

VPN IN A DEVELOPING COUNTRY: PROPOSED DESIGN FOR A BANKING ORGANIZATION IN HAITI

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ABSTRACT

In this paper, the author describes the process of converting from a microfinance institution (MFI) to a regulated bank in Haiti. The literature was helpful as far as some of the procedures were concerned, and the MFI was able to use the recommendations. However there were major omissions in those recommendations from an infrastructure perspective. Using a VPN was a major saving for the MFI in Haiti.

Keywords: VPN, Microfinance, Haiti, Developing country

INTRODUCTION

Microfinance Institutions (MFI) started in Bangladesh in 1976 as an attempt to provide low cost loans to poor people. The amount of the loan was usually between \$10 and \$50 and the loan was given to a group of people, not to individuals. As these institutions matured, they attracted savings deposits from their customers. These funds could be loaned for additional income and many MFIs are now transforming into regulated banks to leverage their savings deposits. Gibbons and Meehan (June, 2000) stated, "Many [MFIs] are gradually transforming their multi-program NGOs into de facto financial institutions because microfinance has become their most effective program for poverty reduction." There is a great deal of literature on the subject of the relative success of MFIs and is not the subject of this paper. This report presents the application of one organization, Fonkoze in Haiti as it attempted to convert from MFI to regulated bank status.

Fonkoze was founded as an alternative bank for the organized poor. With headquarters located in Port-au-Prince, Haiti, Fonkoze is currently in the process of moving from a non-governmental organization (NGO) to a formal regulated financial organization. There is a critical absence of an infrastructure to support business in Haiti, and Fonkoze faces the challenge of computerizing every branch in order to meet the requirements of regulated status. In this paper the author reviews Fonkoze's transformation process and technological challenges found within this complex process, while highlighting areas where the literature is deficient.

Technology Infrastructure Planning Models

Technology infrastructure planning models found in the literature focused primarily on management information systems (MIS) and were categorized in two ways: (1) identifying frameworks for analysis of current software packages and (2) outlining design and implementation methodologies. Of these two models, the first type of model can be seen in USAID's Management Information Systems for Microfinance: An Evaluation Framework (Mainhart, 1999). This document was a good source for evaluating off-the-shelf packages and existing software whose major components were:

- A) Functionality and Expandability
- B) Usability
- C) Reporting
- D) Standards and Compliance
- E) Administration and Support
- F) Technical Specifications and Correctness
- G) Costs

The evaluation framework (Mainhart, 1999) given above was helpful for evaluating software, but provided no guidance to MFIs in the developing world where branches were often spread throughout the countryside. Those offices frequently did not have the basic infrastructure critical to business operations, such as electricity and communication systems. Macray (2000) cited electricity, building security, and room temperature as examples of what needed close attention. The author felt that this statement was confirmatory of his concern that the plans reviewed in the literature assumed that there was some available infrastructure, whereas the author has experienced regions in some countries that lack basic infrastructure. Even Macray, however, did little more than point out the importance of institutional capacity. He did not cite how the organizations should resolve their infrastructure capacity problems.

The Consultative Group to Assist the Poorest (CGAP) published a technical guide (Waterfield and Ramsing, 1998) to assist MFIs. The CGAP website provided this resource material under its technical tools series. The guide comprehensively laid out not only a framework for reviewing software packages but also addressed a development and implementation framework. The overall framework was laid out as follows:

