Rural Microfinance Service Delivery:
Gaps, Inefficiencies and Emerging Solutions

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Abstract

Microfinance, the provision of financial services to poor and under-served communities, has emerged as one of the most promising avenues for stimulating rural economic development through local enterprise. In this paper we will discuss some of the major technology gaps faced by rural microfinance institutions, focusing on areas that are most important for the future growth of the industry. This work builds upon six months of field research, including field studies with eight different microfinance organizations located across Latin America and Asia, and discussions with many other organizations worldwide.

Historically it has proved difficult to provide sustainable micro-financial services to remote rural clients. As formal financial institutions begin to look seriously at this market, the microfinance industry faces significant challenges in maturing and scaling to sustainability. We will look at three of the major tasks faced by rural microfinance service providers today - 1) the exchange of information with remote clients, 2) management and processing of data at the institutional level and 3) the collection and delivery of money to remote rural areas. Each of these has proved to be a difficult problem to solve for microfinance institutions worldwide, and may offer opportunities for information technology-based solutions.

For each of these "gaps" we will look at current best practices, examine the role information technology has (or has not) played in overcoming these obstacles, and discuss promising future directions. In this context, we will discuss the use of hand-held technologies for rural information collection, experiences in the implementation of MIS systems at the institutional level and current strategies for introducing electronic banking to remote rural areas. We will look at the results thus far in each of these directions and the potential ramifications for the long-term growth and sustainability of the sector.

We will continue by presenting some of our current work in this area. This includes the design of accessible paper interfaces for reaching uneducated rural clients; and the Mahakalasm MIS – an open source toolkit for information processing and management by SHG Federations. These projects are joint work with the Covenant Centre for Development and ekgaon technologies in Madurai, India.

We will conclude by discussing some interesting and powerful new trends in microfinance, and postulate some potential models for the future development of the industry.

Introduction

Microfinance is defined as the provision of financial services to clients who have otherwise been neglected by the mainstream banking industry. These clients are excluded from mainstream banking primarily for reasons such as poverty, lack of education, living in a remote location, etc. Many kinds of organizations participate in providing microfinance services. These include non-profit organizations (both regional and international), private companies, financial institutions and registered banks. Throughout the rest of the paper such organizations will uniformly be called *microfinance institutions*, or MFIs. The microfinance industry also includes other participants - such as state, local and national governments, independent rating agencies and other third-party observers.

As microfinance is primarily an information and capital-driven industry, one can expect that its pace of growth will be determined by the flow of these two important commodities. However, as of yet no definitive standards have emerged for managing either of these important value chains. Management and information systems for microfinance institutions are still in their infancy. Most MFIs still use basic software packages developed by local providers, and have much difficulty in upscaling their systems or procedures. Money transfers are commonly handled in slow and inefficient ways, in the best case by "piggy-backing" on the infrastructure of formal financial institutions. Most microfinance institutions still rely on significant manual data collection, entry and other "brute force" efforts to manage their incoming data.

However, big things are afoot. Mainstream banks have begun to look seriously at the microfinance market. As clients repeatedly prove their repayment performance, microfinance portfolios can become a reasonable investment option for those banks seeking to diversify their portfolio, expand their outreach and cater to their social conscience (or meet government regulations).

Examples of mainstream banking companies working with microfinance institutions to provide loan capital have flourished in recent years. Just in the past five years, Citigroup Foundation has made $17 million in grants to 178 microfinance partners in 50 countries.[1] Similarly, Deutsche Bank Foundation has recently launched the $1.5 million microfinance financial development fund[2]. On a national scale, NABARD, the national bank for agriculture and rural development in India, as of 2003 had provided almost $200 million worth of capital for village microfinance groups through its SHG-bank linkage program[3].

One of the most active private banks working in microfinance has been ICICI Bank, the second largest bank in India. ICICI has been a pioneer in implementing new microfinance outreach channels, partnering with MFIs and providing low-cost sources of commercial funds. In the last year, ICICI has completed two portfolio securitization deals with microfinance institutions, with a total value of almost $10 million.[4] ICICI has also supported several initiatives seeking to establish low-cost financial service delivery channels for rural areas, such as banking through Internet kiosks and smart-card based systems.

As innovations like these continue and the formal financial sector becomes more involved in microfinance, it is clear that microfinance service delivery channels will have to become more streamlined, efficient and easy to manage, in order to serve larger and larger numbers of clients and connect the various stakeholders in the industry. In this paper we will look at three major technical challenges facing microfinance institutions in achieving these goals: 1) the exchange of information with remote clients, 2) management and processing of data at the institutional level and 3) the collection and delivery of money to remote rural areas. This report is the result of a twelve month research study, including direct field observations with eight different microfinance institutions operating across Latin America and Asia, and discussions with many other MFIs worldwide.

For each of these "gaps" we will look at current best practices, examine the role information technology has (or has not) played in overcoming these obstacles, and discuss promising future directions. In this context we will discuss the use of hand-held technologies for rural information collection, difficulties in the implementation of MIS systems at the organizational level and strategies for introducing electronic banking to remote rural areas. We will look at the results obtained thus far in each of these directions and the

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1 Citigroup Home Page, http://www.citigroup.com/citigroup/citizen/community/
2 Deutsche Bank Foundation Home Page,
   http://www.cib.db.com/community/htm/db_microcredit_dev_fund.html
3 NABARD Home Page, http://www.nabard.org/oper/oper.htm
4 ICICI Social Initiatives Group Home Page,
http://www.icicisocialinitiatives.org/microfinance/microfinance_content.asp?lvl=126&plvl=0

ramifications for the long-term growth and sustainability of the sector.

We will also discuss some of our own efforts in these areas. This includes our work in the design of accessible user interfaces for uneducated rural clients and the Mahakalasm MIS toolkit – an open source toolkit for information management and processing by SHG Federations. MWe will conclude by presenting some plausible models for the future of rural microfinance service delivery, based upon currently observed trends and certain underlying principles for meeting the industry's goals of sustainability, efficiency and maximum outreach.

Rural Microfinance Service Delivery: Challenges and Solutions

In our time spent studying and working with microfinance institutions, we have found three common and persistent technical challenges for institutions in reaching their outreach and sustainability goals. These issues were common to the many different microfinance institutions we have visited, regardless of size, location, lending methodology, philosophy, etc. Many other works addressing technology issues in microfinance fail to distinguish between these distinct problem cases, and confuse the issues and approaches in dealing with each. In this section we will discuss each of these challenges in depth, highlight current approaches towards solving them, and discuss those solutions which have so far seemed the most successful.

