

Is SaaS the Appropriate technology for Microfinance?

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Abstract

Microfinance, the provision of financial services to poor people, suffers from high interest rates owing to high transaction costs. Within these transaction costs, technologies such as MIS may be a solution to lower operating costs. However, the small size of most MFIs makes software seem expensive and the MIS providers are many and the offer is rather opaque to MFIs who cannot distinguish between the offers. At the same time, the specificities of the microfinance sector and its large diversity require high degree of support from MIS suppliers. Shared infrastructure solution such as Software as a Service (SaaS) may be a possible solution to bring down costs and remove uncertainties. The sharing of infrastructure costs comes from a gap analysis which indicates that software providers would like to receive high margins and provide low support to a few customers. As opposed to this, the long tail of small MFIs would like to buy cheap products and get volunteer support for their products. The Software as a Service (SaaS) provider becomes an intermediary who enables both of these opposite needs to be addressed. Essentially, the SaaS provider uses a software solution which they host in the cloud. The MFIs use this paid on a pricing model such as number of transactions, accounts or customers. The paper provides technical detail of how SaaS will operate in an international microfinance setting with its unique problems mentioned earlier. To overcome many of the problems a hybrid SaaS solution is proposed. Case studies (MicroPlanet Technologies, IBM , FINO and MOSTFIT) illustrate the mechanics of this partnership between MIS and Microfinance. The paper deals with questions such as under what conditions SaaS is appropriate partner for MFIs, the difficulties of implementation and needs of tailor made solutions.

Keywords

Microfinance, SaaS, cloud computing, technology, MIS architecture, shared infrastructure

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Is SaaS the Appropriate technology for Microfinance?

1. INTRODCUTION: THE NEED FOR MIS FOR MFIs

Application Service Providers (ASP) and Software as a Service (SaaS) are concepts bordering on transaction cost economics (Susarla et al. 2009) and innovation (Fortune and Aldrich 2003) as well as Management Information Systems . This paper applies it to microfinance brings it within the realm of development economics also. As a result, the paper is interdisciplinary. Since ASP and SaaS are similar and recent, some authors seem to use them synonymously (Fortune and Aldrich 2003, Susarla et al. 2009), although others differentiate between them (Choudhary 2007, Guptill and McNee 2008). SaaS is a fast growing field and should lead to more employment in the IT industry (Braude 2008).

Microfinance is the provision of small financial services to poor people² in a bid to promote financial inclusion. In the last forty years, this movement has grown considerably and today it is estimated that 150 million poor people have taken a small loan. With an average family size of five, approximately 750 million people have access to microcredit. This extraordinary growth of 30% per annum in outreach has been coupled with a Nobel Prize for the Grameen Bank and its founder, Dr. Muhammad Yunus, all of which makes microfinance a very visible sector. Notable achievements include reaching previously unbanked people in remote villages and ensure high rates of repayment of 98%. Its major contribution has been to use groups to avail of locally available information to overcome information asymmetry problems and associated risks as well as to reduce transactions costs through group lending and group repayments(Morduch 1999). Today, in addition to microcredit, microfinance includes other financial services such as savings, insurance, remittances, and payments (Armendariz and Morduch 2005).

However, because the transaction size is small, transaction costs are proportionately high and the sector suffers from high interest rates of 15% to 50% (higher in some cases), with an average interest rate of about 28% per annum. The costing of these interest rates and comparing them to banking interest rates indicate that operational costs is the key component of the extra interest costs(Rosenberg et al. 2009).

² <http://www.cgap.org/p/site/c/template.rc/1.26.1302/>

It is hoped that technology will provide the solution, such as mobile banking, online lending and MIS and shared infrastructure (Ashta In Press). To understand the challenges of the sector, and the limitations in which technology has to function, it has to be understood that 70% of the Microfinance Institutions are very small and are donor dependant. Thus, they are operating with tight budgets. Therefore, technology solutions are limited. Moreover, the operating staff has often basic levels of literacy and therefore can use only very basic technological solutions. This staff is also subject to high turnover. Owing to both these reasons, the quality of data which can be input into the system is low, with a high error rate and a lot of re-work necessary. Often, the operational processes that are not documented, varying from branch to branch and operation to operation, and systems are largely manual (Iyengar et al. 2010 forthcoming, Quadri et al. In Press). Therefore, paper proliferates across the MFI's operations. Since loans are for short durations, often less than a year, there could be high customer turnover unless the MFI tries to provide bigger loans to retain their customers as their business expands.

In this paper, we look at the partnerships between suppliers of MIS support and microfinance institutions to help bring down the transaction costs and interest costs of Microfinance. To reduce operating costs, one solution would be to bring in Management Information Systems (MIS). Management information systems are essentially systems which record or capture data and transform it into useful or usable information for management decision making as well as for reporting internally or externally. In the microfinance world, one of the key success factors in up-scaling an MFI from a few customers (say a few hundred) to many (say, a hundred thousand) is the quality of its MIS.

In fact, MFIs require easy and ready access to real-time information, both operational and financial, on a daily basis that they can query and analyze to run their business. Relying on "canned" operational reports from the "core" back-end systems is not sufficient to manage a growing operation effectively. There are many benefits of having such easy and ready access to data. Firstly, operations and branch managers have a clear view of the "pipeline" of loans entered, waiting to be approved and waiting to be disbursed. Second, for loans which are not being reimbursed on due dates, timely information provides strong oversight on managing Portfolio-at-risk (PAR), not from day 30 but effectively from day 1 when a loan is late. Third, the finance and accounting departments also have a view of this "pipeline" to more effectively manage and forecast cash-flow. Fourth, a good MIS allows branch managers and loan officers to view their performance (P&L, loan performance, etc) on a real-time daily basis. Fifth, it allows finance and accounting department to perform month-end closing and consolidations faster and more accurately. Sixth, since MFIs have to provide a lot of

external reporting to donors, financiers, apex bodies, regulatory oversight bodies, etc., a good MIS makes this possible at a much lower cost.

