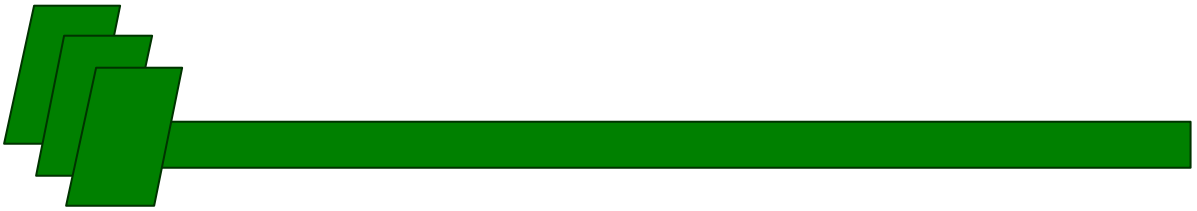
FINMARK TRUST

MAKING FINANCIAL MARKETS WORK FOR THE POOR

MOBILE BANKING: IMPLEMENTATION CHOICES

WORKING DRAFT



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NOVEMBER 2006

PREPARED FOR FINMARK TRUST

Mobile Banking: Implementation choices

- **Introduction**

  One of the key barriers to access to financial services to the poor and particularly to the poor living in remote rural areas is the price of being banked. The costs include both the fees charged by the financial institutions and the time and money required to access the banking infrastructure.

  The ability to make payments and receive account information such as statements has been possible using the internet and this channel is now offered by virtually all banks to their more affluent customers who can afford a PC and an Internet connection as well as being sufficiently computer literate to operate it.

  Relatively recent technology advances have allowed the cell phone to become a safe and effective transactional device. The widespread and rapidly growing ownership of a mobile phone and the ever increasing geographical coverage of the networks means that the use of this device has the potential to be able to offer a cost effective and simple means of making financial transactions to service this largely untapped market.

  As with any investment decision, the criteria for whether and how to establish a mobile banking business derive from the threats and opportunities of the environment and the strengths and weaknesses of the potential investor and/or operator. However, given that mobile banking is still a relatively new technology solution in the field of banking; the experience that has been gathered in early initiatives may be able to provide some assistance with generic guidelines as to the choices which need to be considered.

- **Market potential**

  The operator needs to begin by deciding on its market entry strategy and this will vary according to the vision of the organization and the market potential in the relevant country. The target market segment needs to be quantified and socio economic data gathered in order to assess effective demand. MTN Banking made the decision to price and position for the lower end of the market, but began communicating to the upper end of the market on the basis that although there was great potential in the mass market and unbanked, they felt it was important that the product be positioned aspirationally, rather than as an offering aimed at the poor. Vodaphone on the other hand has so far looked at only targeting the unbanked and have selected markets and channels accordingly.

- **Substitute or Supplement**

Some operators may see the advantages in adding an additional electronic channel to an existing account providing either informational and/or transactional services. At the other end of the spectrum the intention may be to create a banking service centred on the cell phone which will be a whole new relationship with the customer. In other words the mobile banking may be a substitute or a supplement for existing banking services (or a substitute for informal financial services). In terms of views on revenue, the provider may see this as (a) a stand alone driver of revenue in its own right, (b) a way to attract new customers into their main product line or a way to retain and enhance relationship with existing customers (eg FNB's example), or (c) a way to reduce the transaction cost of dealing with the market (for example being able to purchase airtime from the handset saves the 15%-20% commission that one would otherwise have to pay to an airtime vendor)

Operational alliances

- **Telco and bank relationships**

  If the instigator is a telecommunications company (telco) they may wish to ensure that the platform can be used by a variety of banks (banking agnostic). This is the model used in South Korea. On the other hand a bank may wish to offer its clients the ability to access their accounts using any of the telco companies in the country (telco agnostic). MTN Banking was set up as a loyalty scheme for MTN, offering additional value to its customer base. The software was burnt on to the SIM card or sent 'Over the Air" (OTA) so that a potential banking client would need to have an MTN SIM card (This proved effective for new cell phone customers but problematic for existing customers whom either needed to download the software and/or swap their existing SIM card from a 16k to a 32k. This affected approximately 20% of potential clients requesting the application, although this percentage reduced rapidly since all cards currently being distributed are 32k.. However this may not be the case elsewhere.

