

RTS Financial Analysis

Evaluation of Three Business Models Tested in Uganda Pilot

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Overview

1.1. Uganda Microfinance Sector Case Study

Worldwide Microfinance serves a current customer base of between 40 and 70 million clients and has achieved a remarkable record as one of the few sustainable approaches for alleviating severe poverty in developing countries¹. This is accomplished via access to credit and other financial services tailored to serve these people and allowing individual “micro entrepreneurs” to create small business activities in their home or local community creating sustainable economic value. Unfortunately the need is much greater than current capacity, with a potential market of nearly 500 million clients worldwide at the “bottom” of the pyramid. A further opportunity one step up the economic ladder is the “unbanked” client population, estimated to exceed 4 Billion in the low and middle income countries of the world. The current growth curve of microfinance institutions is orders of magnitude below what is needed to service the potential market in any acceptable time frame. Current operating models for microfinance institutions in the developing world show many small/medium size players in a fragmented market, who are typically characterized by a lack of data standardization, infrastructure and operational capacity. The challenge is to identify and address systemic barriers to more rapid growth. The authors and participants set out to answer the question “What changes in operating philosophy, methods and infrastructure are needed to allow scaling of microfinance services orders of magnitude more rapidly?” This challenge was taken up by HP as part of its work with the UN ICT Task

¹ UN International Year of Microcredit 2005

http://www.yearofmicrocredit.org/pages/reslib/reslib_recreading.asp

Analysis of the Effects of Microfinance on Poverty Reduction, Jonathan Morduch, Barbara Haley

http://www.nyu.edu/wagner/public_html/cgi-bin/workingPapers/wp1014.pdf

RTS Business Model Analysis

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Force (United Nations Information and Communication Technologies Task Force) ² and led to the formation of the Microdevelopment Finance Team known as the MFT and their Pilot Program in Uganda to be a Model for Microfinance Accessibility & Efficiency ³.

The examination of current microfinance operations and discussions with professionals helping microfinance institutions and familiar with the current state of microfinance operations in developing countries, points to a need for solutions that enable MFIs to serve the needs of their customers while also cost-effectively improving business operations that contribute to self-sustaining financial models. To achieve this, MFIs must reach greater scale in their client base, allowing them the economic advantages associated with size. In addition, MFIs are seeking opportunities to expand their geographic service “footprint” that enable them to reach a larger potential client population. Of Particular importance to citizens of developing countries is enabling MFIs to reach un-served clients in rural areas, currently an even more costly and logistically challenging goal.

The MFT’s objective through this initiative and the pilot project specifically, is to “champion a breakthrough in the effectiveness, relevance, and scale of financial services to the world’s urban and rural poor.” With this end in mind, the MFT is focusing on positively impacting four key levers to scale: operational costs, financial costs, capital flow, and industry dynamics.⁴ The Stanford Graduate School of Business (“GSB”) team has built upon the work that laid the foundation for the RTS project by creating the financial system

² HP Senior Vice President Debra Dunn chairman of UN ICT Working Group 6, more information at <http://www.unicttaskforce.org/thirdmeeting/documents/summary-conclusions.html>
Unleashing Entrepreneurship – Making Business Work for the Poor – Report to the UN Secretary General
[http://www.ruschlikon.net/INTERNET/rschwebp.nsf/\(UID\)/92F13461306AB08AC1256EA1002CB8EA/\\$FILE/Commission%20Report%20CPSD.pdf](http://www.ruschlikon.net/INTERNET/rschwebp.nsf/(UID)/92F13461306AB08AC1256EA1002CB8EA/$FILE/Commission%20Report%20CPSD.pdf)

³ Pilot Program in Uganda to be a Model for Microfinance Accessibility & Efficiency, more information at http://accion.org/media_press_releases_detail.asp_Q_NEWS_E_141

⁴ Microdevelopment Finance Team USAID proposal, “Mainstreaming Microfinance: a Pilot Plan for Uganda”, May 28, 2003.

modeling tool. This tool is used for understanding how the revenue and expense drivers can be captured for on-going analysis of how well the RTS pilot and participating MFIs are achieving the goals set forth by the MFT.

1.2. Overview of Uganda

The MFT choose to work in Uganda because of the friendly economic situation and the presence of local affiliates of several of the MFT member institutions. Several local factors were favorable for the pilot logistics, allowing the MFT to test multiple operating models in several settings using common support staff. At the same time, Uganda exhibits most of the challenges of operating in third world countries that make successful innovation hard to accomplish. The greatest obstacles to doing business in Uganda (typical in third world situations) are the following factors:⁵

- Lack of reliable electricity: Less than half of all domestic demand for electricity was being met over the last decade and the electricity that is supplied is subject to allocation and load shedding which cause frequent power failures, surges and voltage fluctuations. The Owens Falls hydroelectric station is one of the sole sources of domestic electricity. Since less than five percent of the population is connected to the power grid, rural areas have particularly limited electricity resources, one factor that stunts business growth in these communities. The most common power source, found in both offices and homes is the standard 12 volt automotive battery. Power is expensive, frequently unreliable and used frugally.
- Inadequate transportation system: There is a chronic lack of transportation – roads are in disrepair, infrastructure for trains is virtually nonexistent and most of the railway lines have been closed. The airports are not equipped to handle trade and are inefficient. Finally, there are limited numbers of appropriately trained transportation and maintenance engineers in the country.
- Disease: Productivity rates suffer from chronic illnesses resulting from poor access to clean, safe water systems and from infectious diseases.

⁵ Per Trulsson, *Action Programme on Productivity Improvement, Competitiveness and Quality Jobs in Developing Countries*, 2001.

- Limited telecommunications network: Outside of Kampala, where approximately ten percent of the population has access to a phone, only 0.3% of the populations had phone line and 0.04% had cellular access – with rural areas being the most underserved. Although Uganda Telecom privatized in 1998 and competition is on the rise, service is still very limited, especially in rural areas.

1.3. Uganda’s Microfinance Sector

The MFT decided to focus on a specific geography to develop the technology solution and study the implementation process and challenges in a realistic environment that reflects many of the conditions MFIs face in developing economies. Uganda was chosen due to these factors as well as the progressive nature of government regulations and the dynamism of its microfinance sector, which is representative of the broader microfinance market, particularly in Africa.⁶ In addition, Uganda’s fragmented and emerging information and communications infrastructure poses exactly the type of challenge and sets the appropriate environment for understanding how well the RTS can function in an environment “hostile” to technology typical of developing countries. Important to the pilot activities, all the network institutions represented in the MFT have affiliates in Uganda and extensive experience in that market in setting up or maintaining microfinance operations of some kind (see Table 1).⁷

MFIs based in Uganda face increasing pressure to improve financial performance, provide a broader range of financial services at competitive rates and to increase their outreach to rural clients (see Section 1.5 through 1.7). Pressure from commercial banks, regulators (such as the Bank of Uganda), donors and clients are challenging MFIs to re-evaluate existing operations and find better ways to serve customers, tailor their products,

⁶ Africa currently has less than 17% penetration and depth of outreach of microfinance services. Source: The MicroBanking Bulletin web site: <http://www.mixmbb.org/en/>

⁷ Microdevelopment Finance Team USAID proposal, “Mainstreaming Microfinance: a Pilot Plan for Uganda”, May 28, 2003.

expand their product offering and grow their client base at rates exceeding historical trends. As is the case in many emerging countries, increasing saturation in urban markets is pushing MFIs to broaden their geographic footprint and acquire customers in rural and peri-urban areas. Without significant modifications in outreach methods and operating efficiency, these goals will be nearly impossible to achieve.⁸

In addition, the recently passed MDI Bill permits MFIs to become deposit-taking institutions, subject to their meeting stringent regulatory criteria issued by the Bank of Uganda (such financial performance history, capitalization, governance structure and controls), which also increases the pressure on large MFIs to comply with regulations and new reporting burdens.

⁸ The donor community in Uganda developed a vision for the future of the industry that includes 25% growth in the microfinance client base through 2005. Microdevelopment Finance Team USAID proposal, “Mainstreaming Microfinance: a Pilot Plan for Uganda”, May 28, 2003.

1.4. MFT Affiliates in Uganda

TABLE 1: MFT Affiliates in Uganda⁹

| | FOCCAS/FFH | FINCA Uganda | UMU/Accion | PRIDE Uganda |
|--|-------------------------------------|--|--|--|
| Started | 1995 | 1992 | 1997 | 1995 |
| Location (HQ) | Mbale | Kampala | Kampala | Kampala |
| Lending methodology | Village banking | Village banking | Solidarity Group/ individual | Solidarity Group/ individual |
| Products | | | | |
| — Group | Yes | Yes | Yes | Yes |
| — Individual | No | Yes | Yes | Yes |
| — Voluntary deposits | No | Yes | Planned | Planned |
| Branch Network | No change | No change | 3 rd Party Agent | No change |
| — No of branches | 4 service centers (3 branches) | 29 service centers (10 Full Branches)* | 13 service centers (10 Full Branches)* | 29 service centers (20 Full Branches)* |
| — Location | 6 districts | 29 districts | n/a | 18 districts |
| Loan portfolio | | | | |
| — Average loan balance (U.S. \$) | \$40 | \$76 | \$225 | \$125 |
| — Number of borrowers | 16,000 | 37,000 | 28,000 | 66,000 |
| — Portfolio size (U.S. \$ Millions) | \$0.7 | \$2.8 | \$6.3 | \$8.2 |
| — PAR % > 30 days | 8.9 % | 1.6 % | 4.0 % | 0.3 % |
| Donor Support | EU (SUFFICE), USAID, ADC, FFH | EU (SUFFICE), USAID, ADC | EU (SUFFICE), USAID, World Bank, Ford Federation, UNMCR, NOVIB, ADC | AFriCap, NORAD, Austrian Bureau for Regional Development |
| * “Full Branches” denotes cash collections/ teller facilities Source: FINCA Uganda, FOCCAS, UMU, Pride Uganda | | | | |

⁹ Data as publicly available in May 2005 at completion of study, source is primarily The Microfinance Information Exchange Website: www.themix.org

1.5. UMU Overview^{10 11}

The mission of Uganda Microfinance Union (UMU) is to provide quality financial services to Uganda's low-income entrepreneurs.

| | |
|--------------------------------|--|
| Established in (year) | 1997 |
| Current legal status | Non-Profit (NGO) |
| Regulated | No |
| Institution's Mission | <p>The Vision of Uganda Microfinance Union (UMU) is to become a permanent, sustainable financial institution in order to allow low-income people the opportunity to help themselves.</p> <p>Mission of UMU is to provide quality financial services in a fair reasonable and transparent manner to entrepreneurs and low-income earners in the Republic of Uganda.</p> |
| Background and Main Challenges | <p>The co-directors of UMU, one a native Ugandan the other an American, met while at graduate school (Brandeis University) for international development, and conceived the idea for their organization as part of their applied research project. Their project's aim was to tailor microfinance services to the Ugandan setting, rather than directly importing models from other countries. In 1997, UMU was launched with backing from the Central Bank of Uganda.</p> |
| Products | <p>Loans, Savings, Insurance, Fund Transfer -Loans</p> <ul style="list-style-type: none"> -Loans -Voluntary Savings -Insurance -Fund Transfer Service -Training and Consulting |
| Main Funding Sources | <ul style="list-style-type: none"> -Grants -Loans |

Organizational Structure: UMU is a local non-governmental organization that was incorporated as a company limited by guarantee in August 1997. Based in Kampala, UMU also operates out of 20 service centers throughout Uganda. UMU offers clients various savings and loan products with flexible payment schedules and informal collateral requirements.

History: The co-directors of UMU, one Ugandan and one American, met while pursuing graduate degrees in international development. Uganda Microfinance Union was born out

¹⁰ Source: ACCION International Website: www.accion.org

¹¹ The Microfinance Information Exchange Website: www.themix.org

of their thesis paper, with the aim of tailoring microfinance services to the Ugandan setting, rather than directly importing models from other countries. In 1997, UMU was launched with a small seed grant from the Central Bank of Uganda.

Client Profile: Uganda has a population of approximately 25 million people, 90 percent of whom are located in rural areas. UMU originally began serving rural clients and has since expanded to cover peri-urban and urban areas as well

Impact: UMU has grown rapidly in its 7 years of existence, and now serves over 50,000 clients with credit and savings products. Its historical repayment rate tops 99 percent.

New Initiatives: UMU is finalizing its application to the Central Bank for status as a regulated Micro Deposit Taking Institution. It is hoped that transformation will occur in early to mid 2005, with conversion to a private share company. ACCION continues to work with UMU on building a greater training department capacity, upgrading the reporting functionality of its MIS, improving customer service and building a stronger brand image. UMU is also piloting a small enterprise loan product this year.

Program Locations: UMU is headquartered in Kampala, and operates branch offices in 20 locations throughout Uganda.