2. BACKGROUND: PROBLEMS WITH OFF-THE-SHELF MIS SOLUTIONS FOR MFIs

It therefore behooves MFIs to have a sound Information and Technology (IT) strategy, and one that focuses on “basic blocking and tackling” and researches and pilots disruptive technologies to change the rules of the game. While such MIS is often considered as an aid to control, it is also required for strategic decision making. In some cases, the MIS is even considered a strategic strength enabling a firm to outcompete (Barua et al. 1991, Brown et al. 1995). Nevertheless, it is now being recognized that MIS technology by itself is not the panacea (Clemons et al. 1993) except in certain sectors (Clemons and Row 1991), but when coupled with strong and effective operational process management, MFIs can gain significant benefits that flow to its bottom-line, strengthening its competitive positioning and improving its ability to meet customer demands.

MFIs of all sizes cite technology and the “core” MIS / Banking software (or often referred to as the back-office software) s in particular as one of their biggest challenges. It is the back-office that is the heart, the processing engine which processes high transaction volumes on a daily basis that enables MFIs to grow and scale their operations. There are a number of reasons why “core” back-office technologies are still important³. Firstly, providing financial services for the poor is an information-intensive business. Strong core MIS systems enable MFIs to process large numbers of relatively small transactions efficiently, and can provide insight into an MFI’s business that enables MFI leadership to tune their products and operations to more effectively serve more poor clients. Secondly, while achieving greater numbers – reaching more of the poor with financial services – is important, equally important is measuring the results. A core MIS system can provide MFIs and their stakeholders with the tools to more effectively measure both financial and social performance and, in turn, enable the MFIs to tap new sources of capital and tune their business for greater impact. Thirdly, as mentioned earlier, a good MIS is necessary for scalable innovation. Microfinance is a fertile ground for innovation in both business process and technology. Innovations – mobile banking, ATM integration, new products and business models, etc. – need to be tied together in order to achieve network effects and scale (Cartwright 2002). Those innovations must plug into and be supported by strong back-end technology to transform the innovations into a new baseline of operations for MFIs.

³ Source: CGAP

A good number of MFIs do have a “core” back-office, however a significant proportion of those systems are not supporting the growth and increased impact of the institutions running them. MFIs must invest in a good, robust, and scalable “core” if they are serious about growing their operations effectively and efficiently.

Since the majority of MFIs are very small and most of them are fund-strapped, it is difficult for MFIs to make their own MIS and they need to outsource this activity. Outsourcing comes in multiple flavors – including purchase of software, managed services, renting from ASP (Application Service Providers, and providing SaaS (Software-as-a-Service). The specificities of microfinance, especially its differences from banking, its human resource issues, infrastructure issues, support issues and standardization issues impose particular constraints on the MIS that is specific to this sector. As a result, MFIs should not be in the “core” software development business. The MFI's focus should be on its own core business - providing the right products and services to the customer on a timely basis.

As a case in point, a number of MFIs have start out as a owner or part-owner of a small “core” back-office software vendor and use this software across its operations. The vision is excellent to begin with, however over time execution suffers (software quality was low, each affiliate evolved over time to using different versions, support was sub-par) primarily because these MFIs do not know technology and do not know how to properly manage the partner which eventually leads to a decision to sell-off its portion to the partner, a 3rd party or to acquire control of the partner, and in some instances to begin a search for off-the-shelf robust and scalable “core” software to support its growth.

CGAP lists “core” software vendors on its website – an the list has over 100 vendors. Of this list less than a handful offer good, robust and scalable “core” software that would be useful to a mid-to-large MFI. MFIs must do a comprehensive due diligence on these vendors, and not just on functional capabilities offered, but on customer support - the caliber, level and number of staff, quality assurance practices, success rate to implement in a timely manner, and importantly the financial condition and viability (of the vendor). Figure 1 illustrates the software market with hundreds of vendors chasing thousands of MFIs.

