

Potential Applications of Mobile Technology in Rural Markets
The IFMR Trust Perspective
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Introduction

IFMR Trust (www.ifmrtrust.co.in) is a Chennai based organisation whose mission is to ensure that every individual and every enterprise has complete access to financial services. It seeks to achieve its mission through a mix of research, advocacy and large sized on-ground operations in rural India. On the research front it works closely with its principal academic partner, IFMR (www.ifmr.ac.in). In terms of operations it has promoted four companies:

1. IFMR Rural Finance: Is focussed on building full-fledged rural financial institutions called **Kshetriya Grameen Financial Services (KGFS)** and has currently promoted three institutions with a total of 30 branches (20,000 customers) located principally in **remote rural** areas of Tamil Nadu, Orissa and Uttarakhand. It also has a specialised, one branch operation in Gujarat focussed on agricultural commodity trading. The eventual goal is to help catalyse the creation of 300 such rural financial institutions each of them serving about 1 million customers.
2. IFMR Ventures: Is an Asset Management Company which has promoted its first fund: the Network Enterprises Fund. The fund is proposed to be Rs.6 billion in size, and has had its first close at Rs.850 million.
3. IFMR Capital: Is a guarantee company which is focussed on the microfinance sector. It completed Rs.180 million of transactions in the previous financial year and expects to close about Rs. 2 billion worth of transactions by March 31st, 2010.
4. IFMR Mezzanine Finance: Is a non-bank finance company which seeks to provide mezzanine equity to microfinance institutions. It is in the process of being set up and expects to complete about Rs.200 million of investments by March 31st, 2010.

And, for its advocacy effort it works with the IFMR Trust's Advocacy Unit. This is a not for profit unit focussed on converting all the learnings and knowledge of the various parts of the Trust into strong advocacy messages designed to fulfil its mission.

The two organisations that have ground level operations are IFMR Rural Finance and IFMR Ventures. Both organisations are looking for mobile based applications to address many of their existing challenges. The rest of the note principally shares their perspectives.

IFMR Rural Finance

The main focus of this company is **setting up, running and managing rural financial institutions** with the objective of demonstrating a new model of Rural Finance. It seeks to provide comprehensive financial services to remote rural populations principally through:

1. Branches located in remote rural villages.
2. Highly trained wealth managers manning those branches using a number of automated tools for training themselves and for offering high quality wealth management advice to their clients.
3. **Deployment of advanced technologies** to authenticate the customer (fingerprints), capture data and **facilitate transactions** without the use of any paper and with zero error, zero latency and zero cost (incremental cost).

They are particularly keen to find ways so that:

1. **Customer enrolment may be completed at the home of the customer** with direct upload of data into a central server. Where necessary an interactive process could be used to develop a richer and deeper understanding of the customer. Here the possibility of using specialised data-entry devices also exists as an alternative or complement to the standard hand-set.
2. **Customers are able to transact with each other and with the financial institution remotely** using their hand-held devices which are able to identify them in a secure manner and are able to communicate smoothly with the back-end computers of the local financial institution. This is driven by a need to minimize transaction time and create bandwidth for Wealth Management discussions at the branch. This could be done by:
 - a. **Migrating routine transactions to Electronic Delivery Channels like mobile phones.**

This would ensure that customer time at the branch is used effectively for Wealth Management discussions. These channels could also address some of the challenges that are being encountered in areas such as Uttarakhand where broad-band telecom connectivity is low and customers find it very difficult to traverse even short distances on account of the very hilly terrain.

- b. **Creating roaming transaction points that can be used to provide service closer to customer especially for savings instruments.**

These challenges could be addressed by migrating routine activities of the branch to electronic delivery channels such as Mobile Phones and self-service Point of Transaction (POT) terminals.

To do this, there would need to be the necessary functionality to create **secure delivery channels** between the branch and the customer. The channels would

need to be **easily accessible, user friendly and inexpensive**. Examples of such channels could include:

- i. **Mobile phones equipped with a biometric devices** like a finger-print scanner or voice authentication chip that would enable the creation of a secure transaction channel. This is similar to a POT device with the usability and portability of a mobile phone. Additionally there is need to provide an instant readable passbook type visibility into recent transactions through a method of **on-the-spot printed receipts**.
 - ii. **Interactive Voice Response (IVR) systems** or key input systems that would simplify access for illiterate people and allow them to use services from any touch tone telephone.
3. **Wealth managers are able to communicate** with each other and with the senior management team at each local financial institution using an SMS based platform which is able to aggregate these conversations (many to one), re-broadcast them from one to many on a real-time basis (the “Twitter” functionality) in local languages.
- a. **Training can be delivered to Wealth Managers real-time** using MMS / SMS type platforms - through interactive and adaptive question-answer based techniques for example.
 - b. **Branches, wealth Managers** and other local actors (enterprises, customers, NGOs) are able to **build a real-time profile of their surroundings** (rainfall measurement, temperature measurement, existence of a school, existence of a hospital, roads, wells, ponds, pollution levels, etc.) and automatically update a central database which in-turns maps the data onto a Google map - this last piece is already a project underway with their research partner: the Centre for Development Finance at IFMR (www.ifmr.ac.in/cdf).
4. **The financial institutions are able to update customers** about product or repayment reminders or other relevant information on issues of interest to them such as rainfall forecasts, agricultural commodity price information and gold price information.