FINANCIAL INFORMATION IN US\$

| UMU - Uganda Microfinance Union | 31/12/03 | 31/12/02 | 31/12/01 | 31/12/00 |
|---------------------------------------|------------|-----------|-----------|-----------|
| Exchange Rate used for Conversion | 1,937 | 1,730 | 1,722 | 1,690 |
| | UGS/USD | UGS/USD | UGS/USD | UGS/USD |
| Financial Structure | | | | |
| Gross Loan Portfolio (in US\$) | 6,333,673 | 3,750,105 | 1,659,641 | 711,236 |
| Total Assets (in US\$) | 10,121,782 | 5,638,036 | 2,446,175 | 1,145,437 |
| Savings (in US\$) | 1,385,625 | 659,515 | 300,671 | 139,408 |
| Total Equity (in US\$) | 2,351,236 | 1,672,363 | 1,086,178 | 704,119 |
| Asset Quality | | | | |
| Portfolio at Risk > 30 days Ratio (%) | 3.98% | 1.25% | n/a | n/a |
| Loan Loss Reserve Ratio (%) | 3.32% | 1.52% | 1.54% | 1.46% |
| Write Off Ratio (%) | 0.34% | n/a | n/a | n/a |
| Financial Performance | | | | |
| Return on Assets (%) | 12.36% | 4.33% | 0.99% | n/a |
| Return on Equity (%) | 48.42% | 12.70% | 1.98% | n/a |
| Operational Self-Sufficiency (%) | 139.94% | 113.89% | 102.83% | 90.81% |
| Profit Margin (%) | 28.54% | 12.20% | 2.75% | -10.12% |
| Efficiency and Productivity | | | | |
| Borrowers per Staff member | 114 | 117 | 92 | 92 |
| Savers per Staff member | 193 | 133 | 128 | 118 |
| Operating Expense / Loan Port. (%) | 34.76% | 40.23% | 48.65% | n/a |
| Cost per Borrower | 71.1 | 68.8 | 64 | n/a |

1.6. FINCA Overview¹²

The Foundation for International Community Assistance (FINCA) operates under a village-banking model. Each group leader represents 20 – 40 women. Although FINCA is interested in tracking individual clients at some point, this is not a pressing need for them. Their most urgent need is rural outreach. Each village bank has approximately 25 members. FINCA will be testing this model with approximately 850 existing clients. When they are able to take savings, FINCA also hopes that their remote branch will serve as a savings bank for new clients.

| | |
|--------------------------------|--|
| Established in (year) | 1992 |
| Current legal status | Non-Bank Financial Institution |
| Regulated | Yes |
| Institution's Mission | To provide empowering microfinance services within Uganda's low-income communities-particularly women, under positive social interaction, through a highly motivated staff. |
| Background and Main Challenges | Since its creation in 1992, Finca Uganda has established strong brand recognition and superior financial performance. It has achieved both operating and financial sustainability. The challenge now is to provide a demonstratable operational excellence and leadership as the very first MDI in Uganda. |
| Products | Group Loans, Individual loans, payroll loans, Volunatry and Compulsory Savings, Village phone loans, Credit life Insurance and health Insurance. -Loans -Voluntary Savings -Insurance -Leasing -Full Scale Financial Services |
| Main Funding Sources | -Grants -Loans -Savings |

FINANCIAL INFORMATION IN US\$

| FINCA - Uganda | 30/06/03 | 30/06/02 | 30/06/01 | 30/06/00 | 30/06/99 | 30/06/98 | 30/06/97 |
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| Exchange Rate used for Conversion | 1,730 | 1,730 | 1,705 | 1,555 | 1,440 | 1,224 | 1,060 |
| | UGS/USD | UGS/USD | UGS/USD | UGS/USD | UGS/USD | UGS/USD | UGS/USD |
| Financial Structure | | | | | | | |
| Gross Loan Portfolio (in US\$) | 2,798,869 | 2,451,703 | 1,665,630 | 1,505,023 | 1,128,993 | 1,016,476 | 532,074 |
| Total Assets (in US\$) | 3,980,899 | 3,459,636 | 2,964,308 | 2,245,980 | 1,763,449 | 1,288,900 | 922,587 |
| Savings (in US\$) | 587,188 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Equity (in US\$) | 2,880,480 | 2,762,019 | 2,221,981 | 1,915,973 | 1,464,082 | 1,178,488 | 762,739 |

¹² The Microfinance Information Exchange Website: www.themix.org

| | | | | | | | |
|---------------------------------------|---------|--------|--------|---------|--------|---------|---------|
| Asset Quality | | | | | | | |
| Portfolio at Risk > 30 days Ratio (%) | 1.60% | 2.90% | 1.50% | 1.40% | 0.40% | n/a | n/a |
| Loan Loss Reserve Ratio (%) | 2.39% | 2.14% | 1.63% | 1.51% | 2.62% | 2.57% | 2.70% |
| Write Off Ratio (%) | 0.00% | 0.83% | 0.64% | 0.55% | 0.05% | n/a | n/a |
| Financial Performance | | | | | | | |
| Return on Assets (%) | 0.51% | -0.37% | -4.67% | 13.01% | -3.17% | -8.90% | n/a |
| Return on Equity (%) | 0.67% | -0.48% | -5.88% | 15.43% | -3.66% | -10.13% | n/a |
| Operational Self-Sufficiency (%) | 100.75% | 99.40% | 92.91% | 126.57% | 92.87% | 79.67% | 68.74% |
| Profit Margin (%) | 0.74% | -0.60% | -7.64% | 21.00% | -7.68% | -25.52% | -45.48% |
| Efficiency and Productivity | | | | | | | |
| Borrowers per Staff member | 172 | 213 | 190 | 199 | 198 | 176 | 139 |
| Savers per Staff member | 172 | 0 | 0 | 0 | 0 | 0 | 0 |
| Operating Expense / Loan Port. (%) | 90.00% | 89.71% | 98.19% | 71.36% | 61.18% | 60.24% | n/a |
| Cost per Borrower | 65.2 | 57 | 59 | 44.6 | 36.6 | 36.3 | n/a |

1.7. FOCCAS Overview¹³

The Foundation for Credit Community Assistance (FOCCAS) was founded as an international NGO in November 1996 and then as a Company Limited by Guarantee in 1998. It serves economically active rural women through a village-banking product with education services (Credit with Education) in six districts of Eastern Uganda. Onsite technical assistance from the American-based NGO Freedom From Hunger (FFH) ended in 2001. As of March 2003, FOCCAS has a loan portfolio of approximately 775,000 EUR for 16,965 borrowers (organized in 487 credit associations).

| | |
|--------------------------------|--|
| Established in (year) | 1996 |
| Current legal status | Non-Bank Financial Institution |
| Regulated | No |
| Institution's Mission | The mission of FOCCAS is to provide sustainable financial and educational services that are responsive to the basic needs and wants of poor families in rural Uganda. |
| Background and Main Challenges | Freedom from Hunger's collaborating partner in Uganda, FOCCAS (Foundation for Credit and Community Assistance), was established in 1993 to initiate long-term, self-help solutions to the poverty affecting millions of people in Sub-Saharan Africa. Freedom from Hunger/FOCCAS began offering Credit with Education services in November 1996. In March 1998, FOCCAS became an independent Ugandan organization organized under the Companies Act of Uganda. |
| Products | Credit with Education -Loans -Training and Consulting |

¹³ The Microfinance Information Exchange Website: www.themix.org

2. Description of Financial Model

Given the dynamic factors inherent in the pilot and the iterative product development process underway, to develop the analysis method we chose to follow the Discovery-Driven Planning Model as described in the article published in the *Harvard Business Review*.¹⁴ It is a way to develop the measurement framework in advance and in parallel with the pilot project in Uganda. Breaking down the assumptions into variables at the most granular level possible, the model forces a disciplined approach for projecting potential income, running from the bottom line up – laying out all of the activities required to produce, sell and deliver the service to understand the revenues necessary for achieving sustainable operation. Once a reasonable model of the economics and logistics of the venture is established, the enterprise can then assess the magnitude of the challenges, the sensitivity of the economics to changes in key variables, and use milestone events to test the assumptions.¹⁵

By developing a financial systems model that examines each unit of analysis (MFI client, MFI and RTS Agent), the GSB 390 Team provided a method to analyze the economic value for each unit and helped the field team measure and interpret the results of the pilot test. This model is being used to help determine the viability and potential impact of the RTS solution. Working closely with advisors provided by HP and with the input of the Ugandan field team, the GSB Team has used the Discovery-Driven Planning Model approach to develop the following components for the analysis model project:

- Determine key assumptions
- Create financial summaries for each entity
- Determine pro forma operations specifications, listing all activities required

¹⁴ Rita Gunther and Ian C. MacMillan, “Discovery-Driven Planning,” *Harvard Business Review*, July-August 1995, pps. 4-12.

¹⁵ Rita Gunther and Ian C. MacMillan, “Discovery-Driven Planning,” *Harvard Business Review*, July-August 1995, p. 11.

- Develop an assumptions (inputs)-tracking tool
- Run sensitivity analyses to determine critical success factors for each entity
- Provide an easily-updated, dynamic financial systems model
- Enable the field team to test assumptions at key milestones

2.1. Objectives for Model

The objective of the RTS business is not necessarily to maximize profits. However, in order to be self-sustaining and replicable to other markets, it is critical to know if the revenues will cover all the expenses and if not, what level of subsidies are needed and at what points. This will allow the HP team to structure RTS and related organizations in the most viable manner. The way to determine this is through an analytic framework for the Uganda pilot in order to test the assumptions in a real-life setting and document the results. If the pilot can demonstrate that the concept works, it is likely that other MFIs and their clients will adopt it and that the Remote Transaction System Entity (RTSE) would be a viable business opportunity.

The objective of this model is to provide a working framework for the field team to continually monitor and report on the pilot project results. By constructing a model that allows them to input data for each variable as new data comes in, the pilot team will be able to understand the underlying economics that drive profitability for each entity in the model and identify where the inputs in the model depart from the reality on the ground. Most importantly, this approach is an iterative, dynamic process, which enables all parties involved to work to maximize the pilot's chances of success by incorporating the most accurate data available into a model designed for the true conditions in the field. Since the model is developed in advance of the field experience, it provides a reference for planning collection methods. However the model will also need revision to reflect the reality of information available in the field. Some data elements may not be readily available and the model will

need adaptation accordingly. As each of the identified milestones in the pilot are accomplished, the Pilot team will test the related assumptions and report the results and then support distribution of these to the rest of the Microdevelopment Finance Team and other interested parties.

2.2. Activities performed

During the Academic Winter Quarter 2004, the Stanford GSB Team developed the following deliverables (with the assistance of the advisors assigned by HP): a financial system model outlining the economic value for each entity, an impact analysis for the MFIs based upon best-available information, an economic structure map that outlines the major revenue and cost elements for each entity, an input-tracking tool and a model manual (this document). The GSB Team conducted the following activities to meet these deliverable requirements:

- Developed understanding of Ugandan microcredit environment and institutions
- Developed process maps of the RTS Microfinance Business System
- Identified key assumptions
- Developed pro forma financial statements for each entity
- Constructed financial model of the RTS Microfinance Business System
- Outlined data requirements and verified input accuracy
- Explored preliminary revenue schemes
- Developed system to track and tested assumptions within the model
- Provided summary of project work and presented to HP, MFT and Student Teams

During the period July 2004 through February 2005, Rachael Payne the leader of the Stanford GSB Team, participated in a field internship with the MFT Uganda Pilot and implemented the data collection methods for the model. This work included:

- Developing the data collection methods and reporting forms
- Writing the supporting training materials
- Training RTS pilot field personnel
- Initiating data collection at each MFIs HQ site and Field sites

- Monitoring and guiding data collection activities
- Consolidating field data received from the RTS pilot personnel

This particularly valuable experience allowed the initial model to be adapted to the realities of the field experience and available data from various Pilot sources. The model and results in the remainder of this paper are based upon this experience and the data collected during the Pilot period.

During the period March 2005 through April 2005, Richard Parenteau a microfinance consultant to the MFT, HP and advisor to the GSB Team, performed final data collection and analysis activities for the RTS pilot. This work included:

- Receiving the remaining field data
- Visiting each of the MFI HQ sites to gather additional information
- Cleaning data and seeking clarifying information
- Consolidating the data for analysis
- Performing data analysis
- Working with other contributors to develop the summary and final report of results

The remainder of this paper focuses on the analysis and results of the RTS pilot with associated conclusions, observations and recommendations.

3. RTS Financial Analysis and Findings

3.1. What is the RTS?

The Remote Transaction System (RTS) is a combination of technology and business processes that enable transactions by microfinance clients via a remote transaction system. By providing both online and batch offline processing modes, features for both group and individual lending as well as MFI back-office MIS transaction synchronization, the flexibility of the RTS approach supports several MFI operating models. Three of these were demonstrated in the Uganda Pilot.

Participating microfinance institutions were equipped with the technology (hardware and software) needed to use the RTS. The RTS enabled MFIs to electronically capture transaction data at the client or group level and MFIs to create an electronic identification system. The integration of the RTS in MFI operations has potential positive externalities contributing to the development of related financial institutions (such as credit bureaus)¹⁶ and access to regulated financial switches for interaction with commercial banks. The RTS should be viewed within the context of a larger purpose of establishing a “transaction processing backbone” or an end-to-end data management system that facilitates information transfer from the client level to the microfinance institution and importantly to the broader stakeholder level (such as banks, credit bureaus, institutional services, regulators, civil services including schools and pensions, donor agencies, etc.).¹⁷ The RTS is the critical access-enabling piece in the overall process of establishing financial systems infrastructure that reaches the poor and the unbanked.

