) Banking Sub-Committee, chaired by CellTrust and VeriSign Inc., published the Mobile Banking Overview for financial institutions in which it discussed the advantages and disadvantages of Mobile Channel Platforms such as Short Message Services (SMS), Mobile Web, Mobile Client Applications, SMS with Mobile Web and Secure SMS.

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.

The following aspects need to be 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 the latest tool used by financial and banking service providers in the fight against cyber fraud.[7] Instead of relying on traditional memorized passwords, OTPs are requested by consumers each time they want to perform transactions using the online or mobile banking interface. When the request is received the password is sent to the consumer's phone via SMS. The password is expired once it has been used or once its scheduled life-cycle has expired.

Because of the concerns made explicit above, it is extremely important that SMS gateway providers can provide a decent quality of service for banks and financial institutions in regards to SMS services. Therefore, 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. SLAs give the service parameters in which a messaging solution is guaranteed to perform.

Scalability and reliability

Another challenge for the Chief Information Officers and Chief Technical Officers of the banks is to scale-up the mobile banking infrastructure to handle exponential growth of the customer base. With mobile banking, 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. As customers will find mobile banking more and more useful, their expectations from the solution will increase. Banks unable to meet the performance and reliability expectations may lose customer confidence. There are systems such as Mobile Transaction Platform which allow quick and secure mobile enabling of various banking services. Recently in India there has been a phenomenal growth in the use of Mobile Banking applications, with leading banks adopting Mobile Transaction Platform and the Central Bank publishing guidelines for mobile banking operations.

Application distribution

Due to the nature of the connectivity between bank and its customers, it would be impractical to expect customers to regularly visit banks or connect to a web site for regular upgrade of their mobile banking application. It will be expected that the mobile application itself check the upgrades and updates and download necessary patches (so called "Over the Air" updates). However, there could be many issues to implement this approach such as upgrade / synchronization of other dependent components.

Personalization

It would be expected from the mobile application to support personalization such as:

- Preferred Language
- Date / Time format
- Amount format
- Default transactions
- Standard Beneficiary list
- Alerts

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 Vodafone 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. 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. 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 from 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

CONCLUSION

The theories of experience goods and learning by doing serve as a framework for building understanding of the trends associated with consumer adoption of mobile financial services — mobile banking and mobile payments — both in the United States and in other world markets. This view of the market highlights how consumer experiences with mobile devices and associated nonvoice communication technologies, online banking, and contactless payments, particularly in nonfinancial contexts, are contributing to the various evolutionary paths taken by mobile financial services around the world. These differences became particularly apparent when comparing experiences in developed economies, where adoption of mobile financial services may be driven more by convenience than by the need to provide an infrastructure for electronic access to financial products and services, as is more often the case in developing economies.

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