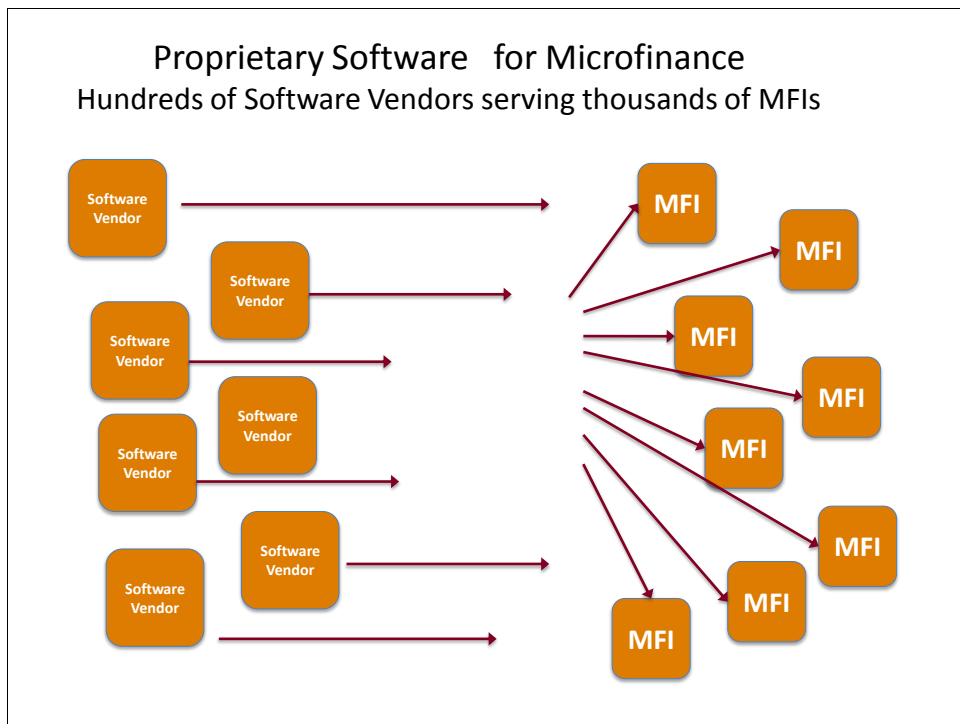


Figure 1: Proprietary off the shelf software market

Our research, based on the CGAP⁴ reviews, informs us that these “Core” software vendors come in all shapes and sizes. The size could vary from a one-man shop to vendors with more than 200 staff. The software that they offer is usually based on proprietary codes but a few open source vendors are also present. Most software is being updated regularly, reflecting the high rate of obsolescence in a competitive sector where software manufacturer imitate competition with minimum time lags. However, not all the software is capable of catering to all the software needs of the MFI. While most can cater to individual and group lending, savings and remittances, whilst others can cater only to individual lending and not to group lending, which is the major specificity of many MFIs. Some software is available only in English, French or Spanish, whereas others have the potential to offer multilingual capabilities, however this requires careful scrutiny especially if one needs Cyrillic language capability, e.g., in Russian. Some software vendors operate globally and have clients spanning the globe, supported by technical support teams across some of the regions or have a large team centrally based. Others may be present only in limited zones with only a few technical support staff.

Moreover, pricing is quite opaque since it is grouped under Licensing Cost, Annual Maintenance Cost (expressed in % or \$), general Consulting Services (per day) and training Cost (per day). This means

⁴ Consultancy Group to Assist the Poor

that it is impossible for an MFI to be able to compare costs. To some extent, CGAP has tried to usher in transparency for the software listed on its site by asking reviewers to indicate approximate costs for three different situations with alternative parameters on number of customers, lending methodology, and financial products. Such cost estimates vary from \$16,000 to more than \$900,000. However, these cost estimates are often subject to large estimation errors⁵.

The large diversity of software and the level and opacity of prices lead to difficulties for MFIs to choose appropriate software which would continue to be useful as they scale up. A small MFI may opt to use the “core” software from a vendor who is a one-man shop, tiny vendor with a staff of around 10, or from a small vendor with 10-30 IT staff, essentially because it is cheap and paying little attention to the robustness and scalability capabilities and even if support is less than par. And they can get away with such an investment for a little while until they start growing and get to a certain size and volume.

Some mid-to-large MFIs make a huge mistake when they invest in “core” software from a one-man shop to a “small” sized vendor, largely because of the cost, and paying little attention to knowing what their needs are, and not just for today but also for tomorrow.

The use of Open Source “core” software is compelling because it is free. However, before making any decisions on moving forward on that front, it begs the question: “To what extent can one rely on software that is developed as a hobby by others for “core” critical application to the MFI?” If free software is acquired without the appropriate skill set of the internal IT staff to support it, and there is no organization dedicated to support the MFI with training in its use or customizations that require programming, is it worth the added expense (to use “free” software) and risk than to pay for a commercially available software?

⁵ In a recent conference, where one of the authors was presenting a paper using this data from the CGAP reviews, a representative from FERN indicated that he would be able to offer deep discounts on the prices quoted for its Abacus software.

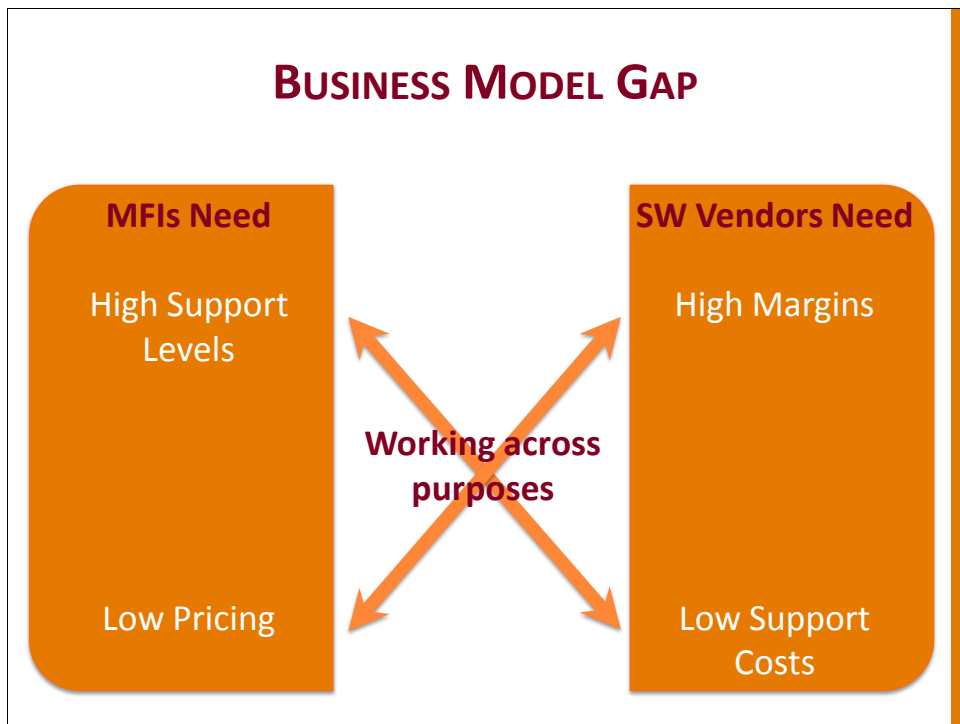


Figure 2: The business model gap in the Off-the-shelf solution

Figure 2 above clearly depicts the basic problem faced by MFIs when it comes to purchasing off-the-shelf software. MFIs still see “core” back-office technology as a major constraint. The systems MFIs use are often inflexible, expensive, hard to support, and incapable of enabling innovation for the MFIs. On the other hand software vendors are looking for high margins and low support costs.