Challenge #1: Collection of Information from Remote Rural Clients

According to Mohammad Yunus, founder of the Grameen Bank and one of the pioneers of microfinance, "the first principle of Grameen banking is that the clients should not go to the bank, it is the bank which should go to the people."[5] Dr. Yunus perceived that to alleviate other potential imbalances, financial services should be provided to poor people on their terms, in a manner that was respectful of their needs, activities and livelihoods. At the Grameen Bank, this means "12,000 staff serve 3.2 million clients in 45,000 villages spread out all over Bangladesh, every week".

One can imagine the immense technical challenge this is. Conducting millions of small transactions every month in remote rural areas with very little infrastructure, on the barest of operating margins – this is an operations puzzle that would make most corporate managers a little queasy. "Bringing a bank" to 45,000 rural villages every week is not a simple thing to fathom. Much of this herculean task falls upon the shoulder of *loan officers*. Every day loan officers travel from village to village, documenting

5 Grameen Bank Home Page, http://www.grameen-info.org/bank/GBdifferent.htm

clients, processing applications, conducting meetings, collecting repayments, disbursing loans, resolving disputes and doing all of the basic tasks upon which the entire microfinance industry relies.

Considering the problem in terms of information flows, there is a lot of data generated in each of these villages every week that needs to be collected in a timely and efficient manner. Every week new clients must be documented, loan applications processed and transactions posted. Moreover, expanding a microfinance institution's business requires knowledge about prospective also. Tools to research and evaluate new clients and credit applications are essential in growing a microfinance institution's business wisely.

Perhaps even more importantly, thousands of transactions have to be captured and processed every week in a timely manner, so that the institution can have an accurate view on its current loans, delinquency and potential trouble spots. The institution has to be vigilant about its loan portfolio and actively follow up on delinquent loans to achieve the rates of return that are required to achieve sustainability and profitability.

There are several other factors which are very important for the efficiency and growth potential of a microfinance institution. Two of these are in how quickly the loan officer can conduct daily client interactions, and the amount of time it takes to process a new application for credit. This defines the amount of time loan officers have to develop new clients, and thereby the speed at which the institution can absorb more capital and expand its operations. As microfinance is a growing industry with a large untapped market, rapid and unpredictable growth can be a important thing for microfinance institutions to manage, particularly in competitive markets.

To meet this challenge, several MFIs have turned to information technology-based solutions to optimize data collection. This refers to MFI initiatives that use some form of hand-held device to allow loan officers to do electronic documentation and/or evaluate credit applications in the field.

SKS Microfinance, a MFI working in the drought-prone regions of Andhra Pradesh, has been one of the fastest growing microfinance institutions in India over the past several years. Having commenced operations in 1997, SKS already works with more than 40,000 clients[6]. It appears that the SKS' pace of growth is not slowing - in a recent 9 month period, SKS was able to double its number of clients. A result of this trend is that they have actively sought technology-based solutions that would allow them to scale more rapidly and reach more clients in a cost-effective manner.

As part of these efforts, SKS introduced a prototype data collection system

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6 SKS Microfinance Home Page, http://www.sksindia.com/Milestones.htm

using the popular Palm Pilot PDA devices and smart cards in May of 2001. Loan officers used the PDAs to record client transactions in the field, which were simultaneously recorded on the smart cards that were provided to clients as a form of backup. During the year-long pilot program, SKS tested the new system in two client centers, marking improvements in accuracy, loan officer productivity and operational efficiency. This initial pilot was supported through $125,000 in grants and soft loans received from CGAP (the World Bank's apex body on microfinance), Digital Partners and Grameen Foundation USA (two US-based non-profits working on technology-based solutions for international development challenges).

Over the year long pilot period, SKS observed significant improvements in the accuracy of the records collected from the field and similar improvements in efficiency for their subsequent delivery to the central MIS[7]. However, the average reduction in village meeting times was only by 10%. After much thought, SKS decided to discontinue the pilot, citing prohibitive hardware and software costs. SKS is still optimistic about the potential for technology as a means to improve its efficiency and expand its operations. However they are unsure about the use of PDAs and whether or not they represent a judicious use of resources in collecting information from rural clients[8].

Compartamos, a microfinance institution working in Mexico, has also grown very fast in a short time and now stands as one of the largest microfinance service providers in that country. Originally started as a pilot project of another large Mexican NGO in the early 1990s, Compartamos became an independent microfinance institution in 1995, and since then has doubled its operations approximately every 2-3 years[9]. It currently reaches more than 150,000 clients located all over Mexico.

Compartamos is supported by the international Accion network, which specializes in supporting a style of microfinance called *village banking.* With the support of Accion, Compartamos undertook a pilot project to use Palm Pilot hand-held devices to aid in their field operations. However, unlike SKS, one of the primary motivations for Compartamos in using hand-held technology was in automating its loan application and approval process. As mentioned earlier, this is one of the key determinants of efficiency in the microfinance industry. Organizations often use detailed algorithms and calculations to decide which clients are eligible for receiving new credit, under what terms.

However, Compartamos, like SKS, has also discontinued its hand-held pilot

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7 CGAP IT Innovation Series, http://www.cgap.org/docs/IT_smart_card.html
8 SKS MIS Management Team, Personal Communication
9 MIX Market Home Page,
   http://www.mixmarket.org/en/demand/demand.show.profile.asp?ett=237

project[10]. One again citing high hardware and software costs, paired with additional difficulties in synchronizing the hand-held with the central MIS, management decided it had more important priorities than continuing the Palm Pilot experiment. While Compartamos and its technical advisers are still optimistic about the use of PDAs in the field, convincing evidence to support their use given current resource limitations has been hard to come by.

Another example of an organization experimenting with Palm Pilot technology to optimize field operations can be found in the Grameen Bank's own backyard in Bangladesh. SafeSave is a relatively small microfinance institution working in the urban slums of Dhaka, the capital city of Bangladesh. One of the novelties of SafeSave's approach is that it is a savings-led approach – the organization focuses on building clients' savings first, and only issues credit that is secured against a client's future or past savings[11].

This is notable, as offering a flexible savings product has long been one of the main challenges facing microfinance institutions worldwide. Clients have long demanded access to flexible savings products, and in fact some observers view microcredit loans as one form of "after-the-fact" savings for clients. However, due to difficulties in accurately capturing savings transactions of unknown value and protecting against internal and external fraud, savings has been one of the most difficult services to offer to rural microfinance clients. Loans are easier for MFIs to manage in that the value of the expected payments and collections for the day is known in advance before the loan officers go out for their rounds. In some countries there are also government stipulations that restrict the kinds of savings products microfinance institutions can provide to their clients. Lastly, and most importantly, MFIs have yet to find a way to get money into and out of villages cheaply and efficiently enough for offering a cost-effective savings product. The result is that very few microfinance organizations have been able to offer safe, flexible savings to their clients, which in some cases is a service that clients need more than loans.