  So if the investor is a telecommunications company the model could be built to require their own specific SIM card. An exclusive relationship between a telco and a bank is more likely to enable the telco to use the infrastructure and knowledge base of the bank regarding banking expertise. However if the mobile account is competing with other bank offerings there will inevitably be a conflict of interest which will manifest itself in terms of allocation of resources and possibly competitive pricing restrictions.

- **Regulatory requirements**

  In some countries such as South Africa, only a bank can participate in the national payments system and all instructions to make payments on behalf of a customer are deemed to be acceptance of deposits and can therefore only be undertaken by a bank. If this is the case then a non banking operator will need to either obtain their own banking license or else form an alliance with a bank so that taking

deposits or 'the business of a bank' will be done within a division of that bank.

- **Electronic purse**

  One option that may be available to avoid the need for a bank license, would be to use an electronic purse which can be differentiated from a bank account as the source of transactions, although the float account itself would still need to be housed in a bank. In South Africa e money can only be issued by a regulated bank, and there remains a lack of clarity in many other countries such as Kenya as to how it should be regulated. This ambiguity may in itself by regarded as an unacceptable business risk and make a relationship with a bank seem more attractive.

- **Structuring the deal**

  The alliance agreement will need to clearly define the roles and responsibilities of each party, the vision of the business, how risks are to be managed and the sources of revenue and profit for each party. For example the parties may decide to provide services on an arms length basis which includes a profit margin. Alternatively it may be agreed that all services are provided at cost and profits are drawn as dividends from the new business. The full benefits and risks of participating in the new business must be clearly understood by all parties.

Regulatory Issues

- **Anti Money Laundering**

  Mobile banking offers increased advantages to the customer and the provider as the number of services which can be offered from the handset increases. This reduces the costs to the provider and makes the banking experience more convenient and more cost effective to the customer. However anti money laundering regulations increasingly require greater face to face interaction between financial institution and customer. The service provider will have to establish the best ways to open accounts and to monitor transactions subsequently. Some countries do provide for reduced authentication requirements for account holders which are regarded as low risk but there is usually still a requirement for some face to face interaction either with employees of the financial institution or its agents.

- **Use of agents**

  The selection and management of agents will be restricted to those who can meet the regulatory requirements for the taking and management of documentation and this may add significantly to costs.

- **Access to national payments system**
  The national payments system, where it exists will have standards to manage the interface and the risk environment. Where card association branded cards are used such as MasterCard or Visa, they will also have regulations around security, interfaces and marketing.

- **Electronic money legislation**

  The opportunity to make use of legislation (where it exists) governing electronic money to avoid the need for a banking licence. This opportunity does not exist in South Africa where e money can only be issued by regulated banks. In many other countries the regulatory environment remains ambiguous in this area.

Distribution channels

- **Agencies for accessibility**

  The ability to offer services such as replacement cards, physical information materials (manuals and leaflets), physical identity authentication, documentation verification etc. depends firstly on the ability to either own ones own distribution channels or to find agents such as retailers, community groups, NGOs etc. The Safaricom M-Pesa model in Kenya uses airtime resellers and these agents are required to keep a cash float.

- **Customer Service and information sources**

  A multi lingual call centre can provide assistance with some transactions and technical information but there are some services that do require physical interaction. However the centralized nature of a Call Centre means that the business is better able to control performance. Call centres can themselves be an expensive solution depending on the extent to which costs are fixed or variable and the problems of needing flexibility and a high level of service.

- **Agencies and risk management**

  Regulation may be a factor in the services that can be offered by an agent and the ability to manage risk, both operational and reputational.