3. CAN SOFTWARE-AS-A-SERVICE (SaaS) PROVIDE A SOLUTION FOR MFIs?

The foregoing discussion pointed out that MFIs have low financial resources but need a high level of support service in view of the low skills personnel. A possible solution is to pool together with other MFIs and sharing the software and the cost of information systems. The problem is that most individual software is sold as a proprietary license protected by intellectual property rights which does not permit users to share with other organizations.

However, a number of paradigm changes over the last few years are now permitting new models of co-creation of experiences with firms networking together to provide solutions to other businesses and consumers through a nodal firm (Prahalad and Ramaswamy 2004). Within the IT world, according to Updegrave (2008) on the demand side, younger consumers have become

psychologically independent of famous proprietary solutions, people are using multiple software, and more data-based management is being sought by business customers. All these are providing people the confidence to experiment with new outsourced software and the market size for on-the-cloud computing has become much larger than desk-top computing. On the supply side, there is increase in independent operating softwares and development of open source, development of new business models based on freewares (loss leaders), increase in broad band, decrease in cost of servers (Updegrove 2008) as well as better security and application programming interfaces (Murphy and Samir 2009) and the simultaneous growth of Application Infrastructure Providers (Demirkan et al. 2010). All these trends are creating an enabling trend for outsourced shared solutions. These solutions are especially useful for attracting the long tail of small and medium business customers who are faced with increasing complexity of IT and do not have the internal resources to do it themselves (Murphy and Samir 2009). The reasons for outsourcing include cost savings, access to technology, time to market, managing applications and revenue growth rates (Susarla et al. 2009).

a. What would SaaS Change?

Over the last decade, a new model called Software as a Service (SaaS) has been developing. Software as a Service would radically change the way MFIs look at computerization and their information needs. At the same time, there are challenges specific to the Microfinance sector emanating from the environment they operate in that differentiates SaaS in this sector compared to implementing it for developed countries.

i. Description of the SaaS solution

To overcome the transaction cost problems, SaaS is being proposed by Application Service Providers (ASPs). In essence, the solution requires hosting the software in the clouds. Choudhary (Choudhary 2007) differentiates between the ASP and SaaS models: although in both models the application is hosted on the web, he considers that in ASP, there is a one time up front fee payable to the publisher and a subscription to the ASP for hosting fees, while in SaaS there are subscription payments to the publisher and a usage fee. As a result, in the ASP model, upgrades are provided by the publisher and paid separately by the user. However, other authors do not seem to provide this distinction and indicate that ASPs are providing SaaS (Fortune and Aldrich 2003, Susarla et al. 2009). Part of the confusion may be based on the fact that SaaS evolved from stand alone applications(ASPs) in 2003-04 to more integrated business solutions in 2005-7 period (SaaS to SaaS and SaaS to locally hosted applications) which were then expected to evolve to work-flow enabled business transformation

ecosystems and eventually to cloud computing (Guptill and McNee 2008) with fully integrated end-to-end business processes.

SaaS is based on cloud computing based on a multi-tenant service oriented architecture (Guptill and McNee 2008). Ideally, this architecture is scalable, configurable and multi-tenant efficient. This software is then available to different users on the basis of a user fee. As a result, small customers will little usage pay only a small fee to access the system. Larger customers get a lower usage fee, but since they use much more, they pay more in aggregate. At the same time, all the users, big and small, benefit from all updating of the system hosted in the cloud. New and small entrepreneurs benefit from increased efficiency in terms of maintenance and upgrades, lower initial costs and ready deployment (Fortune and Aldrich 2003, Elafatry and Lazell 2004, Enslow 2006) as well as being able to focus on their core businesses (Fortune and Aldrich 2003). On the side of the software manufacturer, he gets economies of reaching out to a wider audience (Elafatry and Lazell 2004). The model shows great promise for the microfinance sector and potential provided the services are priced reasonably that a MFI can afford. It would allow MFIs to focus on their core business of providing credit at reasonable rates to the poor and ensuring that repayment rates are improved.

The SaaS provider would host the Infrastructure on the internet and the management of the “core” software (e.g. the SaaS service provider would manage the end of day process). The SaaS provider contracts with one “core” back-end microfinance/banking software provider (such that they can offer software attractive to both small-to-mid size MFIs, and to mid-to-large MFIs) and purchases a number of software licenses with an option to buy more down the road. The SaaS operating model is depicted in Figure 2.