- A) Introduction: Why is information so important?; What is a management information system?; How do the parts of an MIS relate?; Need experiences with MIS be so frustrating?; What about manual systems or spreadsheets?; Can I find standard MIS software to meet my needs?
- B) The Accounting System: Accounting systems; Cash versus accrual accounting; Fund accounting; The chart of accounts; Financial statements.
- C) Creating Reports: Defining information needs; Key issues in report design; Reporting framework.
- D) Tracking Performance through Indicators: Interpreting indicators; Portfolio quality indicators; Profitability indicators; Financial solvency indicators; Growth indicators; Outreach indicators; Productivity indicators
- E) Developing and Implementing a Management Information System: *Phase 1*: Conceptualization: Step 1: Forming the task force; Step 2: Defining needs; Step 3: Determining what is feasible; Step 4: Assessing the alternatives; Step 5: Preparing the MIS needs assessment report. *Phase 2*: Detailed assessment and design: Step 1: Performing a detailed assessment of software; Step 2: Completing the design; Step 3: Finalizing the MIS plan. *Phase 3*: System development and implementation: Step 1: Developing the software; Step 2: Setting up the hardware; Step 3: Preparing the revising document; Step 4: Configuring the system; Step 5: Testing; Step 6: Transferring the data; Step 7: Training; Step 8: Running parallel operations. *Phase 4*: System maintenance and MIS audit.

This guide did address determining what feasible (E.1.c.) is and broke down feasibility into four areas (1) staff capabilities, (2) technology issues, (3) cost issues and (4) budget considerations. Within the section on technology issues the guide did not address questions surrounding electricity and communication systems. Clearly, MIS was one of the most critical elements in almost any business environment. However, the literature did not provide guidance to institutions in developing countries where the infrastructure was at best weak. When the literature rightly documented the need for a well-developed MIS there appeared to be an assumption that basic services such as electricity, telephone, water, and sanitation were available. The researcher found that in Haiti and perhaps other developing countries, considerable time and money must be allocated to designing and implementing the infrastructure to support the MIS modules that are critical to the operation.

Fonkoze's Plan for Technology Infrastructure

In the developed world, there are few instances where researchers have the opportunity to observe and document the process of an organization's conversion from a microfinance institution (MFI) to a regulated bank. Recently the MFI concept is being introduced into some inner-city areas of the U.S., but the likelihood that those institutions will need to convert to regulated status is not yet clear.

Fonkoze, founded in 1996 has grown to over 8,000 active borrowers with a dollar volume of 3.1 million loans and 19,500 savers with \$2.7 million dollars in total deposits by September 2001. Fonkoze has 17 branch offices spread throughout Haiti. This geographic dispersion creates many opportunities, but it also creates many technological challenges for a maturing financial organization. Fonkoze and other MFIs were created in response to the inability of poor people without collateral to obtain loans from banks. Transformation to regulated status will allow the organization to gain access to commercial sources of funding in the global market, mobilize its \$2.7 million in savings into loans, expand financial services to microentrepreneurs, and increase operational efficiencies through enhanced systems, controls, and transparency, in reporting that would result from links to regulators and other banking expertise (Champion and White, 1999).

The Central Bank in Haiti had never received an application to convert from MFI to regulated status prior to Fonkoze's application, but the Head of Bank expressed the absolute need for computerized record keeping in every branch. In addition, the operations at Fonkoze and regulated banks in Haiti would have to be indistinguishable. Fonkoze identified five specific challenges that it would face in the transformation process. These challenges are: (1) improving loan interest yield, (2) raising required capital, (3) improving financial leadership, (4) securing legal assistance and (5) Improving data reporting. Fonkoze met most of the requirements for operational sustainability, by hiring senior staff people as required by the regulators, building institutional capacity and increasing efficiencies by upgrading its current (1) electrification management, (2) communications system and network management, (3) software acquisition and (4) hardware acquisition. Unfortunately, when Fonkoze looked to the literature for guidance it has found solutions only to problems (3) and (4).

Every branch needed a computerized record keeping system, and a centralized system at which all the transactions would be recorded on a daily basis. However, Haiti faces many more challenges of which, inadequate infrastructure is certainly one of them. As previously stated, Fonkoze had 18 offices covering the entire country. Only 4 of those offices had electrical service from the local authority. Only two had telephone service, since many of the offices were in remote areas that were inaccessible to vehicles, requiring people to walk along mountain trails and ford streams as they moved around. Even in areas where services existed, they were unreliable and subject to frequent interruption.