- **Costs and commissions**

  The costs of agents needs to be carefully managed since the commission required will need to be comparable with the opportunity cost of their core business or other agency business. Agents who are paid to open accounts can be paid either on a per account basis up front, or based on a transactional or usage model (as for airtime usage with cell phones) or for a combination of the two. There will be a trade off between risk and cost since many people, at least initially, will open an

account but the number of transactions may remain low for some time. However ongoing commission would be more expensive in the long run if the business becomes successful.

Systems

- **General**

There are currently no dominant standards in this area. Therefore to develop a solution which is to enjoy as wide an audience as possible, one should try to develop as generically as possible.

Systems need to be chosen that are appropriate to the market and the banking environment being considered. The system choices need to be made in regard to:

- the platform or computer system to be used
- the enabling technologies such as the SIM toolkit or a browser) or the handset,
- the interactive technologies such as WAP, SIMToolkit or Java
- the transport or bearer channels on the GSM or CDMA mobile network such a voice/touch tone dialing (IVR), SMS or USSD.

The process of selecting solutions will be iterative and multi dimensional as choices impact on other choices both technically and financially as well as the acceptability to the market and the regulators. The business and its marketing and compliance officers will need to work closely with the technical experts. There will always be risks in technology based applications and the business needs to decide whether to manage this through its business practices or within the technology itself, recognizing that the choices around technology will ultimately determine the size of the potential market.

- **Market requirements**

System choices will be guided by the market segment being targeted in terms of the availability and affordability of the hardware required to support the system for the customer as well as the customer experience or usability of the customer interface. Decisions must be made regarding the level of functionality required by the market, for example whether the system merely offers information such as balance enquiry or will be required to make person to person payments. The expected average size and frequency of transactions per customer will also impact on the profitability of certain system choices as well as the level of security required.

- **Handsets**

  Options around the technology that can be used will depend on the level of accessibility of the required handsets to a broad enough market. The lack of standardization among handsets will also have an impact in several ways. For example it may affect whether the banking software can be made available on the handset as opposed to centrally, which then has a knock on effect on the level of security for authentication. There may also be a practical problem of educating the customer on how to access and use the software since the display may differ from one phone to another and indeed not even be available on some models.

- **SIM cards**

  The functionality of the SIM cards being distributed and available will have an impact on the kind of software that can be used. In many developing countries the SIM card capacity is still 16k whereas SIM browser SMS based banking software will typically require at least 32k cards.

- **Interface with banking environment**

  In developed electronic infrastructures like South Africa there need to be system links to the:
  - payments system (for bill payment and inter bank transfers)
  - card acquirers for the use of bank cards
  - ATM network and bank branches for cash withdrawals and deposits

  In countries where there is little or no electronic banking infrastructure then 'stand alone' systems are more fit for purpose. Here the system will need to do a lot more of the functions such as cash management, central bank reporting and ATM system management as these will not be carried by the existing banking infrastructure.

  The architecture of the system must allow for future interfacing to a national banking infrastructure as in many countries this will and is being constructed. A good example of this is in Nigeria, where over the last three years an interbank ATM infrastructure has been commissioned.

  As the mobile banking solutions are accessed via the cellphones, the availability of the banking service should be perceived to be as good as that of the mobile telephony service. This means that a sufficiently available banking system and architecture needs to be chosen. This will also need to be operated with 24/24 supervision which of course has cost implications.

- **Security**

  Security needs to be implemented that meets the "threat models" in the environment being served. If the system allows only low value transactions to pre-determined beneficiaries then it is possible to reduce requirements. If however the system is part of an existing electronic banking infrastructure (such as in South Africa) then the security will need to meet the levels implemented by the other banks who make up the infrastructure. Specifically this would cover the security around PIN storage in the banking system and the interfaces to the card acquiring and ATM infrastructures where the PINs are entered. In the end, it will be up to the compliance department (and ultimately the Central Bank) to determine what is the acceptable level of risk. However, it is necessary to recognise that there will always be risk in technology based applications and one can then decide whether to manage this in the business practices or in the technology, recognising that the choice around technology will ultimately determine the size of the potential market.