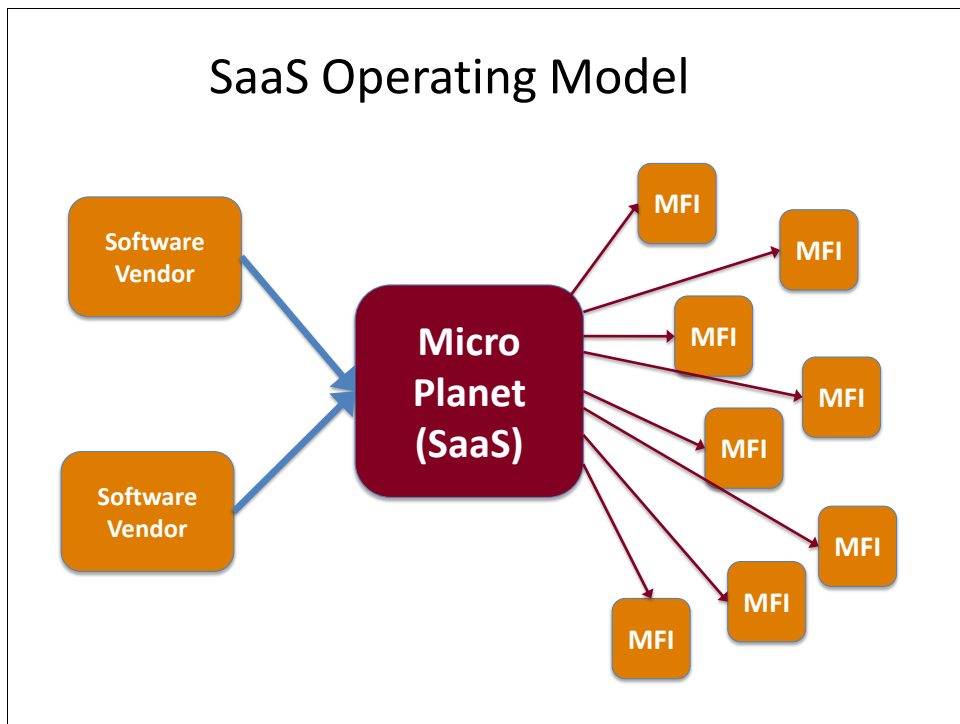


Figure 3: SaaS operating model

The SaaS provider hosts the “core” software that it has bought either using its own facilities or at a 3rd party facility, and offers access to this service via the Internet to the MFI. Since the hosting is done on the Internet, there is no need for the SaaS provider to be physically present with its own technicians at every zone (Fortune and Aldrich 2003). The SaaS provider would technically help the MFI to connect to the “core” software via the Internet since the MFI personnel may not be competent to do this. Thereafter, the SaaS provider offers the 1st and 2nd level of support for the “core” software, and would turn to the software vendor for 3rd level support to address bug fixes, and new enhancements.

As opposed to a software application provider who sells the software for an initial lump sum fee, the SaaS provider charges the MFI on a usage basis (Elafatry and Lazell 2004, Choudhary 2007), usually either a per customer or a per account basis and this would be charged on either a monthly or a quarterly basis (Enslow 2006) although annual up-front fees may also be required (Brodkin 2007). However, Susarla et al (2009) examine monthly fees in two alternative settings: a fixed monthly rental and a usage based charge. The SaaS option significantly reduces the upfront costs that an MFI would ordinarily incur; the only up-front costs that the MFI would incur are the implementation costs of migrating data from the legacy system to the new “core” system, training related costs, servers for the branches if any, reporting server and any requisite software for both.

Chowdhary (2007) finds that the perpetual licensing fee model of Software vendors slow down diffusion of upgrades because the ISV cannot charge for small patches of modification and slows down adoption of upgrades since users have to pay for them. As opposed to this, the SaaS provider includes the upgrades and incorporates them in the rent. As a result, innovation diffusion is faster since the software manufacturer does not need to wait to diffuse and the customer does not need to wait to adopt. Choudhary (2007) finds that under the software model, the software manufacturer will invest more in development and will get higher returns from doing so.

Fortune and Aldrich (2003) terminate their paper with four propositions: increased number of IT firms offering ASP; the ASP form will become institutionalized; customers using ASP will prosper; and those using ASP will have a competitive advantage over firms not using ASPs. There is evidence that, indeed, on demand application have been embraced for applications as diverse as sales force (Campbell-Kelly 2009), procurement and supply chain sectors (Enslow 2006) as well as billing, accounting and tax (Guptill and McNee 2008). Our case studies below indicate that ASP is now being extended to the microfinance sector, as SaaS fills up the business model gap, aptly illustrated in figure 4 below.

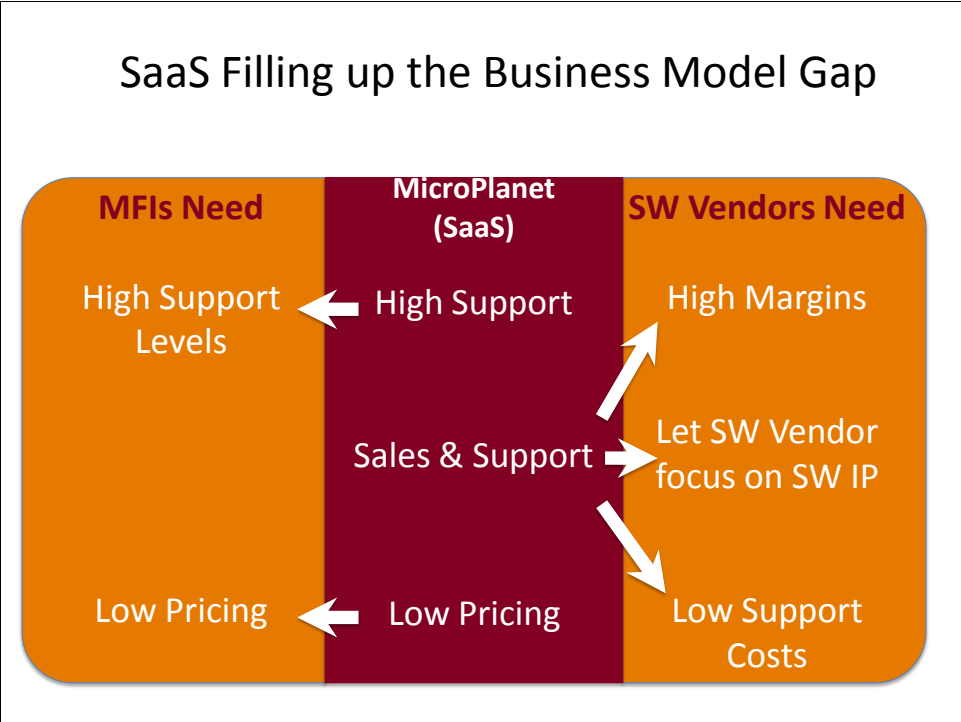


Figure 4: SaaS fillus up the Business Model Gap

ii. Case studies

The current list of vendors offering a SaaS services is small. Nevertheless, it goes beyond the three models indicated by Forutne & Aldrich (2003): provision by ISVs, independent ASPs and umbrella of established firms such as IBM and CISCOs. In the Microfinance sector we can add some MFIs like Grameen who are developing their own “core” MIS or “core” back-office software. We present here three cases studies: the model proposed by MicroPlanet Technologies, an independent SaaS provider to the Microfinance sector followed by IBM, a multi-purpose SaaS provider who incorporates modules for the Microfinance Sector, and, finally, a new entrant Intellcap's MOSTFIT.