IFMR Ventures

The Network Enterprises™ Fund is the first fund promoted by IFMR Ventures and has made a number of investments in specialised supply chain companies which seek to develop well functioning supply chains linking rural producers and consumers to each other and to urban producers and consumers.

The Network Enterprises™ Fund seeks to incubate and grow one dedicated supply Chain Company (referred to as a Network Enterprise™) in each of the nine sectors in which it believes significant supply chain failures exist. The names of the nine companies that it has thus far incubated are given below:

1. Craft, Apparels and Furnishings Network Enterprise™ (CAFNE)
2. Fast Moving Consumer Goods Network Enterprise™ (FMCGNE)
3. Agricultural Terminal Markets Network Enterprise™ (ATMNE)
4. Dairy Network Enterprise™ (DNE)
5. Rural Tourism Network Enterprise™ (RTNE)
6. Rural Energy Network Enterprise™ (RENE)
7. Rural Private Schools Network Enterprise™ (RPSNE)
8. Rural Drinking Water Network Enterprise™ (RDWNE)
9. Vocation Training Network Enterprise™ (VTNE)

The Network Enterprises'™ business model is structured around leveraging the competitive strengths of rural households, both as producers and consumers, in each of the above mentioned sectors. It is envisaged that the Network Enterprises'™ will not engage in direct production of goods and services and will primarily engage in strengthening supply chains by aggregating supplies, investing in structures that make quality of goods and services produced transparent to the final buyers and other such missing links. The Network Enterprises™ are also expected to facilitate access to non-financial resources such as technical, design and marketing resources. Wherever possible, the Network Enterprises™ work with and invest in existing businesses rather than supporting completely new investments. The Network Enterprises may thus be best characterised as supply chain investors that also bring in operational expertise.

Most of the Network Enterprises™ expect to use mobile phones considerably in their operations but are facing a number of challenges that are described below.

1. Craft, Apparels and Furnishings Network Enterprise™ (CAFNE)

- a. **Order Management:** Mobile technology could be used to develop a streamlined '**Order Management**' system that allows a thin client (like mobile phone) at the supplier side. In a typical transaction, a buyer issues purchase orders to its multiple suppliers. This purchase order contains information about quantity & quality of goods to be supplied, credit period, delivery date along with other terms and conditions. Therefore, mobile technology could be used for:
 - i) placing orders from the buyer to the supplier - Photographs of designs to be exchanged directly from a web-based order placement system to the household.
 - ii) allowing suppliers to be aware of the current inventory level at the buyers and accordingly managing their production cycle.

In addition to this, there is a need for tracking orders to ensure timely deliveries by suppliers. This is important to meet fast changing consumer demand, particularly for apparels. Using mobile technology, a buyer can track the status of delivery which needs to be updated by supplier at regular intervals. This would help buyer in **better inventory management** as well.

2. Fast Moving Consumer Goods Network Enterprise™ (FMCGNE)

- a. **Order Management:** Mobile technology could be used to develop a streamlined '**Order Management**' system that allows a thin client (like mobile phone) at the supplier side. In the distribution of FMCG products, mobile technology could be used by sales executive for taking orders from the retailers through SMS based mobile phone interface. Once the orders are taken, this information could be passed on to the hubs which would arrange for the delivery of order. Through this e-enabled ordering, the retailer and the hub would be able to manage their inventories well.

3. Agricultural Terminal Markets Network Enterprise™ (ATMNE)

- a. **Information Services delivery:** The need is for a system to facilitate **delivery of agricultural information to farmers** through automated e-mails/SMS/specific applications. The same system could also be used to send queries to the experts where one could select a query from a list of queries available on the mobile phone. Another method would be to send information as a "voice SMS" and receive information in the expert's voice.

Working with the new International Food Policy Research Institute (<http://www.ifpri.org/>)-IKP Centre for Advanced in Agricultural Practice based at Hyderabad the desire is to be able to provide the farmer with very high quality guidance and to build automated interaction between him and the central decision support system so that a series of questions can be put to him and a high quality answer given. The current design envisages an extension work mediating this conversation through the web but potentially through the mobile phone a direct connection could be established.

- b. **Order Management:** Mobile based order execution system for linkage to the **National Spot Exchange Limited** - this is currently being done at the branch and the customer needs to come frequently to both learn about prices as well as trade.

4. Dairy Network Enterprise™ (DNE)

- a. **Information Services delivery:** The dairy health and productivity management software that Dairy NE is using is already capable of sending SMS messages containing alerts, healthcare schedules, action lists, etc. to the farmers and veterinarians / para-veterinarians.
- b. **Order Management:** The desire would be to use mobile phones/PDAs for order placement and receipt authentication for inputs like vaccines, drugs and mineral mixtures through SMS or mobile based applications.