SafeSave, supported by a $15,000 donor grant, is currently in the midst of a two-year experiment using Palm Pilots involving two branches with about 3000 clients[12]. Similar to SKS, SafeSave is using these relatively inexpensive PDAs (approximately $100 each) to document transactions in the field and to automatically upload these transactions into the organization's central MIS. SafeSave's management has noted several benefits thus far, including better use of staff time, faster loan processing, adherence to rules and

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10 CGAP IT Innovation Series, http://www.cgap.org/docs/IT_pda.html
11 SafeSave Home Page, http://www.safesave.org
12 Mark Staehle, Technical Advisor, SafeSave, comments made in Virtual Conference on E-Banking, February 16-27 2004

regulations and more accuracy. However, they have also noted that "cost savings is not really the big driver – direct expenses per transaction is likely to be at least as much as paper and manual data entry."[13] In an industry driven by scale and the slimmest of operating margins, it remains to be seen whether or not SafeSave will continue the pilot when it comes down to using their own hard-earned funds.

One of the few microfinance institutions that has been unequivocally positive about the use of PDAs in the field has been Basix.   Basix is one of the largest MFIs in India, currently operating in six states and serving over 150,000 poor clients. Together with its technology partners, Basix has invested a lot of time and resources in developing IT solutions supporting its operations. This includes an MIS solution (FAMIS – Financial Accounting and Management Information System), with an integrated mobile solution for the field, using high-end hand-held devices from Oregon Scientific[14]. Basix has even created an independent consulting arm which implements FAMIS at other microfinance institutions.

Basix has noted many benefits from its mobile computing solution. This includes a reduction of transaction costs, improved accountability, speedier synchronization with the central MIS (Basix's solution includes a wireless uplink feature allowing remote synchronization) and increase in customer trust by providing printed receipts in the field. The project's managers noted only small, easily overcome technical problems in the initial implementation. In use since September 2001, in its first 18 months of operation the system was used to   process over 50,000 transactions with a cumulative value of US $450,000[15].

Basix has clearly spent a lot of money on this solution – it relies on more expensive hand-held devices with add-ons (modem, printer) not seen in other prototype deployments. Basix made a huge capital investment to support the development and roll-out of this system. According to reports, Basix has spent more than US $500,000 in developing its information technology infrastructure, including a $350,000 assignment from the International Finance Corporation and more support from the Small Industries Development Bank of India[16]. Basix may now be reaping the rewards of this investment, but it is hard to imagine many microfinance institutions have access to the capital resources needed to develop and support such a system.

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13 Ibid
14 V. Chandra Rao, Mobile Computing for Microfinance, I4donline Magazine, January 2004, http://www.i4donline.net/issue/jan04/mobile_full.htm
15 Ibid
16 Janaki Turaga, Opportunities and challenges in India: Crafting the MF/IT Paradigm-The Indian Experience, I4donline Magazine, January 2004, http://www.i4donline.net/issue/jan04/opportunities_full.htm

As noted in a recent CGAP article, institutions commonly spend between $20,000 and $80,000 on their mobile computing implementations, plus hardware costs, plus yearly maintenance costs ranging between $3,000 and $8,000. These solutions have been developed over time frames ranging from 9 months to two years[17]. As noted above, sometimes the investment can be much more than this. It is apparent that the integration of mobile hand-held computing for collecting field information is an expensive and time-consuming process, and only those institutions that are willing to invest the time and money are going to reap any significant rewards. In an industry where there is little free money and even less free time, it is not surprising to find that most of these prototypes have been discontinued due to inconclusive results.

At the same time, many other institutions have been successful managing their field data requirements using manual, paper-based methods. Paper is a cheap, flexible, readily available information medium that can serve almost all of the same purposes that a mobile computer can in the field – the ability to collect and deliver information, albeit a bit less quickly than using electronic methods. In markets where labor costs are low, this is not nearly enough of an incentive to switch to prohibitively expensive solutions for marginal improvements in efficiency.

In discussions with leading microfinance technology advisers, it has emerged that the only situation where paper is not a sufficient tool for microfinance in the field is when calculating the results of credit-scoring algorithms for evaluating a clients suitability for a loan. As very few MFIs use such scoring methodologies, particularly those practicing solidarity group lending for which this technique is not applicable, it is clear that this is not a case of much value for meeting the broader needs of the industry.

The Grameen Bank has long emphasized the importance of standardized procedures and processes rather than technology-driven solutions. In discussions with an experienced Grameen Bank district manager, he stressed that it is important to inculcate loan officers with the importance of following proper procedures in client management and accurate documentation. In his view experience with manual, paper-based MIS procedures helped rather than hindered loan officers' understanding of these standards. By performing these rote operations they are more familiar with the data that is collected in the field and how it is used within the institution.

Designing Standard, Accessible Paper Documentation Formats for SHGs and SHG Networks in India

Working with ekgaon technologies and the Covenant Centre for

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17 CGAP IT Innovation Series, http://www.cgap.org/docs/IT_pda.html

Development in Madurai, India, we are currently working on developing standardized, accessible paper MIS formats for SHGs and SHG networks. SHG banking is a form of microfinance that has emerged and with government support become very popular in India. An SHG (self-help group) is a cooperative of 15-30 women, who communally save money in regular monthly or weekly increments. This pooled capital is then used to finance loans to group members or, in some cases, to provide loans to external parties (such as other groups) or to make community investments. In many ways SHGS are similar to "informal" cooperative banks, which have existed for quite a long time all around the world.
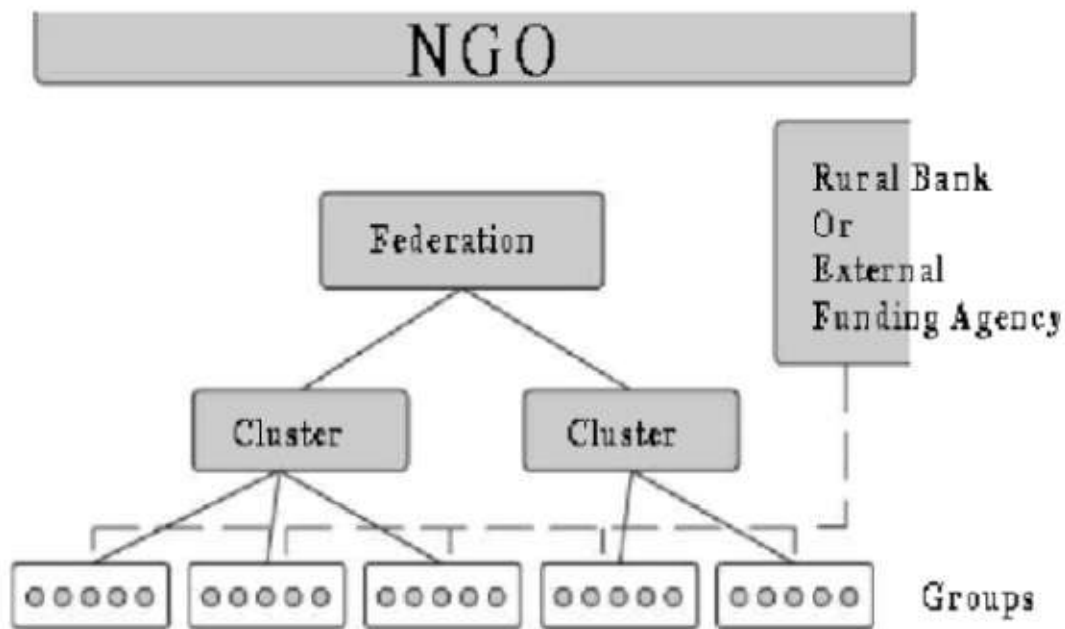