Through the pilot project, the participating entities worked together to develop the infrastructure and implement the RTS. They worked to collaboratively develop necessary business processes for automating data collection and field service operation through the use of the RTS. The pilot project was used to test the RTS technology, identify desirable changes to business processes, and the overall level of effort (including resources expended) to implement the RTS. The RTS was designed to be adaptable to individual as well as group lending and account management approaches. The pilot was conducted in collaboration with

¹⁶ The donor community in Uganda recently agreed on a common set of industry-wide performance reporting metrics for MFIs. This information was being aggregated and managed in a central database at the Association for Microfinance Institutions in Uganda, which has been charged with creating an industry wide repository of MFI performance data called the ‘Performance Management System.’ Microdevelopment Finance Team USAID proposal, “Mainstreaming Microfinance: a Pilot Plan for Uganda”, May 28, 2003.

¹⁷ Microdevelopment Finance Team USAID proposal, “Mainstreaming Microfinance: a Pilot Plan for Uganda”, May 28, 2003.

the following MFT affiliates in Uganda: UMU, FOCCAS and FINCA Uganda. We greatly appreciate many aspects of our experience working with them, including: Enthusiasm for our work; Open discussions about many of the details of their operations; Shared goals for improvement; Support helping integrate the RTS technology into their MIS systems; Access to their clients and their experiences; Devotion to operation of the pilot and resolving the issues that inevitably arise during pilot situations. These are good earnest organizations and dedicated people look for ways to better serve their customers. They are open to experiments that may help them toward this goal. We applaud their many contributions to the results of this project.

3.2. Summary Findings

Summary Conclusion: The three pilots allowed the MFT to examine several diverse operating scenarios and evaluate the value that RTS added into each situation. These different operating models were: 1) Traditional group lending [the “**Group**” model], 2) Branch based group lending [the “**Branch**” model] and 3) Individual lending with payments both via 3rd party agents or existing branches [the “**Individual**” model]. In each situation the MFIs business processes were examined and decisions made with MFI management about where the RTS technology would be applied in order to demonstrate improvements in client service and operating efficiency. Each situation is discussed in more detail below together with a number of opportunities provided by using the RTS. We highlight the addition of 3rd party agents here because this innovative approach appears to provide significant benefits to both clients and to MFI operations. In the pilot 3rd party agents were demonstrated in the Individual model. We also discuss later in the paper how also to gain the primary 3rd party agent benefits in the Group model. These 3rd party agents cost-

effectively extended the MFI service footprint by providing improved client access, reduced client expense, reduced risk and reduced MFI cash transportation and management expenses.

3.2.1 Modeling Tools

The Stanford Graduate School of Business developed a modeling tool that is designed to be a dynamic and iterative. It was intended to be modified over time and as additional data becomes available, the insights gleaned from the data and pilot experiences are likely to cause extensions to the tool to support further analysis.

Overall, the value created in the RTS financial system will have to be shared appropriately among the entities in the system in order to ensure buy-in and adoption – each entity must extract sufficient value to justify expenses or effort expended. The sustainability of the economic model for each entity hinges upon only three or four key assumptions; therefore, certain variables are weighted more heavily than others and should be the focal points for any program adjustments. Based upon the current model structure and the available data, the following summary findings are provided.

3.2.2 RTS Viability

The pilot results indicate that RTS appears more viable in some settings than others. RTS creates the most value when it expands access to credit for new clients, reduces risk variables, reduces transportation and lost-time costs for all clients (as opposed to mainly providing process efficiencies to existing operations) and improves operating economics for the MFIs. Scale-up will be important to producing the benefits needed for significant improvement.

3.2.2 MFI Client Income Improvement

Under the current framework, the value of the RTS for MFI clients differs considerably depending on whether they are existing clients or new clients. Given this, there are two client subsets represented: one with new clients (considered those clients whose experience with the MFI has always been RTS enabled) which emphasizes the increased revenue and reduced leakage that access to the RTS provides (resulting from their access to loans and savings) and the existing clients, who in addition to the benefits just mentioned gain value from reduced costs and time saved by using RTS when compared to their prior non-RTS experience. It is important to maintain distinct client subsets so that the value to each does not become blurred and so that MFIs can recognize the distinctions when planning changes to the fee structure and service terms for each type of client.

3.2.3 Agent Income Improvement

In order to provide a regular framework for analysis, the model tool identifies the “Agent” as either (a) an MFI’s loan officer (Group model), (b) an MFI’s teller (Branch models) or (c) a 3rd party agent (Individual model). The bulk of revenues for the Agent are driven either for loan officers and tellers by the employee pay policy or for 3rd party agents by the number of accounts they service and the transaction fees paid for cash deposits and disbursements. Therefore, the Agent makes its RTS related money under the Individual model by servicing clients (planned rates are 400 clients per agent) and collecting the incremental transaction fee revenue as well as incremental sales to clients that visit. For loan officers the main return is an improvement in account management and the quality of their personal loan portfolio. In all cases, the RTS system is either revenue neutral or profitable for the agent.

3.2.4 MFI Income Improvement

The Pilot data indicates that the Individual model appears to be the most profitable model for the MFIs, due to benefits from the lower operating expenses in the RTS 3rd party agent approach. Another important factor in the MFI profitability structure is whether or not the RTS improves client retention and reduces the MFIs associated Client replacement cost. Further benefits come from scaling due to decreasing RTS supply costs – one of the larger capital cost categories for the MFIs – as greater numbers of equipment and supplies are ordered, economies will be achievable for MFIs with larger volumes. Finally, telecommunications costs comprise the major variable expense category for MFIs. Focusing on ways to reduce these cost areas will improve MFI profitability with the RTS system. Creative approaches to help the MFI explore rates, establish policies or devise incentives to help keep these per-transaction costs low are advised.

3.2.5 RTS Entity Income Improvement

To assist the MFIs with use of the RTS system and share local support costs, a local entity we call the RTSE is identified to provide support services such as RTS technical support, smart card acquisition, and implementation assistance. In Uganda this role is being filled by BushNet, a local ISP and ASP. As the model tool stands now, it includes monthly payments by MFIs to the RTSE but does not include a complete cost picture for the RTSE economics, and therefore cannot determine the RTSE profitability with respect to RTS activities. Further work on this aspect is required in order to better understand the costs related to staff and operations. Initial project grants have covered the RTSE/Bushnet startup costs, along with pilot costs, and Bushnet is now operational as the RTSE providing infrastructure support for interested MFIs. Although installation volume for the RTS device

will be low in the initial period, BushNet indicates that the RTS and MFI related revenue from Bushnet's primary communications business, along with RTS-related monthly support payment will cover RTS support costs for the near term. This payment is included in the tables later in this paper and in the model tool for MFI costs. Bushnet is also actively investigating the value of the RTS for other verticals, such as health care delivery, supply chain, and agriculture. This additional business volume would help assure a profitable economic model for the RTS at BushNet.

3.3. The MFI Client

The MFI Client refers to the entity that would be receiving services from the MFI and conducting financial transactions via the RTS and the Agent. The client would either be an individual borrower (who may be a member of a loan group) or the group representative of a classic loan group. Classified generally as a micro-entrepreneur, the MFI Client interacts with the RTS device via the agent or bank branch facility. Under the current framework, the sources of value for MFI clients differ considerably depending on whether they are existing clients or new clients and whether they are individual borrowers or group borrowers. Given this, there are two client subsets represented: one with new clients (considered those clients whose experience with the MFI has always been RTS enabled) which emphasizes the increased revenue that access to the RTS provides (resulting from their now having access to loans and savings) and the existing clients, who gain value primarily from reduced costs and time saved from using RTS when compared to their non-RTS experience. It is important to maintain distinct client subsets so that the value to each does not become blurred and so that MFIs can recognize the distinctions when planning changes to the fee structure and service terms for each type of client.

Pilot results will provide an opportunity to correlate the models current findings with the expectations from the MFI Client focus group sessions¹⁸ conducted in the summer 2003. These sessions reported enthusiasm and positive value expectations by potential Clients from using the RTS. Some of the reasons given included reducing risk of assault/theft, time away from work location and transportation costs. Additionally, the ability to make smaller more frequent payments to reduce the likelihood of spending the money elsewhere was mentioned. During the pilot, an attempt was made to verify the structure of a MFI client's financial operations (such as number of working hours per day, cost of transportation, number of accounts held, cost of stolen payments, etc.) in order to correctly capture those values for the model.

3.4. Financial Results for New and Existing Clients

The tables below summarize the effects of the RTS device on the finances of new and existing clients. Figures shown in the table are based upon values determined during the pilot and are shown on a per client annualized basis. **Table 2** summarizes the client context for each of the MFIs with respect to their Loan and Savings experience. **Table 3** identifies the impact of RTS on the existing client situation. **Table 4** refers to results for new clients. To avoid repetition of information, MFI related payments and fees to clients for interest, loan origination and transaction charges are provided one time in the MFI related tables, although they may also be discussed in the context of any of the discussion sections.

As the tables show, the Individual model together with the 3rd party agent provides the most interesting improvements for the client. Further we can infer the same key benefits could be achieved in the Group model by modifying some operating characteristics. In the

¹⁸ Leonard Mutesasira, *Koncepts Unlimited: Financial Services Solutions study, "Remote Transaction System: a Client Perspective"*, August 29, 2003.

Individual model we see the majority of an existing client's RTS benefit comes from costs saved – lower transportation and lost work time opportunity costs plus the reduced time spent on each transaction, particularly noteworthy in the Individual model. In the current model for new clients, it is the higher return on assets that is made possible by access to a loan as well as access to savings interest income, which provides greatest revenue opportunities. The RTS helps when it extends the MFI footprint allowing more diverse and competitive services to formerly under served clients. The majority of the client's incremental expenses come from transaction fees charged by the agent and perhaps for commissions (MFIs are currently not interested in paying commissions for existing loan transactions, however for new loan business this could become viable).

The analysis indicates that RTS agent servicing for loans to new clients is a slightly profitable benefit to clients and the value rests primarily on small differences in fees (no saved transport costs are perceived for new clients). This makes it critical that fees charged to clients will support what the market can bear and do not exceed the client's non-RTS costs.

A key finding is the very important benefit that both old and new clients will realize by having the ability to make frequent payments and deposits at a reasonable cost to reduce “leakage”. Experience and surveys consistently report that women are very likely to have their earnings taken by family members or spent in unplanned ways. They consistently report that the ability to make small frequent loan and savings payments on the way home measurably reduces “leakage” since they do not have cash on their person that can be taken away when they arrive home.

TABLE 2: CLIENT BACKGROUND SUMMARY

| Model name | Group | Branch | Individual |
|---|-----------------------------|------------------------------|-----------------------------|
| Typical client interview location | Group | Group | Branch/Agent |
| Number of clients in interview population ¹⁹ | 208 | 300 | 400 |
| Number of clients interviewed (avg. 6/group) | 48 | 80 | 70 |
| | 8 groups avg. 26 clients | 15 groups avg. 20 clients | 40 at branch 30 at agent |
| Typical loan term | 4 mo | 4 mo | 8 mo |
| Frequency of meetings | Bi-Weekly | Bi-Weekly | Bi-Weekly |
| Following client savings/(costs) are <u>Annual</u> values | | | |
| Client gross annual earnings | \$5,139 | \$4,420 | \$4,576 est. ²⁰ |
| Client costs for Transport+ Incidentals to meetings | \$10 | \$60 | \$0 |
| Client costs for T+I to payment site (or group rep. ²¹) | \$3 | \$6 | \$148 |
| Value of Client time/work hour (6 day week 48 hrs) | \$2.06 | \$1.77 | \$1.84 |
| Client time in meetings (Individual no meetings) | 60 hrs | 47 hrs | 0 hrs |
| Client transport time to meetings | 33 hrs | 78 hrs | 0 hrs |
| Client time to payment site (group representative=0) | 0 hrs | 0 hrs | 70 hrs |
| Value of Client time for loan meetings and travel ²² | \$192 | \$221 | \$129 |
| | | | |
| Total client cost T+ I+ time value meetings & travel | \$205 | \$287 | \$277 |
| | | | |
| Client average estimated leakage | 19 % | 30 % | 20 % est. ²³ |
| Client annual average leakage to unintended uses | \$976 | \$1326 | \$918 |

TABLE 3: EXISTING CLIENT RTS SAVINGS SUMMARY

| Model name | Group | Branch | Individual |
|--|------------------|-----------|-----------------------------|
| Following client savings/(costs) are <u>Annual</u> values | | | |
| Enable more frequent local financial transactions | No change | No change | 3 rd Party Agent |
| — Reduce leakage by 5% | | | \$229 |
| — Reduce Travel and Incidental costs | | | \$124 |
| — Value of client's travel time saved | | | \$112 |
| — Reduce cost of proxy payment services | | | \$12 |
| — Client transaction fees for RTS Agent (1,000 Ush Trans. Fee) | | | (\$23) ²⁴ |
| Reduce time in group meetings-RTS individual track | Individual track | No change | No Change |
| — Value of client's meeting time saved | \$62 | | |
| Convert from group to individual record keeping | Converting | No change | No Change |
| — Eliminate 2%/month loan surcharge ²⁵ | \$17 | none | none |