MicroPlanet Technologies – a 501c3 entity operating on commercial principles was formed to offer the much needed « core » MIS software using a hybrid SaaS (hySaaS) model to microfinance institutions (MFIs) around the globe. A true SaaS offering would not work for MFIs in the developing countries due to lack of reliable Internet connectivity, as a true SaaS offering implies that one would connect with them in the cloud with a web-based solution; whereas a hybrid-SaaS offering takes into account this issue, and addresses it by adding the so-called "branch" server that would reside at the MFI's HQ location whereby they can continue to operate even when there is no Internet connectivity with the cloud where the production servers reside. As shown in figure 3, MicroPlanet presents an opportunity to fill these critical gaps by offering technology solutions under an outsourced services model known as SaaS (software-as-a-service), or under a managed services model. The SaaS model will allow MFIs to purchase software on a subscription basis, significantly lowering upfront purchase costs. It will also allow MicroPlanet to negotiate substantially lower prices from vendors because they will no longer have to bear the cost of the initial sales effort or the ongoing support effort, which will be managed by MicroPlanet with its lower non-profit cost structure.

MicroPlanet’s objective is to offer MFIs the lowest possible pricing whilst ensuring the quality and continuity of its ongoing services.

MicroPlanet’s SaaS solution offers MFIs a robust & scalable “core” banking software platform that affords the MFI to grow on a single platform, and helps to automate all core business processes of their organization on a single technology backbone, thereby assisting to achieve their business growth at lower investments, enhance customer reach multi-fold in a secure manner and keep track

of the profitability, PAR and other operational and financial reporting. The functional features and the service features of the MicroPlanet offer are available in Table 1 below.

Table 1: Features of the MicroPlanet SaaS solution

Functional Features	
Multi Currency GL	Teller, Savings & Deposit
Global Accounting Standards	Arrears / Delinquency
Multiple language support	Underwriting capabilities
Real time Transaction Processing	Flexible product definition parameters
Multi-Company / Entity Support	Regulatory Compliance
Multi Channel Interfaces	Offline processing
Group & Individual Lending	24 x 7 availability

Service Features
End-of-Day processing
Report generation & distribution
Management of daily, weekly backups
24 x 7 Management & Monitoring of Server and Network infrastructure
24 x 7 Application Support
24 x 7 Customer Support Desk – with local language support

The offering addresses the need for an offline capability for geographies that have not so reliable or no Internet connectivity, which enables the MFI’s remote branch operations to continue to function.

MicroPlanet has a set-up a processing hub (data center services) in the US, and will look to open another in Europe to service Eastern Europe, NIS countries, and Africa.

IBM – a SaaS offering in Peru leveraging a third-party core banking application

IBM understood that typical banking software is not applicable to MFIs since the needs of the sector are not the same. For example, credit risk analysis using quantitative-based measures is not useful for financially excluded people with no credit-history in any database. Moreover, since MFIs use unadaptable systems, their operational costs remain high (Jimenez 2008a). Therefore IBM is adapting the software to the MFIs. IBM's offering will allow all kind of applications such as accounting, loan portfolio management, customer relationship management, collections and recoveries, risk

management, liquidity management, core banking operations and Reporting to organizations (Jimenez 2008b).

IBM has a huge networking advantage: many potential partners who are already using IBM technology can join in the IBM shared processing hubs. For example, Fortent (now part of Actimize) joined the IBM Software as a Service (SaaS) Specialty to deliver new anti-money laundering (AML), Know Your Customer (KYC) and fraud systems as cloud services to leading large-and mid-sized financial institutions around the world⁶. As MFIs scale up and use mobile banking technology, they could therefore access such services too. The main challenge to IBM would be to integrate diverse software into an integrated one-shop offering (Ferguson 2005).

The network of partners in the hub permits interface with Payment networks, remittance networks, credit bureaus, proprietary applications, ATM Networks/ switches, Mobile devices and national banking networks. The infrastructure which is shared includes a data center, storage facilities, firewalls and connectivity (Jimenez 2008b).

IBM and its network of partners are establishing five regional, shared processing hubs. The services to the MFIs are web-enabled and charged on a per-use basis, allowing both large and small financial institutions to benefit (Jimenez 2008a) The benefits to MFIs would include open access of AFIs to ATM, remittances and other national and international payment networks and switches, and at the same time opening access to of financial products providers, such as insurance companies, to the distribution network of MFIs (Jimenez 2008a).

Each Hub plans to make its offering available to MFIs by selling directly or through independent resellers (Jimenez 2008b).

FINO: From off-the-shelf to SaaS

FINO was created by multiple banks and institutions to facilitate growth of the Microfinance market. Towards this end, FINO had evaluated, chosen and developed software for the back-end using existing robust proven systems allowing group lending, flexibility in repayment schedule generation, Flat Interest rate calculations and reporting as per statutory and stakeholder requirements. Based on its experience, it identified the two key challenges of the Microfinance sector, namely- connectivity in deep geographies and skill set of manpower at branch level. Their SaaS solution, SaaS CBS, keeps this in mind and is capable of dove-tailing into various front-end channels like cards, mobile, ATMs depending on the business architecture.