The proposed plans had to be implemented in the prevailing environment. What might emerge is a modified plan for developing an appropriate infrastructure in this developing country as a possible model for adoption in other such situations in developing countries. The plan was the result of the combined effort of a group of advisors from the Board of Directors, some of who had specific Information Technology or Telecommunications expertise; the Director of Information Technology for Fonkoze; an advisory group of technically qualified professionals in Haiti, and the author. The Board of Directors had to approve the plan since it involved significant capital expenditure. The infrastructure expense was considered as a startup cost since without the complete implementation of such a plan, government approval would be impossible.

The following plan was developed for presentation to the full Fonkoze Board of Directors:

- A. Project development: needs analysis
- B. Planning and Design: Basic design elements; Providers response to requirements definition; Costs and Schedule

There are three distinct parts to the project:

- 1) Electrification of branch offices
- 2) Network and Telecommunications
- 3) Software acquisition

A. Project Development

The first step was to evaluate the existing situation, and then to determine the needs as far as securing government approval was concerned. There were currently 17 branch offices and the main office in Port-au-Prince. In order to manage the project and deliver services reliably, the team decided to create three organizational levels, main office, branch office, and remote office.

Unlike plans for Information Technology in developed countries, the conditions in some developing countries such as Haiti, pose a challenge to the designer. In order to meet the requirements for regulated bank status, Fonkoze needed to make a number of infrastructure upgrades. Before planning computer and network services for Fonkoze, a plan had to be developed to for the simple necessities of a business environment including electrical and telecommunications service, and qualified and trained staff members. In its movement to a regulated bank, Fonkoze took all this into account, evaluated the cost of this upgrade, the mission of the organization, and how its unique and critical service to the poor would migrate and survive in the new environment.

B. Planning and Design

- i). Basic design elements: The main office should be maintained in a way that is consistent with its status as the head office of a regulated bank.
- ii). Development of Request for Proposals (RFP): A formal RFP will be prepared so that all the respondents clearly understand the project.
- iii). Costs and Schedule: With the RFP submissions the team will have a good idea of the potential expenses for the most expensive aspects of the technology plan. The responding vendors will also provide an execution plan that includes implementation strategy and time frame.

The above overall plan was further divided into three specific areas of detail that are critical to the development of detailed specifications for the main office and all the other locations in the organization:

1) Electrification of branch offices:

The objectives of this segment were a) to guarantee appropriate electrification of each branch, b) to evaluate and improve the existing installations, c) install electrical support for a two-year growth cycle, and d) put maintenance plan in place to support above current and future plans.

The above objectives would require the following items: installation of regular and backup energy systems for the computers, typically this would require an uninterrupted power supply for each system; an inverter with a digital circuit for the computers and an analog circuit for other devices; where no power currently existed, either solar cells or a diesel fired generator would be needed. The minimum requirements in every office at all levels will be electrical power for lights and fans, computers and printers, and a water cooler. The remote offices will only have a single computer, but the branches should be prepared for at least three each.

2) Communication System and Network Design

The objectives set up for this activity included designing and maintaining a stable, secure, and reliable environment worthy of a regulated system in any country. An important objective would be the elimination of long distance calls through the use of alternate mechanisms. The quality of service will be indistinguishable from that of any other financial organization.

Fonkoze addressed these important areas in three phases: main office, branch offices, and finally the remote offices. The main office needed all the facilities that a bank in the US would. The cost of this infrastructure was a significant challenge to this organization as it would be to any fledgling operation in a developing country. The Board of Directors would have to raise the startup costs including electrification, communications, networks, and software requirements.