¹⁹ Pilot population size for each model type is chosen by the participating MFI based upon the MFI's logistical unit participating in the pilot

²⁰ Individual client weekly earnings not collected this number, estimated from Group and Branch client data

²¹ Group and Branch groups send a payment representative, this is the clients portion of the representative's time and cost

²² Value of Client time does not include **group representative** time or costs for travel to payment site

²³ Individual model client leakage not collected, this number conservatively estimated from Group and Branch client data

²⁴ Client paid agent fee based upon 1,000 Uganda shilling fee (\$0.58) per payment transaction split 60% for agent and 40% for MFI (See text for discussion about alternate transaction charging models)

²⁵ Group loan groups currently charge themselves an additional 2% of the loan to create a fund to cover individual payment shortages. This is invisible to the Group MFI back-office system and informal enough

| | | | |
|--|---------------|---------|----------|
| — Establish individual credit history | +Larger loans | | |
| Existing Client Savings from RTS | \$79 | \$0 | \$442 |
| In all cases the Client is neutral or positive for RTS | Positive | Neutral | Positive |

TABLE 4: NEW CLIENT RTS SAVINGS SUMMARY

| Model name | Group | Branch | Individual |
|--|-----------|-----------|--|
| Following client savings/(costs) are <u>Annual</u> values | | | |
| Enable more frequent local financial transactions | No change | No change | 3 rd Party Agent |
| — Reduce leakage by 5% | | | \$229 |
| — Client transaction fees for RTS Agent (1,000 Ush Trans. Fee) | | | (\$23) |
| Extend MFI footprint to service clients in new areas | | | + Increase income from access to loans |
| New Client Savings from RTS | \$0 | \$0 | \$206 |
| In all cases the Client is neutral or positive for RTS | Neutral | Neutral | Positive |

3.5. The Agent

The agent refers to the entity that is responsible for managing the RTS device on a day-to-day basis. The device is located at the agents' premises (or the device will move with the agent, if a "roving" agent). Since three different economic models were used by the three MFIs in the pilot program, there are variations in each of the business models, which result in implementation variances. For instance, in the Individual model, the MFI hired 3rd party agents that have established businesses and local expertise (such as traders, soft-drink distributors, agricultural stockists and petrol station managers). These third-party agents interacted with clients directly, conducting financial transactions (such as withdrawals, savings deposits and eventually loan disbursements). This eliminated the need for clients to make their payments to a branch or loan officers, and the agents were paid a transaction fee in exchange for their services. In the Group model, however, the MFI used their loan officer employees as agents during the group meetings. Both types of agents were considered in this

to provide opportunities for misuse. Clients believe this 2% is a Group MFI interest charge on top of the normal 3% (monthly) interest charge. Use of the RTS to track individual client payments allows this practice to be eliminated, reducing client costs and improving Group MFI visibility into loan performance.

analysis. Differences in the economics behind each agent scenario are represented in the values used for the agent inputs. For example, MFI employees, such as loan officers or tellers, who served as agents do not receive a transaction fee.

3.6. Financial Results for Agents

Table 5 provides agent background and **Table 6** summarizes the incremental effect of the RTS device on the agent's income. For an employed Field Officer agent, the use of RTS does not change the salary economics. However the improved efficiency of operation should allow the field officer to meet other sales targets more easily. The pilot data provides an estimate of the agent's economics. In the example shown in the table, the 3rd Party agent receives an extra \$2,683 profit each year as a result of his/her participation in the delivery of RTS services. This is estimated to be an increase in gross margin of 4 to 12 percent for the agent. Since there is no capital investment required to participate as an RTS 3rd party agent, only transaction-related variable costs, the RTS agency should be very attractive to merchants. The majority of the agent's incremental revenue comes from fees he/she receives for each transaction. The majority of the agent's incremental expenses come from the telecommunications costs that he/she would have to incur in transmitting data back and forth to the MFI (a small amount of staff time expense is considered as well). There is a good case for the MFI to change the structure of communications costs used in the pilot and who pays them in order to negotiate volume discounts for RTS communications activity (discussed further in the MFI section below).

For certain 3rd party agents that can leverage additional business from visits by RTS based clients, there is an opportunity for a additional incremental business. Such agents would have an added incentive to participate in providing RTS services.

TABLE 5: AGENT BACKGROUND SUMMARY

| Model name | Group | Branch | Individual |
|---|------------------------------|--------------------------------------|--------------------------------------|
| Per Field Officer Load – Avg. Groups / Avg. Clients | 23 / 600 | 18 / 400 | — / 275 |
| Per Agent Load – Avg. Groups / Avg. Clients | banks as agents | no agents | — / 400 |
| MFI Load – Total Groups / Total Clients ²⁶ | 621 / 16,000 | 2,100 / 48,000 | — / 36,000 |
| Time spent with Clients and services provided | | | |
| — Loan origination | Field Officer + Office Staff | Field Officer + Office Staff | Field Officer + Office Staff |
| — Training in group meetings | Occasional by Field Officer | Program Plan by Field Officer | No meetings |
| — Loan servicing in group meetings | Tracking Pmts (group manual) | Tracking Pmts (group manual) | No meetings |
| — Loan servicing at branch locations | Only for problem resolution | Cash services and problem resolution | Cash services and problem resolution |
| — Loan servicing at 3 rd party banks | Cash services | Not used | Not used |
| — Loan servicing at 3 rd party agents | Not used | Not used | Cash services |
| Transaction fees | Bank fees | MFI fees | MFI fees + Agent fees |
| Example agent: Petrol station estimated annual gross margin used in Table 6 to compare added value of being MFI cash services agent | | | \$64,240 |

TABLE 6: AGENT RTS SAVINGS SUMMARY

| MFI name | Group | Branch | Individual |
|---|-------------|-----------|--|
| Enable more frequent local financial transactions | At banks | At Branch | At Branch and 3 rd Pty Agent |
| — Expense Impact on Agent (3 rd P. or Field Officer) | None | None | Telecom+labor |
| Per client annual | | | \$6.70 |
| Per 400 3 rd Pty Agent client base annual | | | \$2,670 |
| — Revenue Impact on Agent (3 rd P. or Field Officer) | + Bank fees | None | + 3 rd Pty Fees |
| Per client annual (600 Ush Trans. Fee) | | | \$13.40 ²⁷ |
| Per 400 3 rd Pty Agent client base annual | | | \$5,350 |
| — 3 rd Party Agent annual gross margin = 4 to 12 % gross margin increase for agent | | | \$2,680 |
| — Other Revenue Impact | None | None | Add'l 3 rd Pty goods sold to client |
| RTS ROI Analysis for 3 rd Party Agent | | | |
| — Required volume to achieve breakeven | | | 1 |
| — Operating Revenue | | | \$13.40 |
| — Operating Expense | | | \$6.70 * |
| — Depreciation Expense (all agent costs variable) | | | \$0 |
| — Operating Income (Loss) | | | \$6.70 |

²⁶ Client totals include both group and individual borrowers, in rare cases a client may have both a group and individual loan

²⁷ Client paid agent fee based upon 1,000 Uganda shilling fee (\$0.58) per payment transaction split 60% for agent and 40% for MFI (See text for discussion about multiple transaction charging models)

* In the Individual model, for the MFI to avoid risk with the agents, it was required that the agents deposit funds and maintain a working account balance with the MFI. The required balance is monitored by the RTS and transactions will fail if an overdraw attempt is made. This advance payment represents an opportunity cost for the agent as the funds are tied up until clients transact. The deposit pays bank rate interest, but that may not be sufficient incentive for the agent to willingly commit the required level of funds. We believe a better approach will be to reduce the current committed funds and look for more efficient ways to smoothly interact between the agent's bank and the MFI's bank. One approach suggested is an initial risk management approach that is phased out after perhaps 6 months as a 3rd party agent.

3.7. The MFI

The MFI refers to the entity that delivers microfinance products and services, managing the account of MFI Clients, sourcing, training and managing Agent relationships and interacting with the RTS Entity for the RTS device and associated services.

3.7.1. Financial Results for Micro Finance Institutions

Table 7 provides additional MFI background information for discussion of the impact of RTS on the different types of operating models being examined in the pilot. **Table 8** shows the capital costs required to deploy each of the models and also the start-up expenses that typically would be required to enable a new MFI to use the RTS system. For many MFIs, especially those using the group model, these costs would typically be funded by a grant for this purpose. **Table 9** summarizes the ongoing RTS operating revenue and expense for participating MFIs. This provides critical planning information for each model and shows whether the RTS is self funding or when a particular MFI approach needs

justification and ongoing funding based on other savings or non-monetary operating benefits like better access to capital or improved loan portfolio performance. **Table 10** focuses just on the Individual model and summarizes three similar scenarios with key variations. The first column of Table 10 shows the same scenario as the Individual model for Table 9 except it is scaled up to full deployment. Even when both start-up and depreciation costs are added, it still generates a positive annual return of \$171,000. The second column is the same as the first except the MFI portion of the transaction fee is cut by 50 percent and results in a positive annual return modestly above breakeven, a very respectable performance. The third column is the same as the second column except that the communications expense portion of the transaction fee (about one third of the agent transaction fee) is moved from the agent to the MFI and the agent fee portion is correspondingly reduced. This results in the same gross margin for the agent and allows the MFI to manage the communication costs and any benefits that can be derived from volume. This also results in a 50/50 split of the transaction fee of \$0.47 (800 Ush).

The following results are specific to the particular deployment approaches used in the pilots, and demonstrate the breadth of opportunity provided by the RTS in varying situations. The pilot data collected and specific models used along with other analytic tools will be provided at www.sevaksolutions.org.

3.7.2. Group Model

In Table 9, the **Group model** generates an operating savings for the MFI of \$1,080 annually from deployment of RTS for all of its Groups and clients when compared with the cost of manual transcription and entry of individual account payment information. This demonstrates essentially a breakeven implementation of RTS to accomplish this business

objective. Note also the Table 8 capital and start-up costs of \$181,000 that need to be grant funded because they are not covered by the expected savings. The key value of this project is the conversion of this MFI from a purely group lending operation where all of the financial records are maintained at the lending group level to a more capable hybrid that maintains the values of group lending along with new data records and performance metrics at the individual level. Several benefits flow from this important business process change:

- i) Rapid visibility into the quality of the lending group, allowing assessment of the individual performance of each group borrower. This added transparency also provides the means to improve the MFI's loan portfolio quality.
- ii) With individual accounting it becomes possible for the MFI to deploy additional services for the individual, while maintaining the value of the lending group. In particular the MFI can now provide the high value service of accepting loan payments and savings on a frequent basis in order to reduce leakage. The MFI can improve the economics of this by employing the transaction fee and various types of 3rd party agents for efficient and convenient payment processing.
- iii) Payments made outside of the group meeting can be brought into the meeting via RTS receipt or the RTS system "real time" supporting the group model while gaining the advantage of individual transactions at an economical cost.
- iv) A key finding is the importance to clients of the ability to make frequent convenient transactions at reasonable cost to reduce "leakage". Further detail is provided in the Individual model discussion.

3.7.3. Branch Model

In Table 9, the **Branch model** was used to support the concept of branch mobility where a sub-branch is maintained closer to the clients and a teller visits the location once or twice a week. The value of RTS in this setting is marginal and does not contribute significantly to the economics of the sub-branches. In this case, the cost of deploying RTS for the limited volume transaction traffic generated and in the absence of transaction fees overwhelms the savings from using RTS. The pilot results demonstrate that the RTS is a small part of the value the sub-branch brings to rural clients. In this case, the RTS does not provide sufficient direct benefit to the MFI to recommend using the RTS in this approach. Clearly there are indirect benefits to the rural clients from access to loans, reduced transportation and lost-time costs, but client savings shared with the MFI (if any) result primarily from the proximity of the sub-branch and not the use of RTS as part of the model. When considering the Branch model where the RTS adds expense of \$960 per branch each year plus annual HQ operating expense of \$24,600 it is clear that a more expansive use of the technology would be needed to realize substantial value from the RTS.

3.7.4. Individual Model

In Table 9, the **Individual model** using 3rd party agents shows that the deployment of RTS generates actual cash revenue and in the pilot situation would become sustainable once use reaches about 8% of the available client base - a small deployment of 2,630 clients. With broader deployment this solution not only sustains itself, but can also begin to pay off the capital and start-up costs as well. This is possible because the model for this pilot charges the client a transaction fee for use of the RTS. This is economically viable because the transaction fee of 800 to 1000 Ush (\$0.47 to \$0.59) is substantially less than the pilot

client population's typical time and travel expense to go to the MFI's branch for the transaction.