⁶ Source: 2009, "FORTENT JOINS IBM SAAS SPECIALTY PARTNER PROGRAM". *Worldwide Databases*, 21(1): 2-4

The Fino SaaS offering allows three back office applications: Core banking, customer relationship management and Data Analysis. It allows interfaces with mobile devices, remittance and payment networks, Credit bureaus, ATM networks and front office devices. Its infrastructure management provides data centers, storage, performance management, security firewalls, connectivity and redundancy. In many ways, the FINO offering is similar to IBM's.

Many front office applications are also possible such as interactions with cards, biometric devices, Point of Sale devices and Receipt Printing. Thus, if these devices work in online/offline modes, the limited connectivity problem can be overcome if the inputs or outputs can store the information for later updating.

Many other business applications can be added on, including business planning, regulatory functions such as due diligence, and relationships with entities.

MOSTFIT: focusing on the needs of medium MFIs

MOSTFIT has come out with its SaaS offering at the end of 2009, offering a limited package of Loan Portfolio Management, Customer Relationship Management and Accounting. It incorporates individual as well as group or village lending. The software is available in English, with multi-lingual capabilities baked in. The software is targeted towards medium sized Microfinance NGOs and Non Bank financial companies with 5000 to 25000 customers. For bigger MFIs, it is recommended to run MOSTFIT on a dedicated platform to deal with the heavy volumes. MOSTFIT is being offered in SaaS model, with a usage charge of Rs. 5 per client per year. So far, one MFI is using the product.

MOSTFIT claims that it is the only open source SaaS where they enjoy development through community while still presenting a viable business model for anyone who wishes to provide these services. Their development team has created a codebase which actually does a lot in about 7000 lines of code. Setting it up, customising it and testing it is very simple. Not only is the source code free, Intelcap also offers an unprecedented transparency in the development process with access to the commit logs and the results of the integration and functional tests. In addition, Intelcap will soon be taking active steps to create a vibrant developer community. Once in motion, this program will hopefully lead to thousands of eager eyes hunting for bugs in the software as well creating test suites to test every possible behaviour of the system. This will for the first time allow clients to have confidence that their reports and other information they get from the system are 100% correct.

MOSTFIT is the only MFI MIS that is written by developers sitting in the same company and the same office as microfinance professionals. They have unlimited access to the Microfinance knowledge within Intellectap. Since Intellectap's interests are aligned to the efficiency of the microfinance sector as a whole, the emphasis is not just on providing individual solutions to MFIs. Rather, they seek to build an open infrastructure for the industry which will benefit everyone.

MOSTFIT is built for extensibility since the only constant is change. To enable this, the software is written in ruby. The software has successfully added mobile integration. MOSTFIT is also extremely modular, allowing a developer to add and remove functionality at will. It also provides a full web-services architecture and so interoperates all kinds of other machines such as Tally accounting software, core banking systems, mobile phones, etc.

b. When is SaaS Appropriate?

In his sub-section, we resume the advantages of SaaS for Microfinance, as illustrated by our case studies and, thereafter, we note the difficulties which remain to be addressed.

i. Advantages of SaaS for Microfinance

The degree to which an innovation is adopted depends on relative advantage, compatibility, complexity, trialability and observability (Rogers 1962). The adoption of ASP based solutions (Fortune and Aldrich 2003) requires it to be viewed as a major innovation leading to lower costs; it should be targeted to younger CEOs who tend to adopt more technologically innovative products such as ASPs; possibilities of customer training; availability of online trials; and a plan by ASPs to raise awareness.

There are four domains (business, data, application and technology) that are commonly accepted as key parts of the overall enterprise architecture. By ensuring effective management and adherence to an agreed upon enterprise architecture plan, MFI(s) can derive a number of benefits from adopting a SaaS solution, which can be regrouped under efficiency, risk and cost considerations.

Firstly, the MFIS would get a more efficient IT operation. The solution would be readily deployable, with limited skills and with limited in-house resources. This is because of increased portability of applications. Since the basic application is hosted in the clouds, there would be improved

interoperability and easier system and network management, especially for MFIs which are working in networks in different corners of the world. There would therefore be reduced complexity in IT infrastructure. All this would help MFIs improve the quality and timeliness of their services, leading to greater outreach. If an apex body changes reporting requirements, all the MFIs using a particular SaaS network become immediately compliant if the software provider incorporates the changes.

Second, the MFIs would also benefit from lower risks. The SaaS provider, being an expert, would be able to select the best software to host, to address security issues, and all the small and large MFIs would get improved ability to address critical enterprise-wide issues like security. Moreover, as soon as bugs are reported by one user and fixed by the software manufacturer, all the users would benefit from the improvement.

The upgrading and exchange of system components would be easier, since it would be taken care of by the SaaS provider. In fact, the SaaS solution affords MFIs the best of all worlds. The buying decisions are simpler, because the MFI no longer has to select the appropriate software from among hundreds of software available in the market: the information governing procurement is readily available in a coherent plan. The procurement process is faster - maximizing procurement speed and flexibility without sacrificing architectural coherence, on which the MFI would have no knowledge. The SaaS provider could be a nodal operator offering different software and would thus provide the MFI the ability to procure heterogeneous, multi-vendor open systems, a one-stop shop (Murphy and Samir 2009). This eliminates negotiating with a number of individual service providers for different software applications, especially if the different software have to be compatible with each other (Elafatry and Lazell 2004).

Third, the financial returns on investments would improve. This is because the cost of lump-sum IT ownership are eliminated and replaced with usage fees, to share the costs of the shared infrastructure. This benefits, especially, smaller MFIs who are limited by indivisibilities to get economies of scale. All MFIs, including the larger ones, also benefit as they can focus on their core business rather than on Information Systems. All MFIs would benefit from lower software development, support, and maintenance costs since these are also now being shared across all the users. Since the software manufacturer does not need to interact with more than one customer (the SaaS provider), his own marketing and distribution costs come down and he can therefore devote more time and energy to improving products or passing on his economies to customers (the MFIs). MFIs, in turn, can use these savings to lower interest rates or achieve financial sustainability.

ii. Difficulties in adapting SaaS to the Microfinance environment

A service, like SaaS, is made possible given the increasing availability and reliability of Internet connectivity around the globe. The positive trends, at least until recently, were that the cost of Internet service was decreasing, availability had significantly improved in the last three years, and reliability was also improving. At the same time satellite providers have also come on-stream to offer broader range of services, making it easier to reach the remote corners of the world. The other driver for this trend is the speed at which cell phones and usage has and continues to proliferate across the globe, and with that comes improved telecommunications access

.