- c. **Cattle Insurance:** Currently laptops are being used to register cattle for cattle insurance but the desire would be to shift to mobile phones/PDAs for registration and data entry as they would be more convenient. Ideally there would be a need for phones that could directly read RFID tags that have currently been deployed on cattle.
- d. **Milk Collection and milk payment solutions:** For milk collection and payment solutions, the RFID enabled mobiles would be of great use to generate user payment records. The DNE is keen to see if this can be developed as a value-added feature for the contemplated model of Milk Collection Enterprise. DNE is looking for an immediate solution in the form of a cheap PDA/mobile that can read RFID tags, has good memory storage and can remain charged for long period despite running complex applications.

5. Rural Tourism Network Enterprise™ (RTNE)

- a. **Booking Management System:**
 - i) In case of rural tourism the mobile technology could be used by the accommodation owners for updating room inventory and providing this information to Rural Tourism Network Enterprise (RTNE) so that booking can be made.
 - ii) Similarly, RTNE could provide confirmation of the booking to the owner through SMS alerts including SMS alerts in the morning on arrival and departure. In addition it would also be useful to customers who can check destination and property information on mobile. Once the customer has registered and made the booking, subscription can be made to get local destination information about places to visit through SMS alerts.

6. Rural Energy Network Enterprise™ (RENE)

- a. **Retailing of energy efficient products:** In the rural energy retail work, RENE intends to establish viable distribution channels for energy efficient products (e.g. solar lights, smokeless stoves, micro-wind pumps, etc.) in remote rural villages. The approach is similar to that of multi-level marketing (similar to Amway, Tupperware, Avon, etc.). Such a multi-level marketing structure consists of sales agents, sub-agents sub-sub-agents. A commission is given to each based on their direct sales to customers and for sales happening through their appointed sub-agent (and their agents). Mobile technology could be used to register an agent / sub-agent, collect information on their product needs (inventory management) and register a transaction when sale to customer happens. Further, mobile phones could be used to collect user feedback on the products and assess product performance.
- b. **Distribution of energy through grids:** Mobile technology could also be used in load management with Decentralised Distributed Generation (DDG) in off-grid areas. Currently the power plant operator travels to each independent customer site to confirm their daily demand for electric power and aggregates it to decide upon viability of his plant running. With SMS/mobile

base technology, a good real time demand signalling from independent enterprises could be done to the local distributor/generator. This could be extended to SMS based customer grievance handling. Also, agricultural-pumps could be remotely switched on to avail cheaper electricity at night or to support local load management and automatic load switching.

7. Rural Private Schools Network Enterprise™ (RPSNE)

- a. SMS based exams for standardised evaluation of school children on basic language and mathematics skills.
- b. SMS based training using adaptive learning techniques of EI (<http://www.ei-india.com/>).

8. Rural Drinking Water Network Enterprise™ (RDWNE)

RDWNE envisions the creation of Community Water Systems (CWSs) to provide clean and affordable drinking water in rural areas. A crucial aspect in making this water affordable is adopting a mobile technology platform that is effective in monitoring day to day sales cost efficiently. This technology platform would need to have three key functionalities:

- a. **Operations Management:** An SMS-based application that would allow local operators at the CWS plant level to record day-to-day production and sales data as well as revenue generated per day. It is envisioned that the data points entered through this SMS-based application would feed directly into a central database, allowing the RDWNE to remotely monitor day-to-day operations at the plant level.
- b. **Payments for water purchase:** A system allowing a CWS plant to accept cashless payments through various channels including mobile phone based payment systems.
- c. **Marketing:** An SMS-based application that would allow people in the villages the RDWNE serves to contact their Community Water System (CWS) managers, requesting information about pricing and delivery of water to the areas in which they live. This would allow RDWNE build their customer-base, and provide information to potential customers regarding availability and price of the CWS water to their locality.

9. Vocation Training Network Enterprise™ (VTNE)

- a. SMS based exams.
- b. Mobile phone based training.

IFMR ECOSYSTEM

In addition to the specific areas in which mobile technology is required for both IFMR Rural Finance as well as IFMR Ventures, the overall IFMR Ecosystem sees a continuing need for technologies to enable the following services:

- a) **Information Sharing:** Early warning systems - Systems used to spread awareness in times of emergency or during disaster response. Public service messages to create awareness about immediate issues.
- b) **Public information campaigns and surveys:** SMS based information sharing campaigns where questions can be sent and received over an SMS like format.

Next Steps and Contact Information

The IFMR Trust wishes to explore the technological requirements listed in this document with providers of mobile hardware and software technology solutions. A focus is needed on technology solutions that are viable in rural India. Solutions that are user friendly (language customizable), cost efficient, easily available (low bandwidth requirements) and easy to implement on a variety of basic mobile phone architectures are necessary.

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