Figure 1: Structure of SHG Networks

In India, SHGs are most often formed and trained by non-governmental organizations (NGOs). These NGOs provide valuable assistance to SHGs, including maintaining their accounts, resolving disputes and helping them to link to external sources of capital. This external capital can be provided by local banks, which will typically lend to SHGs after they have reached a certain level of stability and self-sufficiency (typically six months).

This practice is supported by NABARD, the Indian National Bank for Agriculture and Rural Development. NABARD will refinance a bank's loans to SHGs at an attractive interest rate, which together with SHGs typically good repayment rates make it an attractive investment opportunity for banks. More importantly, this is a way for banks to meet quotas imposed by the Reserve Bank of India that stipulate a certain amount of every bank's

loans must go towards national "priority" areas, such as the rural sector.

In some cases groups of SHGs will be guided by NGOs to form larger super-structures, like clusters and federations. These "cooperatives of cooperatives" facilitate things like loans between groups, larger group investments, and other inter-group activities. In some cases federations can also access larger amounts of capital directly from financial institutions or donors.

These structures can become quite complex and powerful, which can make the job of managing and administering SHGs and SHG networks tedious. As SHGs mature they are supposed to become independent to the point where they can be managed internally by the group members themselves. As an article from PRADAN (one of the pioneers of the SHG movement) relates, "The approach that PRADAN has adopted requires that the groups become independent from PRADAN in a reasonable time frame so that the staff is free for their core task of livelihoods promotion."

However currently almost all SHGs are still heavily dependent on the NGOs which themselves rely on donor funds for their survival. It is our opinion that SHGs and SHG networks would benefit greatly from a set of standardized MIS formats and procedures which they could follow in their local language. This would reduce much of the "reinventing of the wheel" that must happen when NGOs train new SHGs in data recording and management. Currently each such NGO must develop its own set of forms for conducting these basic documentation tasks.

Village Banking and Grameen-based microfinance institutions already benefit from such standards in their particular lending methodologies. Even for SHGs, standards do exist in certain states, but they are unnecessarily cumbersome and can vary from state to state. These formats are commonly based on traditional accounting documents, which are difficult to use and understand for SHG members.

We are attempting to develop a much simpler set of forms which can be used directly by SHG members, if necessary with the help of locally known villagers who are more literate. This will consist of a set of simple records, journals, ledgers and an operational manual, to codify documentation guidelines and guide members in the analysis of basic records. We are currently in the process of developing this MIS. After the initial trial run has been completed, it is planned that this paper MIS will be tested in at least 90 more SHG Federations spanning several states.

In this work we are applying some of the same principles we had obtained earlier while working on developing an accessible *computer* user interface

for the same purpose[18]. It is interesting to note that as we have worked on this project many of our underlying assumptions have changed drastically, but the guiding principles we have discovered along the way have remained strikingly consistent. We will consider this topic again in the conclusion.

Challenge #2: Management and Information Systems at the Institutional Level

Over the course of the last year I have had the opportunity to visit eight microfinance institutions and observe their MIS (Management and Information System) implementations. Five of these MFIs were in India, while the other three were in Central America. They ranged in size from medium to small, between 10,000 to 50,000 clients, and practiced various forms of microfinance lending methodologies.

Some of the observations in India were collected while working as a consultant evaluating MIS implementations for organizations such as CGAP, Grameen Foundation USA and ekgaon technologies. The remaining observations were collected as an observer on field visits with the Grameen Technology Center's Microfinance Automation project[19].

Over the course of these visits, we observed many common trends. Six of the eight organizations we visited were using a system based on Microsoft's Visual Basic and Access[20] software development packages. Of the remaining two, one MFI was in the process of migrating from an existing Delphi application to a PHP / MySQL solution that was developed in-house. The other did not have a computerized MIS and stored all of its data manually.

Visual Basic is a software development platform that uses a simple visual programming language to develop single-user client applications. It is designed to be used with Microsoft's Access database, an easy to use non-relational database typically meant for use on a workstation. Due to its ease of use and the abundance of training materials, Visual Basic / Access programmers can be found in abundance in almost any corner of the globe. This makes applications based on this platform amongst the most inexpensive to develop and maintain.

However, this platform does have significant limitations. The Visual Basic programming language does not support a modular separation of the user's view of the application from its implementation, which is a fundamental

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18 Parikh, Ghosh, Chavan, Syal and Arora, Design Studies for a Financial Management System for Micro-credit Groups in Rural India, http://www.cs.washington.edu/homes/tapan/papers/p0314-parikh.pdf
19 Grameen Technology Center Home Page, http://tech.gfusa.org/automatn.shtml
20 Microsoft Home Page, http://office.microsoft.com/home/office.aspx?assetid=FX01085791

driving principle in the design of modular, extensible software. Moreover, the Access database is not a true relational database. It is not meant to be used in client-server applications and can not reliably handle multiple users, excessive load or large data sets.

Many MFIs have experienced difficulty expanding or adapting software based on this architecture. Either as they seek to diversify into new financial products, adapt an existing software to their needs, or grow towards a multi-user client-server architecture – it was not found to be a flexible or scalable enough platform upon which to implement the new requirements. As a result, institutions had to spend excessive time, money and resources to develop a completely new system or completely redesign their existing one.

However, VB / Access based solutions are currently the runaway leader when it comes to microfinance MIS implementations all over the world. Why is this the case?

Out of the eight organizations we visited, five of them had developed the software locally (two had developed or were developing in-house solutions and three had sourced solutions from a local software provider). Of the remaining three, two were in the process of migrating from a software developed by a local provider to a specialized microfinance MIS developed by an international provider. Only one organization had started with a system developed by a non-local software provider that had any previous experience developing microfinance MIS systems.

In this kind of market – driven by specialized, local software development – one can expect a lot of "re-inventing of the wheel". Microfinance institutions are continually re-developing custom MIS applications with little potential for scaling or future adaptation. Largely driven by programmers without significant technical experience, these systems have had difficulty when it comes to adapting for new purposes, or scaling for multiple users. In fact, only those MFIs that have a full and capable in-house IT team have had any success in these situations. This is a luxury that most microfinance institutions frankly do not have the resources to support.