While Africa still lags behind other continents in Internet connectivity, particularly with respect to broadband, the next few years are likely to see significant changes as new fiber optic cables come on-line, wireless internet begins to converge with expanding mobile phone capabilities, and the rapid expansion of mobile phone usage continues.

However, given the terrain that MFIs operate in, the MFI must host a “branch” and a reporting server at its own HQ location in the country, i.e. to host locally. The reason to host a branch server in the country is to ensure that the business continues to operate in the event of an Internet failure; and the need for a reporting server to be hosted locally is to satisfy central bank regulatory requirements, to have a local copy of the customer data. Backups need to be provided both on the main server and the regional server.

One reason for adopting an innovation is that its value increases if others in a network are using it. This is especially true of ASPs in supply chain networks (Enslow 2006). In microfinance, the supply chain networks would be the Microfinance Investment Vehicles which are supplying funds to different MFIs and may therefore be interested in standardized information reporting from the recipients of their funds.

A limitation of SaaS is that the software would need to be incorporated with a firm's intranet and other internal software (Braude 2008). Thus, although a new MFI without software could easily accept a SaaS solution if it provides all forms of software which the firm is likely to use, a firm which has already sunk costs in some software and has data embedded in that software will not find it easy

to migrate the data or integrate the existing software with the SaaS offer, without incurring high integration costs.

Microfinance is also characterized by a lot of concerns for data security, confidentiality and privacy.

One of the difficulties of the SaaS model is that it is unclear what happens if the SaaS vendor goes out of business (Braude 2008). This threat is very real because models of leasing computer time have existed before during the 1950s and 1970s and have been found vulnerable to economic recessions and to technological change within the computer industry (Campbell-Kelly 2009).

A second difficulty is that of aligning contracts and incentives: if the contract is based on fixed monthly rental, there may be few incentives to focus on the customer's analytical needs, while a contract based on usage rates may not motivate the providers to reduce costs (Susarla et al. 2009) owing to locked-in protection from competition.

4. FUTURE DEVELOPMENTS

For the larger MFIs operating across multiple geographies, the key is using one standardized “Core” software, and they should consider going one step further .

They should create a Regional IT hub with a Regional IT team, and outsource the hosting of the infrastructure that pertains to the “core” back-office software to a 3rd party hosting provider. The Regional IT team would manage and support the “core” back-office software. Such an approach can derive further benefits and would allow MFIs further economies of scale. It would reduce the complexity of IT at the affiliate / partner level. It would minimize the expense on maintaining extensive IT infrastructure at our own location. It would eliminate the need for each MFI in the network to test bugs and new software releases. It would strengthen knowledge sharing across the region. It would increase opportunities for pricing discounts from vendors . Finally, regional coordination would enable sharing of IT staffing costs, which in turn offers opportunity to lower IT costs at the affiliate / partner level and can further lower their operating costs.

As a case in point, a large network MFI implemented this strategy (maintaining one legacy software and transitioning over time to a new standardized “core” software) in Africa, Eurasia, and in Latin America which generated immediate benefits in improved management of the legacy “core” software, service, knowledge sharing of information, sharing of training and training material, and

having the comfort of knowing that there is a team of dedicated resources supporting them 24*7, and having access to these experienced resources at lower cost (with cost being proportionately allocated amongst those in the region).

All other MFIs, must give serious consideration to the adoption of a SaaS service offering that enables them to leverage the use of a robust, scalable “core” back-office (MIS) software which allows them to reduce their operating costs, and to have not to worry about how they will manage and support such complex technologies locally themselves. And importantly it allows the MFI to focus on growing their business without having to worry about technology themselves, and have the benefit of lowering their operating cost through the use of technology and automation.

5. CONCLUSION

Each of the cases we reviewed is playing on a different strength. The hybrid-SaaS (hySaaS) offering from MicroPlanet Technologies is specifically targeted at the MFI sector knowing the vagaries of their operating environments. IBM is leveraging their high technology multiple application global strength. FINO is leveraging the experience of the banks and their knowledge of the microfinance market. Intelicap is leveraging their in depth knowledge of poverty and development issues, including microfinance. The market promises to be competitive and interesting to observe.

It behooves MNFIs to closely scrutinize all available options with respect to the “core” back-office before making any decisions on whether to purchase the software or to use the services of a third party to manage the software or to use the services of a SaaS provider.

MNFIs must assess their own capabilities in this area, i.e. their capability and their willingness to expend both human capital and financial capital in software and IT before making any decisions.

And in addition must ask the question whether they want the challenge and the headache of managing and maintaining a complex set of software and hardware infrastructure themselves(?) or would they benefit from the expertise of a 3rd party to manage and maintain such complex architecture?

Provided the SaaS solution is priced right for the MFIs, and the vendor can offer a responsive and quality service MFIs do stand to benefit from the availability of such a service. If nothing else it removes the financial Capex burden, i.e. from having to incur high upfront one-time capital costs, to

one of an ongoing Opex based costs, i.e. where the MFI pays more palatable lower subscription-based pricing. Gravitating towards a SaaS model enables the MFI to afford a much needed scalable and robust “core” back-office software, and it better positions them to substantially enjoy lower upfront costs and palatable quarterly subscription-based pricing, which enables MFIs to focus on their growing demands in a cost effective way.

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