Four Major Benefits:

Below we discuss multiple benefits of the Individual model coupled with 3rd party agents. We also remind the reader that many of these benefits can also be associated with the Group model once that model is enabled with individual record keeping and individual 3rd party agent based transactions.

Reduced Client Time and Travel Expense: Pilot data shows that time away from work and travel expense to payment location are significant costs to many clients. With a 3rd party agent close by to receive payments, these client costs are significantly reduced - and allow payment of a transaction fee while still providing a substantial savings to the client. Depending on the 3rd party agent's business, the agent may also gain added sales from the visit by the client. Unfortunately, the clients' awareness of this savings only applies to old clients that were actually incurring the extra time and transport costs.

Reduced "Leakage": Experience and surveys consistently report that the social status of women in many countries, as well as the view that everything is "family" property, makes it very likely that daily earnings needed for pending expenses will instead be taken by family members and casually spent in unplanned ways. The availability of convenient transaction locations could allow clients to make small frequent loan and savings payments on the way home measurably reducing this "leakage". **This is a Key Finding** (a) because it **affects 20 to 30 percent of the income** and any improvement of behaviors related to this money significantly impacts the client's financial situation, and (b) because **this benefit applies to both old and new client** subsets. This opportunity is an order of magnitude

more valuable than other benefits studied in the pilot and should be an important consideration as MFIs' plan product and transaction fee policies.

Reduced Cash Management Risk and Expense: Moving cash carries a high risk of robbery in most locations where the RTS system is designed to be used. The cost of security as a preventative measure is expensive. A local 3rd party agent makes frequent small transactions practical, reducing risk and the cash flows through the merchant's cash management system. The RTS' electronic transactions allow the MFI to receive payment from the agent's bank and credit these payments to the proper client account while the risk and expense of actual cash transportation is eliminated.

Reduced MFI costs for brick-and-mortar branches: The use of 3rd party agents also reduces the MFI's expense for "brick and mortar" branch locations as well as the expense of permanent staff. When branch locations do need to be established, they are for the convenience of bringing Loan Officers together for periodic loan origination activities and staff meetings. With no cash on premises, suitable existing locations are easier to locate and are less expensive.

3.7.5. Implementation Considerations for All Models

Given the Key Finding that frequent convenient small transactions have important client benefits, the per transaction fee charging approach needs re-examination. A per transaction fee is a disincentive to customers and is a block against frequent small transactions "on the way home". This defeats the ability to reduce leakage.

On this basis we suggest a redesign of the 3rd party agent fee payment approach. We believe client fees should be monthly, or part of loan origination, and collected by the MFI as part of loan processing. The use of the 3rd party agent should "feel" to the client like it is

low cost or free, and of course should not be onerous in actuality. One approach could be that the client has a generous number of transactions built into their fee. However, if the client goes “wild” and exceeds these credits, then additional fees are charged. This has implications for the 3rd party agents since the MFI needs to craft payments to 3rd party agents that encourage them to seek clients and treat those clients respectfully. We suggest that even though the client does not pay each time, the agent should still be paid on a per transaction basis to ensure their respective attention to the client. The transaction fee should be volume related. In other words, the agent would make a certain fee per transaction for the first 100 transactions per week (or bi-week, we think a month is too long), then a smaller fee for the next 300 transactions, and a yet smaller fee for the rest of the time period. The MFI should cover the difference between the fixed client fee and the actual variable transaction fee paid to the 3rd party agent. Experience will allow the MFI to adjust the average client fee and agent payments so they tend to be in balance.

It is important to remember that if a client is transacting frequently then she is either making more loan or other payments. Some of this is likely to be savings, for regulated MFIs, which is positive for MFI operating costs. Frequent transacting should be positive for added sales for most 3rd party agents. Before discouraging the clients with a frequent transaction pattern, investigation is appropriate to determine whether the client is uncovering a new advantage the MFI could capitalize upon. Additionally, the MFI can still charge for some “unusual” transactions such as School payments or cash transfers to remote destinations, which are services that can be built into future versions of the RTS.

Communications costs are the single largest ongoing expense associated with the RTS. In the pilot, communications costs for airtime and paper supplies for the RTS device were established as a 3rd party agent expense. In order to implement the fee structure

changes just discussed above, the communications cost should move to the MFI. By doing this the 3rd party agent fee can be reduced from 600 Ush to 400 Ush while still providing the 3rd party agent with the same net revenue opportunity and incentive. This change of responsibility for communications fees now will position the MFI, rather than the 3rd party agent, to reap the rewards that inevitably will flow as (a) the RTS system efficiency increases and communications costs are reduced, and (b) a volume reduction in communications fees is negotiated by the MFI for all their agents. By aggregating the communications costs, the MFI has the opportunity, perhaps in collaboration with other RTS users, to negotiate lower communications costs through volume purchasing. This advantage increases as client transactions increase and the savings can either flow to the bottom line or be returned to the client as an incentive. Refer to Table 10 for modeling of some of these alternate approaches.

In the case of the Individual model, use of the 3rd party agent provides positive benefits even with a small deployment for 2,630 clients. For all models, the majority of the MFIs' revenue comes from the number of clients in their loan and savings portfolio. *This supports the notion that scale matters and improved outreach at lower cost could be achieved via the RTS when accompanied by selected business practice changes like 3rd party agents.*

The net margin here indicates that profitability is driven by how the model is implemented – the numbers show considerable difference across the types of implementation schemes. There are also non-monetary factors (such as planned changes to MFI business practices), which have not been described in this business model analysis.

TABLE 7: MFI BACKGROUND SUMMARY

| Model name | Group | Branch | Individual |
|---|--|-------------------------------------|--|
| — Field Officer RTS related incentive payments | RTS related extra hours paid | Incentives not RTS related | None |
| Products | | | |
| — Loan products Group | Yes, but only one loan | Yes | Yes |
| — Loan products Individual | Yes, but only one loan | Yes | Yes |
| — Savings | 5 % required Through Banks | 10 % required MDI enabled | MDI pending |
| Loan collateral | | | |
| — Required Savings % (caps loan amount) | 5 % | 10 % | 20 % (part can be loan holdback) |
| Loan Revenues | | | |
| — Interest | 3 % / month | 3.5 % / month | 3.5 % / month |
| — Origination Fees | 2 % of loan | 1 % of loan | 2 % of loan |
| — Insurance | 0.75 % of loan optional death any cause and abrupt disability | None | 0.5 % of loan credit life |
| — Penalty fees | Yes, by FO and group 10% of payment due | Yes, by FO and group amount varies | Yes, by FO \$3 each occurrence |
| — Other fees | None | None | \$7 annual ledger fee |
| Interest Expense | | | |
| — Interest payments on required savings | Paid by Banks | 3 % Annual | 3.5 % Annual |
| — Bank fees for loan payment | Group MFI pays bank fees and absorbs \$0.10 to \$1.15 per trans | None | Client pays RTS trans fee |
| — Bank fees for savings deposits | Bank trans fee paid by MFI (typical 1,000 Ush for payment transaction, paid to bank) | None | RTS trans fee paid by Client (typical 1,000 Ush for payment transaction, paid 60% to agent & 40% to MFI) |
| Rural outreach | | | |
| — Ability to efficiently reach larger rural client base | Limited to FO from branch locations | Limited to FO from branch locations | Expands with 3 rd Party agents and branches |
| Continued next page | | | |
| Model name | Group | Branch | Individual |

| | | | |
|---|---|--|---|
| Operations and Portfolio quality | Can Improve | V. Good | Good |
| — Comment on approach | Tracking Group loan info Shifting to individual client status | Tracking Group loan info Group savings info lacks individual client status | Tracking Individual Loan & Savings. Distributed MIS challenge |
| — Potential for RTS effect | Provides efficient individual client status | Minimal | Enables footprint extension with 3 rd Pty Agents |
| — Future RTS connection to credit bureau | Useful | Minimal | Useful |
| — Future connection to financial switch and banks | Useful, client's transactions done at banks | Limited | Useful, can leverage more 3 rd Party Agents |
| Risk of theft | High, cash moved by group leaders to banks | High, cash handled at branches and transfers | Reducing, part of branch cash mgmt moving to Agents |
| Quality of loans and client reliability | Medium, changes will increase individual client visibility | High, all info and management is at group level only, quality depends on internal group processes | Medium, lending philosophy has increased risk in exchange for higher volume and lower overhead |
| Operations | | | |
| — Client acquisition | FO prospects for group 20-30 | FO prospects for group 20-30 | FO prospects for small gp 1-5 |
| — Loan origination | FO + branch staff, paper based | FO + branch staff, paper based | FO + branch staff, paper based |
| — Client maintenance (frequency of contact) | Frequent bi-weekly Group meeting | Frequent weekly to bi-weekly Group meeting | Seldom, During loan renewal |
| — Client transaction service model | At Banks bi-weekly | At Branches bi-weekly | Either Branch bi-weekly or Agent frequently |
| — Fixed versus variable field staff cost model | Fixed | Fixed | Fixed changing to Variable |
| — Cost of expanding client access footprint | Medium FO Meeting location + staff + FOs | High New Branch + staff + FOs | High New Branch + staff + FOs But Declining to FO Meeting location + FOs + Agents |
| Continued next page | | | |
| Model name | Group | Branch | Individual |

| | | | |
|----------------------------------|----------------|------------|--------------------|
| MIS | | | |
| — Brand of backend MIS system | Loan Performer | SIEM 7.0 | Banker's Realm |
| — Back end MIS system design | Central HQ | Central HQ | Distrib. Branch |
| — Reconciliation of transactions | Monthly | Weekly | Daily RTS-Daily |
| | | | |

TABLE 8: MFI RTS CAPITAL & START-UP COSTS SUMMARY

The volume factors assumptions used in Tables 8 - 10, that were used to provide numerical information, were selected to highlight notable characteristics of each of the models.

- The group model MFI is shifting its entire lending operation from group only accounting to group with individual accounting, therefore the entire population of the MFI's borrowers is used in this analysis.
- The Branch model is focused on the economics of a sub-branch. The population of borrowers serviced by this branch is used in this analysis.
- The Individual model is focused on cost savings from 3rd party agents as well as the revenue from transaction fees. The breakeven client volume was chosen for this calculation. This table presents capital and start-up costs associated with these volumes. Many of these values remain consistent even as more clients are added, thereby reducing the start-up costs per client as when the MFI uses the RTS at volume. Further analysis of the Individual model at alternate higher volumes and varying transaction fee structures is provided in Table 10.

| Model name | Group | Branch | Individual |
|--|--|-------------------|---------------------------------------|
| RTS Capital costs (total costs): | | | |
| — Volume Factors | 4 branches 27 loan officers 16,412 clients | 1 branch | 1 branch 7 agents 2,630 clients |
| — MIS Connector to RTS server system | (\$6,000) | (\$6,800) | (\$4,800) |
| — Computers @ \$1,500 each (PCs to start) | (\$4,500) | (\$4,500) | (\$4,500) |
| — Computers @ \$1,500 each (add'l volume) | (\$4,500) | (\$0) | (\$0) |
| — Communication link install @50% | (\$3,500) | (\$0) existing | (\$875) |
| — HQ PoS devices for RTS support staff @ \$700 | (\$1,400) | (\$700) | (\$700) |
| — LO/Agent/Branch RTS PoS devices @ \$700 | (\$19,600) | (\$2,100) | (\$5,600) |
| — Client smart cards 16,432 / 21 / 2,235 @ \$2.50 | (\$41,080) | (\$50) | (\$6,630) |
| | | | |
| Total Capital Expense | (\$80,580) | (\$14,150) | (\$23,110) |
| Total annual depreciation exp (3 yr amortization) | (\$26,860) | (\$4,720) | (\$7,700) |
| | | | |
| Start-up Costs for MFI (Typically Grant Funded) | | | |
| — RTS capital costs | \$80,580 | \$14,150 | \$23,110 |
| — Project Manager 2 yrs @ \$1,200/mo | \$28,800 | \$28,800 | \$28,800 |
| — Start-up trainer & cust. support 2 yrs @\$500/mo | \$12,000 | \$12,000 | \$12,000 |
| — Product customization | \$10,000 | \$10,000 | \$10,000 |
| — External start-up project & management consult | \$50,000 | \$50,000 | \$50,000 |
| Total Start-up Costs | \$181,380 | \$114,950 | \$123,910 |

TABLE 9: MFI RTS OPERATIONS SUMMARY

| Model name | Group | Branch | Individual |
|--|---|---|--|
| — Volume Factors (see explanation in Table 8 above) | 4 branches 27 loan officers 16,412 clients Client Transaction fee None | 1 branch Client Transaction fee None | 1 branch 7 agents 2,630 clients Client Transaction fee 1000 Ush 600 to agent 400 to MFI |
| Revenue - RTS annual savings | | | |
| — Client annual fee received | \$0 | \$0 | \$23,410 [\$9/client] ²⁸ |
| — MFI processing savings (reduced work volume) | \$46,580 | \$0 | \$1,220 |
| Expense - RTS related annual costs | | | |
| — Field RTS PoS trans airtime | (\$13,040) | (\$830) | (\$0) |
| — Field RTS PoS trans paper | (\$1,860) | (\$130) | (\$0) |
| | | | |
| RTS Annual operating costs | | | |
| — HQ RTS IT Sr. staff ops & support @ \$700 | (\$8,400) | (\$8,400) | (\$8,400) |
| — HQ RTS Training staff @ \$500 | (\$6,000) | (\$6,000) | (\$6,000) |
| — HQ RTS vol. IT Jr. staff ops & support @ \$500 | (\$6,000) | (\$0) | (\$0) |
| — RTSE MFI monthly support fee @\$850/mo | (\$10,200) | (\$10,200) | (\$10,200) |
| Total annual HQ operating expense | (\$30,600) | (\$24,600) | (\$24,600) |
| | | | |
| RTS Operating Income Analysis for MFI (assumes capital and start-up costs funded via grant) | | | |
| — Operating revenue | \$0 | \$0 | \$23,410 |
| — Field operating savings from using RTS | \$46,580 | | \$1,220 |
| — Field operating expense for using RTS | (\$14,900) | (\$960) | (\$0) |
| — HQ operating savings from RTS | (\$0) | (\$0) | (\$0) |
| — HQ operating expense for RTS | (\$30,600) | (\$24,600) | (\$24,600) |
| — Operating income at indicated volume | \$1,080 | (\$25,560) | \$30 |
| | | | |
| — Memo: Required client vol. to achieve breakeven | 12,818 clients | No breakeven | 2,630 clients |

TABLE 10: MFI RTS INDIVIDUAL MODEL – ALTERNATE FEES

Unlike the other tables, the three columns in Table 10 are all for the Individual model. Unlike Table 9 which only looks at breakeven, Table 10 includes Capital and Start-up costs in the analysis (rather than using grant funding, which is still an option of course).