The case was not much better for those MFIs working with solutions developed by an international software provider. Often, the international provider could not provide the training, support and small customizations that the MFI might require. In return, the MFI was most often left no choice but to learn on their own, and adapt their processes more towards those supported in the software. Lack of technology capacity in many microfinance institution leaves them very limited in their options for handling such situations. Once again, those institutions with permanent, capable in-house IT teams were invariably better off.

The two international software products that we observed were both developed by relatively small software houses focused on developing microfinance applications. Both were based on the Visual Basic / Access platform.

International microfinance software providers who offer more high-level products have had difficulty in finding a market. Many of these products come from a commercial banking lineage, and are therefore not fully compatible with some of the special features of microfinance (solidarity lending, group meetings, no direct collateral, etc.). Usually these international solutions are only used in cases where there is very strong donor support for the system that can pay for some or all of its implementation. Even in these cases most implementations have not been very successful. MFIs are frankly far more comfortable working with local technology service providers.
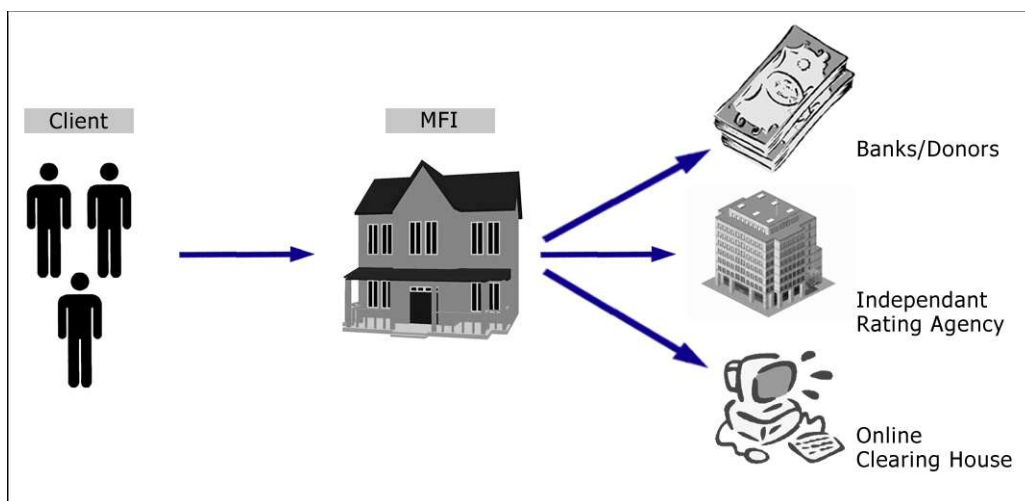

Figure 2: Information channels in microfinance.

So this is the situation that we are left with – a fragmented international microfinance software market where no clear industry standards have emerged and the vast majority of current MIS implementations are unsuccessful, flailing or barely meeting the institutions information needs.

The demand for MIS is driven by the outputs – performance reports for donors and creditors, analytic reports for directors and senior management, and operational reports for staff and clients. Currently much of this demand is met through arduous "information" labor – such as picking through disparate sources to compile consolidated Excel reports. This is a grievous waste of time for already overburdened individuals who do not have much to waste. And as a result outside information recipients, whether they be

donors, creditors or third-party evaluators, can never really be sure of how the figures were calculated and how accurate they are.

In an industry where information is such an important commodity, this should be a cause for significant concern. So far it seems that more international attention has gone towards the development of hand-held technologies for field data collection, which while an innovative experiment, is not in our opinion the main information challenge facing the industry. In the following section we will outline one approach towards solving this difficult problem.

Mahakalasm MIS: MIS for SHG Networls

This project is assembling an open-source, easy to use MIS for SHGs and SHG Federations in India and abroad. The Mahakalasm MIS toolkit is also suitable for use by similar kinds of community-based micro-financial institutions, such as village banks, MACS, SACCOs, etc. The toolkit consists the following main components:

- Manuals and Formats - Documented procedures and paper data formats for collecting information and managing records.
- Mods to SQL-Ledger - Customization of the open source SQL-Ledger accounting package for use by SHGs and SHG Federations.
- Portfolio Management System - A web-based portfolio management and reporting system for SHGs and Federations.

The pilot implementation of the Mahakalasm MIS toolkit is being done with four SHG Federations near Madurai, Tamil Nadu. These Federations are locally referred to as Mahakalasms, or large storage jugs. The pilot implementation is scheduled to begin in January 2005. The second phase of implementation is currently being planned for the CEFI network of SHG Federations, located across Southern India in seven states and with over 150,000 individual members. These community-based financial institutions require inexpensive, easy to manage information systems to grow and offer a consistent value to their members. More details about each aspect of the project can be found below:

- **Manuals and Formats** The first step is to document the organizational procedures used in SHGs and SHG Federations and to specify standard data collection and reporting formats. We are currently working on the redesign of the paper record keeping formats used at the Mahakalasm federation in Pulvoikarai, Tamil Nadu. We are also developing a local-language training and policy manual for use by the Mahakalasm.
  As part of this process, we are trying to simplify the existing formats by removing some of the gaps, inefficiencies and redundancies. As described earlier, we are specifically designing the formats to be easy to use, and

potentially be at least partially understandable by uneducated or semi-literate group members.

- **Accounting System** Accounting is probably the most common and demanding data processing task for many microfinance institutions. This is the first phase of the Mahakalasm Computerization project, automating the current ledger-based accounting system. Right now the Mahakalasm expends great effort and resources in producing even the most basic accounting reports. Computerizing the accounting system should make it much easier for the Mahakalasm to prepare financial reports and handle audits.

- **Portfolio Management System** For the second phase of the Mahakalasm Computerization project, we are developing a web-based porfolio management system for use by SHGs and SHG Federations. This part of the toolkit will require the most work, as there are not many open source products or libraries that would be helpful. Currently it is planned that the system will be implemented in PHP or Perl. As it is not feasible that individual SHGs maintain their own computerized records, they will continue to maintain their basic records manually. However, we are planning that the Mahakalasm will offer computerized record keeping and reporting services to individual groups for a monthly fee. For this purpose, the accounting and portfolio systems will be able to handle record-keeping at both the federation and group levels.

For the current status of these efforts, or to find out how you can contribute, please visit the project web page http://mission.sarovar.org.

Challenge #3: Conducting Financial Transactions in Remote Rural Areas

The one thing that we found as an almost universal challenge in microfinance institutions was the collection and disbursement of money in the field. Historically this has been done by most microfinance institutions in a cash-centric, labor-intensive way.