Access to the physical world

- **Use of cards to access cash and payments for purchases**

  Since access to cash remains a critical requirement for any banking client, the system will have to provide an interface to the so called physical world of bank notes. In many countries debit, credit or cash cards are already well accepted by potential clients and just as importantly, the acquiring infrastructure (ATM machines, Point of Sale (POS)devices) is widely available. In this case a retailer with a POS can offer 'cash back' or a simple withdrawal as a correspondent or agent of the bank.

  Where the use of cards is not already prevalent it may be worth looking at ways of avoiding the use of cards and allowing retailers and banks to offer cash through receiving the required information and authentication directly from the handset. In technologically advanced countries such as Japan, this is already being done using chips in handsets. However there are also other solutions such as sending an SMS or making a USSD connection to a POS or an ATM.

  The benefits of avoiding the use of cards would be the reduced costs resulting from not having to distribute and install the requisite acceptance infrastructure or having to pay for the cards themselves or the fees to the card associations such as MasterCard or Visa as well as the costs of card distribution.

  The use of the handset in the acquiring environment in order to do money transfers is an opportunity to get the most from the cellular infrastructure.

Bearer Channel

- **USSD vs SMS**
  There is a debate regarding which channel is preferable but the final choice will depend on many of the issued raised above when considering system options, such as the perceived level of risk of the transactions as well as market preferences and sophistication. For example using the USSD string requires the customer to enter a string of numbers and/or letters which could result in errors as opposed to the use of structured commands from a menu. However USSD commands can be used by virtually any handset and would be very appropriate for simple requests for information such as balance enquiries which could be saved onto the phone. USSD phase 2 does allow for a menu function. Risk management practices will determine whether USSD or SMS toolkit or WIG/WAP is necessary or not.

- **Patents and legal risk**

  There are various patents relating to the use of Mobile telephones in banking which may restrict options and/or increase costs.

- **Interactive Voice Recognition (IVR)**

  Depending on the culture and respective pricing of each channel, in some countries it may be worth looking at the use of IVR. This has been used successfully in Egypt by Vodaphone. This however places a higher traffic load on the network and depending on whether the customer is charged for the time that they are active may affect the attraction and viability of the service.

Financial Model

- **Operational profitability**

  The key drivers of profitability are the average transaction numbers and the average float value. Revenue needs to be derived from a balance of transaction fees and interest earned. However the profitability may be restricted by the extent to which the business is a price taker if a large number of services have been outsourced. This is likely to be the case if the business is being provided by a non bank since in many countries only a bank can have access to the payments systems. The other restraint is that of customer affordability and comparisons with substitute products. The main operational costs will come from call centre staff, software and hardware maintenance/operations, the cost of communications, and plastic bank cards (if they are used).

  The cost of acquisition of an account derives mainly from the cost of the download of the software, particularly if this is a number of SMS's and the

commission paid to the distribution channel or the employment cost if not outsourced. The higher the cost of acquisition, the greater the number of transactions expected will need to be in order to reach a reasonable pay back period per account. Transactions with a relatively high revenue may be the sale of airtime, acquiring and money transfer.

- **Fixed costs**

  Major areas of fixed costs derive from the acquisition and development of software and hardware and the establishment of a Call Centre. There are beginning to be opportunities to purchase the software and even the hardware from a host who provides the service on a per transaction basis.

  Marketing can be seen as a semi variable cost although in some senses it is closer to a fixed cost since it is difficult to tie it to the numbers of accounts either activated or active. Since mobile banking is a new concept for most banking clients and banking is itself a new concept for many poor people, successful implementation requires significant expenditure on marketing and education. The customers need to feel that they can trust the provider as well as to understand how to use the service. Compliance is also a big driver of costs since it increases the amount of documentation collected as well as the information required to be warehoused.

Conclusions

There are a number of options on the table for potential cell phone banking providers which will depend on the type of organization, the baking legislation, the capacity of the network and, ultimately, the level of risk that one is willing to accept into the organization.