The first column shows a complete Individual model implementation for the pilot situation (Table 9 used only 2,625 clients to show the breakeven point). This table demonstrates the significant revenue that can come in from a 1,000 Ush [\$0.59] transaction fee (agent 600 Ush [\$0.35] and MFI 400 Ush [\$0.24]). The second column shows the same information but using a 800 Ush [\$0.47] transaction fee with the Agent still getting 600 Ush and the MFI going from 400 Ush to 200 Ush [\$0.12]. Note that the MFI at this rate is a little above

²⁸ Client paid agent fee based upon 1,000 Uganda shilling fee (\$0.58) per payment transaction split 60% for agent and 40% for MFI (See text for discussion about multiple transaction charging models)

breakeven, yet still covering the capital and startup costs at full deployment (ramp up considerations will vary, of course).

The third column is the real winner. Here, we moved 200 Ush of the transaction fee used to pay the RTS communications airtime and paper costs from the agent (changing 600 to 400 Ush) agent to the MFI (changing 200 to 400 Ush). The net result for the Agent for all three columns is the same. Moving the communications costs from the Agent to the MFI gives all of the potential upside to the MFI and not to the Agent. We expect upside (a) as RTS improves (reduces) the transaction communication time and the airtime charges, (b) by aggregating the airtime at the MFI for a better opportunity to negotiate volume discounts and (c) in the event the cellular provider reduces airtime costs then the savings will go to the MFI. For all of these reasons the MFI should want to have the airtime in their part of the equation. This will allow them to manage the transaction fee relationships and leverage potential savings as they occur.

| Model name | Individual MFI full fee Agent full fee Agent pays com Start-up & Depr. included | Individual MFI red'ed fee Agent full fee Agent pays com Start-up & Depr. included | Individual MFI red'ed fee Agent fee-com MFI pays com Start-up & Depr. included |
|--|---|---|--|
| Volume Factors | 20 branches 90 agents 35,787 clients | 20 branches 90 agents 35,787 clients | 20 branches 90 agents 35,787 clients |
| RTS Capital costs (total costs): | | | |
| — MIS Connector to RTS server system | (\$4,800) | (\$4,800) | (\$4,800) |
| — Computers @ \$1,500 each (PCs to start) | (\$4,500) | (\$4,500) | (\$4,500) |
| — Computers @ \$1,500 each (add'l volume) | (\$33,000) | (\$33,000) | (\$33,000) |
| — Communication link install @50% | (\$17,500) | (\$17,500) | (\$17,500) |
| — HQ PoS devices for RTS support staff @ \$700 | (\$2,800) | (\$2,800) | (\$2,800) |
| — LO/Agent/Branch RTS PoS devices @ \$700 | (\$63,700) | (\$63,700) | (\$63,700) |
| — Client smart cards 16,166 / 21 / 2,235 @ \$2.50 | (\$89,520) | (\$89,520) | (\$89,520) |
| Total Capital Cost | (\$215,820) | (\$215,820) | (\$215,820) |
| Total annual depreciation exp (3 yr amortization) | (\$71,940) | (\$71,940) | (\$71,940) |
| Grant Funded Start-up Costs for MFI | | | |
| — Project Manager 2 yrs @ \$1,200/mo | \$28,800 | \$28,800 | \$28,800 |
| — Start-up trainer & cust. support 2 yrs @\$500/mo | \$12,000 | \$12,000 | \$12,000 |
| — Product customization | \$10,000 | \$10,000 | \$10,000 |
| — External start-up project & management consult | \$50,000 | \$50,000 | \$50,000 |
| Total Start-up Costs | \$100,800 | \$100,800 | \$100,800 |
| Annual RTS Basic Start-up Costs (no capital) | \$50,400 | \$50,400 | \$50,400 |
| — Total Capital Cost | \$215,820 | \$215,820 | \$215,820 |
| — Total Start-up Costs | \$100,800 | \$100,800 | \$100,800 |
| Total Start-up and Capital Costs | \$316,620 | \$316,620 | \$316,620 |
| Continued next page | | | |

| Model name | Individual MFI full fee Agent full fee Agent pays com Start-up & Depr. included | Individual MFI <u>red'ed</u> fee Agent full fee Agent pays com Start-up & Depr. included | Individual MFI <u>red'ed</u> fee Agent fee-com <u>MFI pays com</u> Start-up & Depr. included |
|--|---|---|---|
| Volume Factors (see introduction prior page) | 20 branches 90 agents 35,787 clients Transaction fee 1000 Ush 600 to agent 400 to MFI | 20 branches 90 agents 35,787 clients Transaction fee 800 Ush 600 to agent 200 to MFI | 20 branches 90 agents 35,787 clients Transaction fee 800 Ush 400 to agent 400 to MFI |
| Revenue - RTS related annual revenue + savings | | | |
| — Client annual fee received | \$318,500 [\$8.90/client] ²⁹ | \$161,040 [\$4.50/client] | \$318,500 [\$8.90/client] |
| — MFI processing savings (reduced work volume) | \$16,600 | \$16,600 | \$16,600 |
| Expense - RTS related annual costs | | | |
| — Field RTS PoS trans airtime | (\$0) agent pays | (\$0) agent pays | (\$91,257) |
| — Field RTS PoS trans paper | (\$0) agent pays | (\$0) agent pays | (\$9,126) |
| RTS Annual operating costs | | | |
| — HQ RTS IT Sr. staff ops & support @ \$700 | (\$8,400) | (\$8,400) | (\$8,400) |
| — HQ RTS Training staff @ \$500 | (\$6,000) | (\$6,000) | (\$6,000) |
| — HQ RTS vol. IT Jr. staff ops & support @ \$500 | (\$18,000) | (\$18,000) | (\$18,000) |
| — RTSE MFI monthly support fee @\$850/mo | (\$10,200) | (\$10,200) | (\$10,200) |
| Total annual HQ operating expense | (\$42,600) | (\$42,600) | (\$42,600) |
| Volume Factors (see footnote prior page) | | | |
| | 20 branches 90 agents 35,787 clients | 20 branches 90 agents 35,787 clients | 20 branches 90 agents 35,787 clients |
| RTS Operating Income Analysis for MFI (assumes capital and start-up costs funded via grant) | | | |
| — Operating revenue | \$318,500 | \$161,040 | \$318,500 |
| — Field operating savings from using RTS | \$16,600 | \$16,600 | \$16,600 |
| — Field operating expense for using RTS | (\$0) | (\$0) | (\$100,383) |
| — HQ operating savings from RTS | (\$0) | (\$0) | (\$0) |
| — HQ operating expense for RTS | (\$42,600) | (\$42,600) | (\$42,600) |
| — Annual RTS basic start-up costs | (\$50,400) | (\$50,400) | (\$50,400) |
| — Annual depreciation expense (3 yr straight line) | (\$71,940) | (\$71,940) | (\$71,940) |
| — Operating income at indicated volume | \$170,160 | \$12,700 | \$69,777 |

²⁹ Client paid agent fee based upon 1,000 Uganda shilling fee (\$0.58) per payment transaction split 60% for agent and 40% for MFI (See text for discussion about multiple transaction charging models)

3.8. Intangible Factors

It is important to recognize that intangible factors may be a prime motivator for some of the approaches used and these are not explained in the numerical analysis. We are aware for example from surveys and interviews of a “prestige factor” that clients feel when they have a RTS “smart card”. This is a symbol of being part of a larger activity, of being “trusted” by an institution in financial matters. It is a symbol of “technology knowledge”. For these reasons a client may be favorably inclined toward a MFI offering RTS as part of its service even though the loan product is otherwise similar to competitors.

MFIs like most businesses have outside expectations to meet from donors, regulators, competition and clients. We are aware of an example where the MFI needed to improve loan portfolio management in order to track problem loans on a more timely basis. This required a change to business processes to accomplish and in this case the RTS was one of the potential ways to implement the change. When the efficiency of the RTS combined with the operating cost of the RTS was compared with a manually implemented solution, the implementation costs were about the same. However by making the effort to upgrade from a manual approach to the RTS technology, the MFI gains the intangible benefit of an ability to add future services at little added cost.

In another situation the MFI management was innovating a new product delivery method and could incorporate the RTS pilot along with the larger project. Since the focus was on the existing project in progress, we benefited from a pilot opportunity, but the MFIs ability to adapt its business practices for maximal advantage from RTS was limited. In that case the intangible factor resulted in only modest benefit from the RTS and a future effort will be needed to more fully exploit the RTS system.

While we recognize these additional factors affect specific approaches used, we believe the financial opportunities we have highlighted resulting from analysis of the results from these pilots point to real advantages that are available to many potential deployments of the RTS system. Sevak Solutions (www.sevaksolutions.org), a new non-profit, that holds the rights to the RTS has been established to provide an Open Source license to the solution. This is an easy low cost access point for any microfinance institution to the technology, and to help prospective users identify how the RTS System would be most usefully deployed in their setting.

3.9. Open Questions

3.10.1 Impact of Savings Mobilization: As the participating MFIs become designated as MDIs (Microfinance Deposit taking Institutions), the impact of savings mobilization upon the RTS system should be monitored. It is expected that accepting deposits via the RTS will improve the profitability of the MFIs and increase the RTS' overall value. Indeed, one of the strongest Key Findings from the pilot data was the ability to reduce leakage and the ability to make savings deposits is a likely enabler of this. This opportunity is so significant that we believe it warrants its own study and pilot activity to determine how to convey the importance of this to clients and encourage them to take advantage of it.

3.10.2 RTS vs. Branch Cost Differences: Since it is still unclear what the magnitude of the cost difference is for setting up the RTS versus establishing a typical branch set-up (and maintenance investment costs on both sides), it is important that when information becomes available, these costs are explicitly captured and the difference is

monitored. The value of the RTS may depend on its lower costs of set-up, overhead and general operations versus a typical bank branch. It is important to more fully understand the magnitude of costs associated with a branch. For example, is cash management and security a heavier cost burden than the administrative overhead. Depending on relative expense levels, the RTS may be an advantage but not a “significant” advantage when weighed against other components of branch operation.

3.10.3 Incremental Increase in Customers: Another important area for future investigation is the incremental increase in customers that the MFI achieves as a result of the RTS. Since this depends upon the strategy of each MFI and the RTS business processes adopted, future research will need to determine which approach yields the greatest increase. This remains an open question at this time. We have concluded from the pilot results that this analysis requires longer and higher volume activity in order to create enough data for a confident analytic result.

3.10. Risk Areas

There are a few areas, which pose potential risks for the success of the RTS pilot project and the future viability of the RTS.

3.11.1 Lack of Measurement: An area that often poses significant challenge during a pilot is tracking the pilot’s progress and knowing which variables to measure to determine whether or not it is successful. By creating the Input Tracking Tool³⁰, the GSB Team intended to assist the pilot team in identifying key factors for success and has a readily available and usable tool to update these measures. Only by remaining diligent and

³⁰ This tool will be available on the Sevak Solutions website (www.sevaksolutions.org)

continuing to update the model as more data is obtained will the model serve its purpose and allow future users to make an informed decision.

As anticipated, one of the most significant challenges has been reliable collection of data from the field. HQ support personnel have been excellent providers of information and willing researchers of answers from available information. However the variability of the field data demonstrates the importance of thorough training and an “on the ground in the field” person dedicated to managing data collection efforts.