The communication between the main office and all other offices was through either landlines or wireless telephone connections. The branch offices will use landlines through the local telephone service to an Internet Service Provider (ISP). The remote offices used a wireless option to connect to the ISP. A corresponding supporting network was installed at the main

office. The first phase included the complete communications and network installation at the main office. The main office had to be completely set up before the other offices could be served since the daily updates and access to the database at the central office required that the main office be prepared for that activity. The second phase will bring the branch offices online in order of transaction volume.

Fonkoze reviewed the options of either installing a leased line from each of the offices to the main office, or a dialup service. The first option is usually appropriate for large organizations with trained staff and is both expensive, and in Haiti unreliable. The second option would not work in rural areas, where telephone service is nonexistent, and those offices that do not now have telephones would have to wait several years for a telephone connection. The technical plans call for the installation of a virtual private network (VPN) through a national ISP that also provides telephone lines. A wireless connection will be used for offices that do not currently have a telephone and for the rural offices. A VPN is less expensive than leased lines and would eliminate all long distance dialing since each office would use a local telephone connection to the ISP. The VPN then uses the ISP's Internet service to access its central database along the secure VPN. A VPN acts as though it was a leased line although it is not. Security is implemented through encryption technology and a firewall at the main office as well as the branch offices. The main office and the branch offices will have a router to connect the network segments efficiently.

The installation at the main office included routers for the servers, and for connection to the external world, a firewall for security, software to permit remote access to the databases, and accounts with an ISP to permit every office in the system to eventually connect through the VPN along the Internet to the database system in the main office. As the system expands, every office will have connectivity to the main office. The client software permits encrypted transmission between the offices along the VPN.

3) *Banking Software Acquisition*

The prevailing environment was not acceptable to the regulators in Haiti. Fonkoze investigated the software currently being used by the regulated banks in Haiti, as well as some neighboring Caribbean countries, and decided what would be useful and desirable for Fonkoze. This exercise brought out the functional need for Corporate Administration, Retail Branch banking, System Administration, Operations and Control, Multiple Currency capability, and Financial Management and Reporting.

Each of the branch offices must include Teller and Loan operations, Financial Statements, and Profitability Analysis, Accounting, and Payroll. The *Teller and Loan* operations should support client identification, savings and loan groups, savings interest calculations both daily and rolled up, reimbursement schedules, certificate of deposit management, money orders, and currency exchange. *Financial Statements, and Profitability Analysis*, should include statements for savings and loan accounts, portfolio analysis, account analysis, and cash reconciliation. *Accounting, and Payroll* should support an integrated distributed general ledger consistent with GAAP regulations, and a complete payroll system. Thus the software would have to support multi-branch, multi currency and multi lingual operations, and have high-level

security modules, user authentication, multi-year backup and retrieval. The cost information should include a breakdown by software module, and should itemize training and maintenance costs clearly. Any charges in addition to the stated purchase price of the software should also be clearly itemized in the proposal.

Conclusion

The author has presented a view of the challenges faced by IT professionals in some developing countries. The researcher believes that the problem experienced by Fonkoze in Haiti could be found in several other developing countries. In many instances even where electrical power is available, it is unreliable or inconsistent. Even telephone service in many developing countries is not very different than what was described in this report. The need for a VPN is a viable alternative to the expense and technical difficulty of creating and maintaining a private network. If not for the existence of a VPN, the only option would be for Fonkoze to create its own private network, which would raise the cost of the project considerably. The connection to the Internet through an ISP provides the security required for financial transactions, while keeping the costs down. There is usually a shortage of technically qualified personnel and Haiti certainly does not have an adequate supply of qualified technicians. By contracting with an ISP to provide a VPN, Fonkoze was freed from the responsibility to manage its own network.

It is clear that developing countries require more detailed recommendations for technology enhancement. Some of the assumptions that would be reasonable in developed countries are rendered incomplete when they are used in developing countries. Future researchers might wish to examine the particular needs of remote areas in various countries that need to share in the technological advances of the developed world or they will become victims of the digital divide.

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