In the most common model, most transactions are done directly between loan officers and clients. Cash payments are collected in the field by a loan officer and returned to the branch office. There the branch manager collects money from all of the loan officers, to deposit in the bank either that or the following day. Loan disbursements are handled similarly, loan officers will travel to the field to disburse the loan to the client.

If there is a nearby bank that will cash checks for microfinance clients, the branch manager may disburse loans in the form of checks in the names of the recipients. It is the responsibility of the loan recipient to go and cash

the check at the nearest bank branch. In the case of India, there is a widespread regional rural bank (RRB) network that is supported by the central government. Many microfinance institutions in India will establish relationships with these regional rural banks to make it easier for loan recipients to go and cash checks at the nearest possible location.

In some cases bank branches are not accessible nearby, or they will not deal with what they perceive as poor, uneducated microfinance clients. Then loan officers would need to travel to villages regularly with large amounts of cash. Due to safety and security issues, MFIs generally do not do this and require clients to come to the branch office (usually in pairs, again for security reasons) to collect the loan.

For clients, cash transactions are clearly the most convenient. However, security issues make cash difficult to transport into and out of villages. As microfinance groups meet on a regular schedule, it would be quite easy for a potential thief to predict when a loan officer might be traveling through an area with significant amounts of cash. In one of our visits, we heard of a loan officer who was murdered during such a robbery. In another case an MFI had to equip all of its officers with a private vehicle because it was found not to be safe to ride the public bus to meetings.

Transacting in cash increases the potential for fraud by loan officers. In several cases we heard of loan officers who had under-represented loan repayments, only to be caught days or weeks later. This is the one reason that microfinance institutions cannot offer flexible savings products to their clients. Even if it was allowed by the government, it would be too difficult for the MFI to track how much money a loan officer should be bringing back and forth from the office every day. This would leave the door wide open for potential fraud that would take weeks if not months to track down.

To meet these challenges, many microfinance institutions are starting to lean more heavily on local bank branches for handling their cash tractions. In addition to doing loan disbursements via check, they have also begun to collect repayments by asking clients to make deposits in specified accounts at local bank branches. The clients then bring the processed deposit slip to the group meeting as proof of their payments. The MFI then transfers these funds out of these "dummy" local accounts into their main institutional accounts. Out of the eight microfinance organizations we have visited in the last year, all of them had begun to collect some or all of their loan repayments in this manner.

However, this is not seen by most observers as a long-term, internationally applicable solution. Rather, this is seen as a short-term way to shift risks and expenses from microfinance institutions to clients, regional rural banks and indirectly to the government that subsidizes them. In many countries

and locations there are not such extensive rural bank networks that MFIs can rely on. In these cases it is the client that spends the time and money to travel to bank branches and conduct transactions.

In India, these rural banks are essentially providing a free service to microfinance institutions. The money is not left in their accounts for long enough to earn any appreciable interest, nor is there any per-transaction service fee. Due to the small value of microfinance transactions, any reasonable charge would be proportionately too small to probably make any business sense for the bank. Therefore, with no sound business case linking them, the relationship between microfinance institutions and these regional rural banks can be very inconsistent. In many cases the MFI must spend significant time lobbying the bank's local management before they provide service to their clients. If this does not work, they must appeal to the bank's central management.

We observed an interesting example of this scenario during our visit to CASHPOR, a microfinance institution operating in eastern Uttar Pradesh. CASHPOR is collaborating with ICICI bank in a new model for microfinance[21]. In this model CASHPOR manages all of the field operations – recruiting clients, managing group meetings, processing loan applications, issuing disbursements, collecting repayments and following up on delinquent loans. For their part, ICICI provides all of the loan capital. CASHPOR receives a 5% service charge on each loan disbursed to meet its operating expenses. All of the remaining interest and principal repayments should go directly back to ICICI.

We say that the payments should go directly between ICICI and the clients, but that is really not the case. Once again, the regional rural bank network must handle the brunt of the transaction handling. When ICICI sanctions a loan, it transfers the required capital to CASHPOR's account with ICICI. After collecting its 5% service charge, CASHPOR transfers this money into an account with the regional rural bank, so it can issue a bearer check to clients to disburse the money. Deposits work the same way. Clients deposit money into CASHPOR's account at the regional rural bank, which CASHPOR then transfers to its account with ICICI, which is eventually debited back to ICICI's consolidated portfolio account.

Because all of the loan capital is provided by ICICI, CASHPOR is able to focus on its role, doing the main work of developing clients and their businesses. They do not have to worry about where the capital will come from as long as their clients can keep using it. This gives them a lot of leverage in aggressively pursuing new clients and expanding their operations. However, the regional rural bank still must handle the thankless task of

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21 Grameen Connections,
   http://www.gfusa.org/newsletter/summer03/RemovingBarrierstoGrowthinIndia.shtml

processing the cash transactions in the field, for which they receive no financial retribution or gain.

Another problem in this approach is dealing with cash inactivity. Due to delays and inefficiencies in India's funds transfer network, money transfers from a central bank to a regional rural bank branch may take inordinately long. In this case, the transfer between ICICI's consolidated account and CASHPOR's rural bank account can take up to seven days in each direction.

Bindu Ananth and Bastavee Barooah of ICICI Bank's Social Initiatives Group talked about the costs associated with slow cash transfers in a previous issue of i4d weekly[22]. While funds are in transit and therefore financially idle, someone must pay for the interest that should be accruing on that money. In fact this can be a major cost for microfinance institutions which has been an issue at every microfinance institution that we have visited. In many this cases this cost is passed on to the clients, in other cases the institution has to bear this financial cost. In inflationary economies this problem is exacerbated.

As Ananth and Barooah mention in their article, "the challenge for banks is to innovate a low-cost network / delivery channel with a high outreach and flexibility with respect to the timing of its operation." Rural transaction processing has been one of the areas of most intense technological investigation for MFIs. There can be many factors in the successful design of an electronic banking solution for remote rural areas. These include hardware costs, communication costs, geographic accessibility, power and connectivity requirements, government regulations and customer acceptance. Any successful solution must address all of these issues.

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22 Bindu Ananth and Bastavee Barooah, Leveraging technology for micro banking,
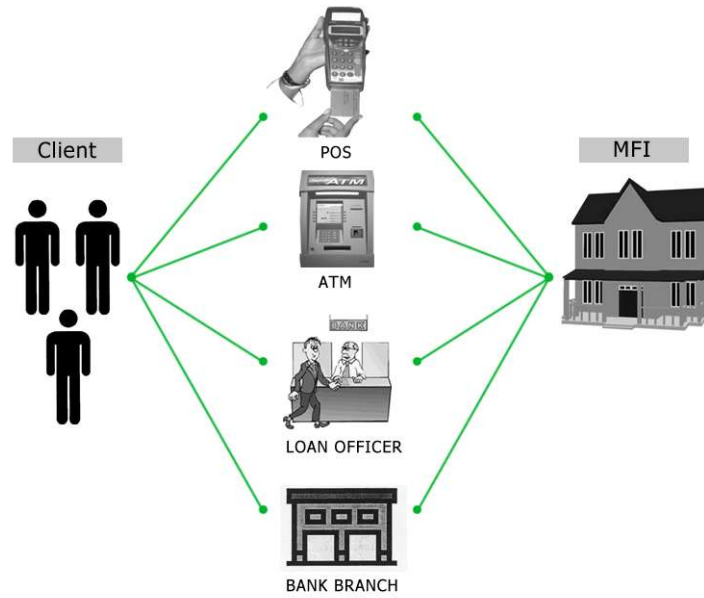   http://www.i4donline.net/issue/jan04/leveraging_full.htm

Figure 3: Rural cash handling options for MFIs.