3.11.2 Model Complexity: One of the pitfalls this team has tried to avoid is over-complicating the model. In order for it to make sense for the field teams, the summary page of the model was kept as simple and streamlined as possible, avoiding unnecessary complexity. As the model becomes more sophisticated, special effort will need to be taken to ensure that it remains usable and understandable, not only for the ones doing the modeling but also for the people who will be using it (in the field). This remains a challenge and effort continues to be made in this area.

3.11.3 Mapping Business Processes: As business processes adjusted and evolved over the course of the pilot, we attempted to mirror those changes in the model. Starting first with a diagrammatic representation of the change is the most productive approach. Regardless of method employed, all changes on the ground need to be reflected in the model in order for it to be of use. The model has been updated to reflect actual circumstances and data collection. The advantage of multiple concurrent pilots has demonstrated clearly the different results that come from higher or lower attention to business processes as leverage factors in the deployment of new technology like the RTS system.

3.11.4 Allocation of Costs: For the purpose of simplicity, many costs in the model are attributed to only one entity. As more data is collected from the ongoing rollout of the RTS, these costs need to be monitored to ensure that they are being captured in the right proportions and for the right entities, since this can significantly impact each entity's profitability. As discussed elsewhere in the paper, we did identify important areas of business practice where the RTS system as implemented and deployed is not optimal for the situation. In particular we are referring to the advanced deposit required of 3rd party agents used by the MFI to manage risk of payment default. It is evident that this ties up too much of the agents capital and requires frequent attention by the agent which is detrimental to their regular business activities. In addition the transaction fee model for 3rd party agents can be improved as previously discussed.

4. Appendix A: Input Data Collection Tools

This information is available on the Sevak Solutions web site at www.sevaksolutions.org

5. Appendix B: Details of Economic Models

The model tool uses a number of elements to model the economic relationships in the RTS “ecosystem”. The model tools, field data and related information are provided in the Uganda pilot portion of the Sevak Solutions web site. The elements that the Stanford team designed into the analysis tools are described in this appendix. Actual pilot data collection subsequently affected the ability to utilize all of the design elements and adjustments were made accordingly during analysis and these considerations are reflected in the discussion.

Economics of the MFI Client

Sources of Incremental Revenue (or cost savings) - New Clients

Incremental revenue for new clients as a result of the RTS device is grouped into two major categories, although there may be additional sources that were not identified during the pilot:

Return on Assets

This refers to the productivity of assets used by the client. Given a set of assets, how well is the client able to generate a positive return? That level of productive use is the return on assets. Due to the limited number of revenue sources relating to microfinance services, the sales made using existing assets is an important variable for understanding overall client profitability. In the model, a percentage of the amount disbursed to clients is invested in working capital – what is used up in the production process. What is left over is an invested asset that can be used again for future production. This remainder affects the client’s return on assets, the higher the number, the greater the return.

In the pilot situation it was not possible to collect reliable information for calculating the Return on Assets. This is caused by the casual and informal client information where there are usually no periodic written records to refer to. In addition, the access of the RTS staff to clients is limited to interviews of a varying subset of clients in each meeting of the lending groups (typically 6 out of 20). The results of this data item are summarized outside of the model in subjective section of the report.

Savings Interest Revenue

Another source of revenue for clients is savings revenue, calculated as the interest earned on funds deposited into monthly interest-earning savings accounts. This figure will be a small source of incremental revenue and will change depending up on the interest rate yield and the number and size of accounts held.

Sources of Incremental Expenses – New Clients

Incremental expenses for new clients are grouped into seven major categories:

Transportation Expense

Although new clients will not recognize the cost savings for most of their expenses since they will have no basis for comparing the cost differential, they will enjoy a lower cost

structure on nearly all sources of expenses. Transportation expense is one instance where few trips to a bank branch will ever be required and the client's overall profitability is higher due to these lower expenses.

Opportunity Cost of Time

Again, new clients will be interacting with a system that is presumably much faster and more efficient. Therefore, their opportunity cost of conducting each transaction, from meeting times to wait times, will also be lower.

Cost of Leakage

This is perhaps the greatest value of the RTS for new clients, outside of just getting access to a loan. In Pilot interviews leakage was frequently identified by clients at levels from 20 to 30 percent of earnings and sometimes more. With a savings account that enables them to make frequent, small deposits into a trusted savings account, clients will be able to eliminate a portion of the losses they incur on a daily basis when most of their earnings are taken by various members of their family (and social network). Since Ugandan custom is to give much of what you have to your loved ones, cash in hand is viewed by some as "disposable income" when in reality, much of that cash is already earmarked for loan payments, working capital expenses, upcoming family or business-related expenses (such as school fees or special events) and needed business investments. Reducing leakage via increased access to savings instruments is of paramount importance to clients, new and old.

Cost of Proxy Payments

Before the pilot it was felt that new clients will not yield much benefit on this variable since they would not be sending proxies to make their loan payments (since we assume that they do not have loans yet). An interesting finding was that even with use of the RTS, there is still a level of proxy payment use. Therefore the RTS provides actual value in reducing the time and cost for proxy use. This is a more relevant variable for new clients than we initially understood.

Cost of Delinquency

The pilot assumes that the convenience of the RTS and the improved accuracy of account data will give rise to lower delinquency rates. From collecting payments to reducing wait times and possible theft, delinquency rates caused by various sources will decline in nearly every category. Lower delinquency is beneficial for the client (since it improves the likelihood of their being approved for future loans) as well as the MFI and should be included in information about the benefits of the RTS. For one of the Pilots, the benefits of RTS to the MFI in addressing this area caused the MFI to embark on a business process change to take advantage of the RTS to increase transparency of their loan process and reduce the cost of delinquency.

Cost of Cash Disbursements

Any charges for use of the RTS system, whether per transaction or on a commission basis, is an expense that will be incurred by new clients. **This is one of the most important factors behind a client's profitability.** How high the payments are (i.e., % of transaction or fixed fees) will not only determine whether the costs can be borne by

the client (and perceived as reasonable) but also whether or not this system will be adopted by the market. The Pilot has confirmed the critical nature of this element and the importance of how these charges are structured.

Cost of Cash Deposits

Again, any charges for use of the RTS system, in this case for a savings deposit transaction, are an expense incurred by new clients. This is one of the most important factors behind a client's profitability. How high the payments are (i.e., % of transaction or fixed fees) determines whether the costs can be borne by the client (and perceived as reasonable) but also whether or not the market will adopt this system. In this case, since savings mobilization is a critical initiative for most MFIs in Uganda, fees for savings deposits that are perceived of as too high (for example, greater than the perceived amount that would have been lost to leakage), will deter savings activity among new clients, since their basis for comparison is a "without charge" option (though not free due to costs of leakage).

Sources of Incremental Revenue (or cost savings) - Existing Clients

Incremental revenue for existing *clients* as a result of the RTS device is grouped into two major categories:

Increase in sales due to time saved

Increases in productivity and decreased time spent for each transaction drive the logic behind this factor. Increased sales due to lower opportunity costs are measured by looking at the average sales per hour (during working hours) and multiplying that by the time saved using the RTS.

Leakage Reduction

Because the decrease in leakage is a negative expense (or conversely, a revenue source), this figure is similar to the leakage factor for new clients, except that it appears as a positive source. In Pilot interviews leakage was frequently identified by clients at levels from 20 to 30 percent of earnings or more. Again, leakage refers to losses incurred by clients when most of their earnings are taken by various members of their family (and others in their social network). Since Ugandan custom is to give much of what you have to family and others in one's personal network, cash in hand is viewed by some as income that others have rights and make claims to; when in reality, much of that cash is already earmarked for loan payments, working capital expenses, upcoming family or business-related expenses (such as school fees or special events) and needed business investments. Reducing leakage via increased access to savings instruments is of paramount importance to all clients.

Reduced cost of Proxy Payments

Existing rural clients will yield considerable benefit from this factor since they are often currently sending proxies to make their loan payments for them and there are high risks associated with this practice, from robbery (of or by the proxy), time spent (even family members have a cost since that's lost labor) and the costs of transportation for the proxy. Given their knowledge of how costly or precarious sending proxies can be, they

understand what the potential value of the RTS is for their business. The pilot has documented that the use of proxies will continue at perhaps a somewhat lower level. The reduced time and travel distances for the proxy will result in lower costs to the client and reduced risk of loss.

Reduced cost of Delinquency

The pilot assumes that the convenience of the RTS and the improved accuracy of account data will give rise to lower delinquency rates. From collecting payments to reducing wait times and possible theft, delinquency rates caused by various sources will decline in nearly every category. Lower delinquency is beneficial for existing clients since it improves the likelihood of their being approved for future loans.

For one of the Pilots, the benefits of RTS to the MFI in addressing this area caused the MFI to embark on a business process change to take advantage of the RTS to increase transparency of their loan process and reduce the cost of delinquency. Of particular note is the effect on individual payment patterns that had been opaque and are not transparent. This has a very direct effect on the creditworthiness of individuals and when the changes contemplated are in effect will reduce the cost of loans to clients by 2% without changing the economics for the MFI. A remarkable achievement accomplished directly from an RTS enabled process change.

Sources of Incremental Expenses – Existing Clients

Incremental expenses for existing clients as a result of the RTS device is grouped into seven major categories:

Cost of Cash Disbursements

Any charges for use of the RTS system, whether per transaction or on a commission basis, is an expense that did not otherwise exist for existing clients. This is an important factor behind an existing client's profitability. How high the payments are (i.e., % of transaction or fixed fees) will not only determine whether the costs can be borne by the client (and perceived as reasonable) but also whether or not this system will be adopted by the market. The Pilot has provided useful information about fees and fee structure that will help address this issue for clients.

Cost of Cash Deposits

Again, any charges for use of the RTS system, in this case for a savings deposit transaction, are a new expense incurred by existing clients. This is one of the most important factors behind a client's profitability. How high the payments are (i.e., % of transaction or fixed fees) determines whether the costs can be borne by the client (and perceived as reasonable) but also whether or not the market will adopt this system. In this case, since savings mobilization is a critical initiative for most MFIs in Uganda, fees for savings deposits that are perceived of as too high (such as greater than the incremental amount that is no longer lost to leakage), may deter savings activity via the RTS among existing clients, since their basis for comparison is a "without charge" savings option (though it includes costs associated with the previous practices, including leakage).

Economics of the Agent

Sources of Incremental Revenue

Incremental revenue for the agent as a result of the RTS device is grouped into 3 major categories:

Transaction Revenue

This refers to all revenue collected by the agent on a per-transaction basis. Such revenue comes from transaction fees (of a fixed dollar amount) that are paid to the agent irrespective of the size of the transaction. It is also irrelevant whether the MFI or the customer is paying the transaction fee. All that matters is that the agent collects certain fees for each transaction it processes. The model currently assumes a flat fee per transaction. However, it can be refined to include separate fees for cash disbursements versus deposits.

As a result of feedback from the Pilot a new variation on transaction revenue is being examined. Feedback has made it clear that to keep Agents interested in performing this service for the Clients and MFIs that a meaningful level of revenue must be generated by the Agent's RTS service. In the Pilot, petrol stations were used as the initial Agent location. The positive aspect is the service is available for long periods each day and the petrol station has sufficient cash to handle the RTS transactions without stress. The negative is that many MFI clients do not own vehicles and therefore do not provide incremental sales revenue. Therefore the Agent's interest in the RTS is more reliant on transaction fees. A new approach for collecting the Client's transaction fees as a fixed monthly cost added to the loan allows 1) the agent to have a more predictable revenue stream (assuming the Client has an assigned "home" agent) and 2) there is no disincentive for the client to transact because there is not a per transaction charge (for at least some number of transactions). This should increase frequency of use and benefit derived from Client use of the RTS/Agent model.

Commission Revenue

This refers to all compensation that the agent receives based on the size of the transaction. It is assumed that the agent could collect a certain percentage (fixed or sliding) of the *amount* of cash disbursed or deposited. The model allows different commission rates to be set for cash disbursements versus cash deposits. For example, if the commission rate were set at 5% for cash deposits and 0% for cash disbursements, the agent would receive \$5 for each \$100 it receives as a deposit and \$0 for each \$100 that it disburses. The current Pilot results do not indicate an interest in a commission approach to compensating the Agent, however this remains as one of the potential methods.

Indications are that a commission is much more likely when associated with loan origination. In a future version of the RTS where remote loan origination was possible the savings in employee field time could permit some type of commission approach. It

is important to consider the effect of incentives and regulatory requirements to assure the client's best interests are ultimately being served.

Incremental sales Revenue

This refers to incremental sales that the agent makes as a result of the additional customer traffic it receives. The MFI's customers who come into the store to use the RTS cause this additional traffic. The additional traffic leads to sales of other goods and services (e.g. soap, butter, etc.) that the agent would *not* have made otherwise. Unfortunately the Pilot agents products are not frequently purchased by the MFI's Clients. This suggests that part of the Agent choice procedure should be to match Agent business with Client interests to achieve a sustainable long term relationship.

Sources of Incremental Expenses

Incremental expenses for the agent caused by the deployment of the RTS device is grouped into 6 major categories in the model:

Telecommunications Costs

This refers to all costs incurred for the "airtime" that is used by the RTS device each time a transaction is made, and also for any additional telephone calls the agent has to make as a result of the RTS (e.g. calls to the MFI to report a failure of the RTS device.) The model currently assumes that all transactions are done in a real-time basis. It can be refined to deal with transactions that are done in batches. The Pilot results indicate that as the agents become familiar with the RTS device that the frequency of hardware related problems has quickly diminished to relatively inconsequential numbers. There are essentially no device failures reported in the data collected. Therefore, telecommunication costs will be mostly transaction transmission time and time spent resolving process problems. While the RTS system has been very reliable, the human element has created occasional operational problems and some of these manifest themselves when the Client attempts an Agent transaction. This creates a call for assistance using airtime to resolve the problem. The most common issue is an improperly configured Client card that has been issued with the wrong initialization data.

Opportunity Cost of Time Spent on RTS

This measures the costs the agent incurs as a result of time he/she has to take away from "usual" activities in order to serve clients that walk in to use the RTS device. The time spent serving RTS customers is costly to the agent because he/she could have been using that time to sell other goods to other customers.

The Pilot results indicate that the Agent transaction time is small. The agents report completing basic transactions in less than 2 minutes including transmission time. It is helpful that the Agents chosen for the Pilot have other devices similar to the RTS and are familiar with operating the equipment.

Lost Interest on deposits

This variable measures costs the agent incurs as a result of keeping extra cash on hand to honor RTS customers' cash withdrawals. Prior to having the RTS device, the agent

would have kept such money in a bank account and would have received interest income from the bank. As such, the interest income that the agent is losing from keeping this extra cash around should be accounted for in the model.

An interesting development in the Pilot is what we call the “Dell operating model”. As you are probably aware, the secret of Dell Computer’s business model is that they collect payment for computers ordered before they purchase the parts to build the ordered computer. They have one of the very few business models that by design has a negative cash-conversion cycle³¹ In the Pilot of one of the MFIs using the 3rd Party Agent model requires the Agent to deposit funds in anticipation of collecting payments from Clients. When sufficient payments have been collected to offset the deposited funds, the deposit is replenished. In the way, the MFI is always cash positive with respect to deposit status and has no risk of an Agent failing to deposit collections.

Cost of incremental goods sold

This measures the cost of the additional goods that the agent sells due to the *incremental* store traffic caused by the RTS device. As mentioned earlier it is important to match the goods offered with the likely purchases of the Clients in order for this dimension of the Agent model to have value.

Opportunity Cost of RTS failure

This measures the cost incurred by the agent when the RTS device fails (both hardware or software issues.) For every minute that the RTS device is malfunctioning, the agent is losing an opportunity to serve RTS clients (and to receive commission and transaction fees from these clients.) As such, the lost revenue due to RTS failure is captured in the model as a cost for the agent.

In the Pilot expedience we have not seen significant issues with the basic hardware or software failing. We do see mistakes made by operators of the system where they miss configure the Client smart-cards causing subsequent failures. During use of the system we have also uncovered additional MFI transaction types not previously disclosed which needed to be accommodated in the software. Both of these types of problems will lessen as the software matures and makes it more difficult for these types of errors to occur.

Costs of paper for RTS device

This measures the cost incurred by the agent in keeping the RTS device stocked with paper (for printing receipts, etc.). Since the device uses a thermal printing mechanism, it is assumed there are no costs for the toner for the RTS device. In pilot experience we have seen an expendables cost of one roll of paper every two days which represents a supplies cost of \$0.50 per day.

However, we have had complaints from users in the pilot that the thermal paper used in the current RTS device fades rather quickly and so the transaction record is only semi-permanent. This is an important consideration in this system that needs to be rectified

³¹ Thomas Meredith - Dell Computer Corp. “PERFORMANCE MEASUREMENT & RISK MANAGEMENT At Dell Computer Corp.,” Stephen Barr, *CFO Magazine : September Issue 1998*

before the system is expanded to multi-party transactions where reconciliation issues may depend upon receipts for proof of activity.

Economics of the MFI

Sources of Incremental Revenue (or cost savings)

Incremental revenue for the MFI as a result of the RTS device is grouped into six major categories, although there may be additional *sources* that will be identified during the pilot:

Interest Revenue on New Accounts

This refers to the incremental increase in loan interest revenue that is directly attributable to the RTS device only (and not the normally expected growth of the client base). This is measured by determining the increased customer acquisition rate, the number of agents (or loan officers) servicing these customers, the average loan disbursement amount for these new clients and the average interest rate charged for new clients. The revenue generated from the loan interest revenue of these incremental clients is the increased interest revenue.

- When examining acquisition rate, it must be the incremental increase in acquisition rate, not the overall rate.
- The key drivers for MFI (as well as the client) on the customer acquisition variable are cost per acquisition and per transaction.
- The key driver for agent is also cost per transaction and commission (fees) but on the revenue side (unlike clients).

Transaction Revenues (from Agents)

This refers to the percent of the transaction fee that is not retained by the agent and is passed to the MFI (multiplied by the number of agents working with each MFI). In our initial pilot set-up, the MFI is not capturing any of the fees charged by the agent to the client but in subsequent phases, this could be a possible source of revenue for the MFI.

- For FINCA, the number # of clients refers to people coming to the store NOT who they represent (i.e., not the 875 number; this is also the case in the agent model). Transaction revenue changes a lot therefore whether or not it's a "group" client or an individual.

Commission Revenues (from Agents)

This refers to the percent of the commission fee that is not retained by the agent and is passed to the MFI (multiplied by the number of agents working with each MFI). In our initial pilot set-up, the MFI is not capturing any of the fees charged by the agent to the client but in subsequent phases, this could be a possible source of revenue for the MFI.

Revenues from Increase in Savings Accounts

This refers to the incremental increase in savings account revenue that is directly attributable to the RTS device (and not just the normally expected growth of clients with

savings accounts). This is measured by determining the increased customer acquisition rate, the number of agents (or loan officers) servicing these customers, the average savings account balance for new clients, the percent of new clients that open a savings account and the average margin on a savings account for the MFI. Eventually, we will also want to compare the difference in the cost of capital for the MFI but it is too early in the process to accurately estimate how that would be structured into the model (given the donor-based funding received to date by most MFIs). The margin the MFI enjoys on each savings account is thus a source of revenue.

Revenues from Decrease in Delinquency

This refers to the assumed decrease in delinquency resulting from the convenience offered by the RTS, the reduced wait time at the branches (and therefore, the improved ability of the MFI to serve clients and lower abandonment), and the improved accuracy of account data. From collecting payments more frequently (in smaller amounts) to reducing wait times, leakage, and possible theft, delinquency rates caused by various sources will decline in nearly every category. Lower delinquency is also beneficial for new and existing clients since it improves the likelihood of being approved for future loans.

Revenues from Increase in Client Retention

Retention generally refers to several positive effects: reduced customer attrition, improved customer satisfaction (due to the device), increased lifetime value of a customer, decreased in cost per acquisition (no longer investing to obtain the client, merely keep the client), lowered cost per transaction (MFI and Client alike) and increase in interest income earned (for future years). In our model, due to the lack of data available, we focused on the lower cost of acquisition and per transaction. Eventually, these other retention variables will need to better reflect the true value.

Sources of Incremental Expenses

Incremental expenses for the MFI are grouped into three major categories:

Payment to Agent from MFI Expense

Fixed payments to agents refers to the possibility that the MFI might create an incentive pay structure to agent in addition to commission and transaction fees agents collect, to reduce agent risk and increase adoption/trial of RTS as a business.

MFI Fixed RTS Costs

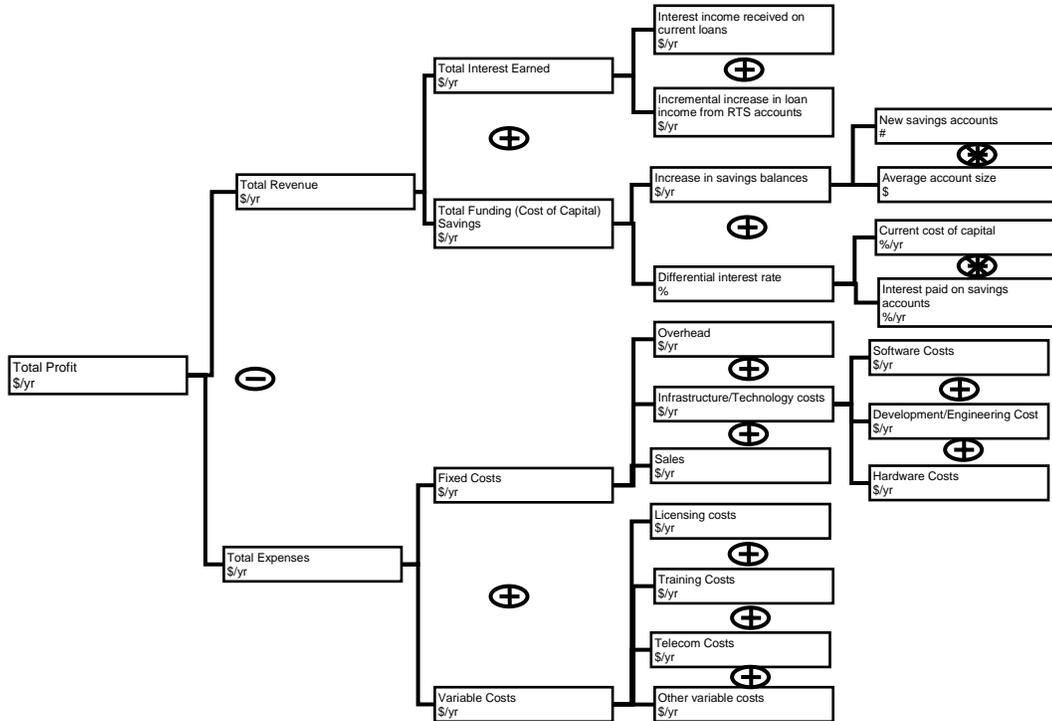
This refers to the upfront costs of implementing the RTS and the on-going costs of maintaining it. Included in this cost category are the incremental RTS operating costs (rent, utilities, salaries, capital expenditures, insurance, security, etc.), travel expenses, sales and marketing, training, failure and downtime costs, infrastructure maintenance costs and other related technology expenses.

MFI Variable and Stepped Costs

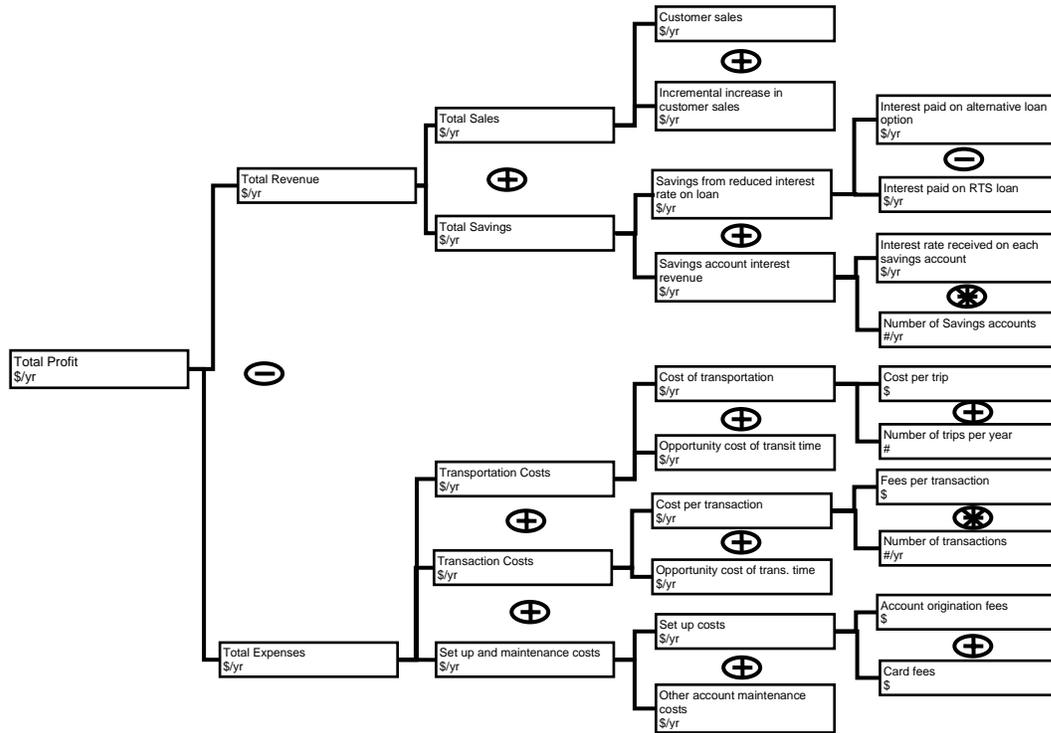
This refers to the costs associated with the growth of the RTS and the on-going working capital expenditures and other variable costs. Included in this cost category are the following variable and stepped costs: RTS supply (and material) costs, customer support, training, licensing and other related expenses.

6. Appendix C: Flow Charts for Economic Models

MFI Economic Model



Client Economic Model



Agent Economic Model