To this end, several initiatives have developed low-cost ATMs suitable for the microfinance market. ICICI is working with IIT-Madras, one of the premier technology universities in India, for the development of a low-cost ATM machine[23]. The current prototype carries a price tag of 30,000 Rupees, which is approximately $700 USD. This is a quantum leap from the costs of a typical commercial ATM, which can range anywhere between $15,000 to $30,000 dollars. It is also planned that IIT Madras's ATM will eventually include built-in fingerprint identification and web cameras for identifying clients.

Another project using low-cost ATMs is underway in Bolivia. PRODEM is a large Bolivian microfinance institution that is one of the widest reaching financial service providers in that country. Since early 2001, PRODEM has establish a dedicated ATM network across all of its branch offices and at many other standalone locations[24]. Clients have found it very convenient to conduct transactions at any time using this extensive network.

PRODEM's ATMs leverage technologies such as touch screens, fingerprint recognition, smart cards and a multi-lingual voice interface to serve its mostly illiterate, ethnic minority clients. This is done at a cost of only $18,000 per ATM, still significantly less than the prices charged by most commercial vendors. PRODEM achieved this cost savings by building its own machine sourced from local hardware providers.

While this project has been a success at PRODEM, so far the cost and

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23 IIT Madras TENET Group, http://www.tenet.res.in/Press/atm_icici.html
24 Digital Dividend PRODEM case study,
   http://www.digitaldividend.org/case/case_prodem.htm

infrastructure requirements of ATMs have remained prohibitively high for most microfinance institutions. Even these "low-cost" ATMs are still out of the financial reach of most MFIs.

Another more economical approach relies on "human-mediated" ATMs. In this case the client conducts transactions with a local human proxy (often a merchant or trader), who is equipped with a Point-of-Sale (POS) device. These transactions are conducted on behalf of the MFI or bank, and securely stored on the client's smart card. The MFI can later collect the money from the merchant and issue some payment in exchange for his services.

Several initiatives in Africa are currently testing this approach[25]. One project is led by Hewlett Packard and an association of several large MFI networks. They are seeking to develop a generic *Rural Transaction System[26],* suitable for conducting many kinds of transactions. This project is currently entering a trial deployment, and expect to have the results of this pilot by the end of the year.

POS devices have already been used in similar trials in India by ICICI bank in Karnataka and the Warana sugar cooperative in Maharashtra. So far the major impediment to their success has been the cost of the POS device, which ranges between $100 and $300 dollars. It has been difficult to convince merchants of the value of this investment without a proven cash flow in place.

This has led some to believe that these small rural businessmen may not be the best place to introduce new technology. Merchants currently have no stake in the relationship between clients and the microfinance institution. Therefore it might be better to install POS devices first in branch offices, so that local merchants can have an opportunity first hand to see the value of the device and the potential new business that can be generated.

For example, POS devices have been successfully used in closed-loop economies, such as the Warana sugar cooperative in Maharashtra. In this case members of the cooperative are paid via deposits on a smart card, which can later be used to buy agricultural inputs and other goods from the cooperative's stores. While this is not strictly a microfinance scenario, it does illustrate that to effectively implement a smart card solution one must have an influence on both the source and eventual destination of the currency.

Another "human-mediated" approach uses an Internet kiosk instead of a

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25 Microfinance Gateway, Experiments with Point of Sale Technologies Underway in Africa, http://www.microfinancegateway.org/content/article/detail/19469
26 Microfinance Gateway, Uganda Remote Transaction System Pilot, http://www.microfinancegateway.org/content/article/detail/19145

POS device to connect to an on-line banking application. The merchant records transactions on the kiosk, and the client is provided with a paper receipt. ICICI Bank has been trying to prototype such a solution with some of its MFI partners in Madurai, India. ICICI already supports several community Internet and tele-center projects in the region[27], and using these facilities to provide banking services is a natural extension of these efforts.

However, so far ICICI has been limited in this effort by Reserve Bank of India (RBI) regulations that explicitly prohibit such "proxy" banking. ICICI is actively lobbying the RBI for an easing of these regulations, but they will need to prove that there are security mechanisms in place that limit the potential for abuse by proxy bankers before this approach is accepted by customers or the government.

With all of these experiments still underway, so far it is safe to say that the best solution for rural cash management has yet to emerge. All of the solutions developed thus far have been limited by factors of cost, infrastructure, government policy, customer acceptance, or a combination of these. As technologies mature and we learn the results of some of these initial trials, we should watch for continued development in this area.

Future Scenarios

As we discuss the future of rural microfinance service delivery, we must also keep in mind that microfinance is a young and evolving industry. Only very recently has it been seen on an international scale as a viable commercial opportunity, and not as a fringe activity for non-profit organizations. As the industry develops it is quite likely that we will see some shifting of roles and responsibilities in the microfinance sector. In this section we discuss some ways in which that could happen.

Currently there are several large international and national banks have already or are seriously considering entering microfinance as a potential commercial market. Several examples of this have already been discussed in this paper, and there is no doubt that there is a "buzz" around this topic in the industry. As long as microfinance clients can continue to prove their repayment performance, and new low-cost delivery channels can be innovated, there is no reason to believe that commercial banks will not become more involved in microfinance in the coming years.

However, there are some aspects of providing microfinance services that most banks probably will never do, at least not as they are currently structured. Most people familiar with microfinance will agree that there are three very important factors in running a successful microfinance operation

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27 SARI Project Home Page, http://edevelopment.media.mit.edu/SARI/

– 1) vision from the top, 2) reliable information systems, and 3) quality field staff. If the top-level visionary provides the brains, and the information systems are the nerves, then it is the field staff who truly form the backbone of the microfinance institution. Field staff carry out the key task of managing relationships with the clients. It is they who are truly "bankers to the poor", and it is based on their work that the economic development (and hence repayment performance) of the clients truly lies.

Good field staff are grassroots people who understand the rural scenario and can relate to microfinance clients. They must interact daily with clients – training and advising them in their financial decisions. Moreover, this relationship must be driven by a coherent vision from the top that directs their activities for the financial betterment of their clients. While a bank is certainly better equipped in terms of access to resources, capital and existing information systems, it is the microfinance institutions and their understanding of the rural context that currently provides the vision and forms the grassroots backbone of the industry.

While private banks may eventually choose to develop an integrated grassroots arm for reaching out to clients, currently it seems too expensive and too far from their core strengths to be a reality any time soon. More likely we will see an increase in partnerships such as the one between ICICI Bank and CASHPOR – where a mainstream bank looks at microfinance institutions as grassroots partners that allow it to effectively offer financial services to the rural poor.

However, the same trend may represent a "fork in the road" as far as MFIs are concerned. Most microfinance institutions are happy to partner with banks in order to access capital for their clients. At the same time, many institutions are finding it difficult to cope with the strain of rapid growth and increased financial accountability that goes along with these new formal relationships. They find that they do not possess the capacity to manage these requirements effectively, and may even see it as a distraction from their core social agenda.
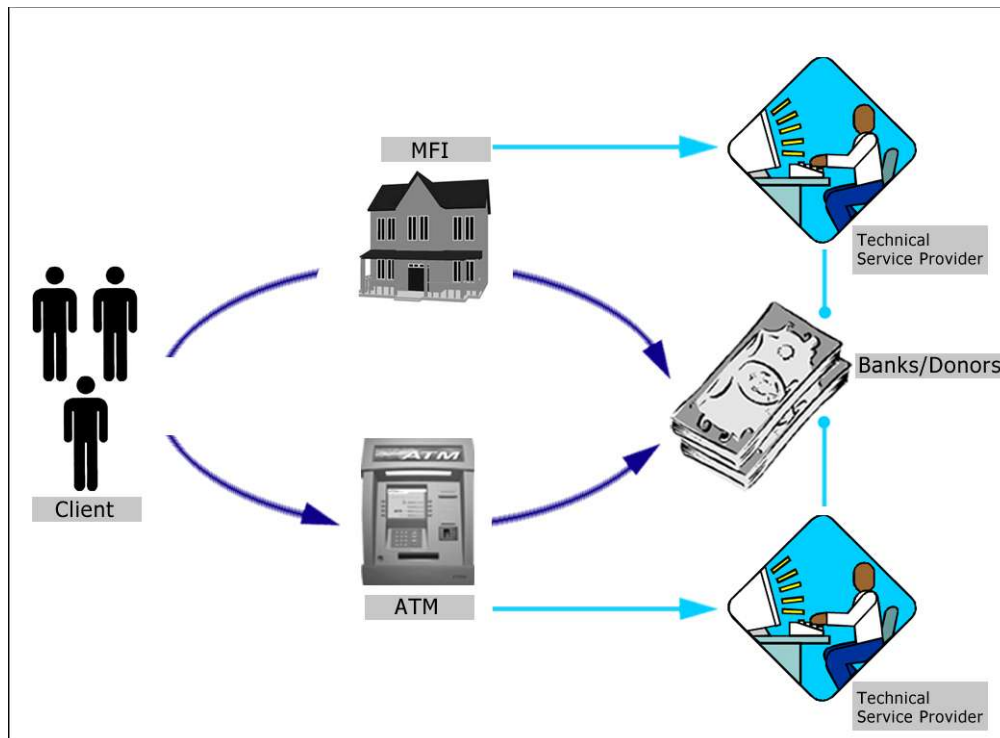
Figure 4: Future scenarios in microfinance, and the role of technical
service providers.

In the future one may begin to see more off-loading of administrative and
IT-related tasks from MFIs to partner banks or to other third-party service
providers. The MFI may still handle basic data collection and manual, paper-
based administrative duties internally, but most of the computerized data
processing, analysis and reporting may be "out-sourced" to institutions with
more technical capacity.

This out-sourcing could be done by a partner bank, who might maintain a
single consolidated department that looks after the MIS systems of several
partner MFIs, or it could be done by a private service provider that
specializes in maintaining the MIS systems of MFIs on a contractual basis.

Additionally, the bank (or service provider) may implement its own rural
transaction infrastructure, such as an ATM or POS network, to save MFIs
from the arduous task of cash management. This would leave the MFIs
relatively free (and unprejudiced) to focus on their main tasks of recruiting
clients and helping them in their financial betterment.

Alternatively, some MFIs may choose to incorporate into private companies
and focus on building the technical capacity required to effectively provide
microfinance services.   Examples of this abound already – many of the
largest microfinance institutions in the world either started as or
transitioned to become commercial for-profit entities focused on providing
microfinance services. In this case they may choose to take on many of

these technical challenges themselves. The social agenda would largely become secondary for these organizations, as it already has in many cases. This issue can be addressed by working with non-profit and development organizations specializing in social causes.

In either case, as the industry matures the door seems wide open for third-party service providers to enter the market and perform the tasks that neither banks nor MFIs want to do. For example, this could include outsourcing of the entire MIS and other administrative applications to an on-line *application service provider* (ASP). The ASP model is becoming popular in the mainstream corporate sector (for example, see www.salesforce.com). MFIs would be the perfect candidates for outsourcing such applications to an external service provider.

Several private companies and international network organizations have already started providing ratings and evaluations of microfinance institutions. Grameen Capital, a new company in India, has taken on the role of consolidating existing microfinance portfolios and selling them to financial institutions in insecurities deals[28].

Another business opportunity lies in building and implementing low-cost rural transaction channels that can be used uniformly by banks and microfinance institutions. It remains to be seen which of these business opportunities will be taken and which will remain viable with the continued development of the microfinance industry.

Conclusion

However these scenarios resolve themselves, we feel that the future of microfinance depends on certain guiding principles that determine the health and stability of any evolving industry. In some sense the future of microfinance will depend on the answers it chooses for the following key questions:

- **Specialization –** What roles will various industry actors assume, and what strengths will they specialize in? What new business opportunities will be created? Will there be anyone left to play the social development role currently undertaken by non-profit institutions working in microfinance?

- **Standardization** – What standards of operation, information exchange

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28 Counts, Stahl, Hastings and Dunford, Capital Markets Initiatives and Social Empowerment, https://marriottschool.byu.edu/conferences/microenterprise/presentations/Counts%20Stahl.ppt

and accountability will the industry agree to? How can we make sure such standards remain transparent and allow for the widest possible participation?

- **Systemization** – What supporting systems will emerge to govern these new structures? Who will ensure that they remain fair, impartial and beneficial for all involved?

It is an exciting time to be working in the microfinance industry. As the movement evolves from a social undertaking to a commercial one with strong social underpinnings, it will be interesting to see how it handles some of the conflicts that are sure to arise. It is a novel case merging capitalism and the common good, and, if handled properly, it could prove to become a truly international success story where the end result is the upliftment of many human beings.