

# Management Information Systems for Microfinance



Management Information Systems  
for Microfinance:  
Catalyzing Social Innovation  
for Competitive Advantage

Edited by

Arvind Ashta, Bryan Barnett,  
Karl Dayson and Godfrey Supka

**CAMBRIDGE**  
**SCHOLARS**  

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**P U B L I S H I N G**

Management Information Systems for Microfinance:  
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Edited by Arvind Ashta, Bryan Barnett, Karl Dayson and Godfrey Supka

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## FOREWORD

RAGHAVAN KUNIGAHALLI

We live in an age where technology is rapidly reinventing the financial services industry. From online banking through to digital wallets, how we consume finance has been altered profoundly in recent years. At one level this isn't necessarily a new phenomenon; banking has always embraced technology—from double entry bookkeeping in the fourteenth century to Automated Teller Machines in the 1960s. What makes today's changes unique, and pertinent for this book, is the global nature of this transformation, and how technology is helping us improve financial services to the poorest communities in the world, namely through the use of management information systems (MIS) in microfinance.

Microfinance plays an important role in global economic development by providing opportunities for job creation and increasing financial stability to low-income families. With more than a billion people living under US \$1.25 a day, microfinance has a significant potential to play a major role not only in economic uplift of the poor but in creating business opportunities for financial institutions. Year by year growth of 30% during the last decade, highlighted in the Preliminary Background of this book, clearly demonstrates entrepreneurs and global economic uplift opportunities offered by technology advancement in microfinance. With this phenomenal growth it is essential to modernize the information systems and technology infrastructure supporting Microfinance Institutions (MFIs) and their customers. This should ensure sustainable growth and substantially improve outreach, as well as profitability, of microfinance institutions around the world.

Advancements in open-source software solutions, cloud-based service offerings and social networks present low-cost opportunities for improved management of loan portfolio, liquidity and credit risks. Several chapters in this book provide useful insights to both practitioners and researchers on opportunities presented by these technological innovations. Microfinance lenders, entrepreneurs and investors will greatly benefit from technology insights presented in these chapters.

Identifying market opportunities and reaching out to potential borrowers with low credit risks will significantly enhance capabilities of microfinance institutions to increase market penetration and improve the health of their loan portfolio. In this collection, a number of tools are examined which should help identify market opportunities and target potential microcredit borrowers with appropriate and affordable products.

The banking sector has benefited from automated credit rating systems and this could be extremely helpful in improving the financial health of microfinance institutions seeking to manage default rates. The final two chapters discuss this in detail and look at potential approaches to establish a distributed Microfinance Credit Bureau system. This begs the question whether the establishment of credit reporting agencies solely focused on microfinance in various regions of the world would enhance sectoral performance.

While it is necessary to look at the health and profitability of microfinance institutions to ensure sustainable growth, it is essential to measure the performance in terms of achieving broader objectives such as economic uplift of the poor. Content presented in the chapters focused on Financial Reporting and Performance Management will help readers to gain a deeper understanding of Social Performance Management and discover Information Technology opportunities to improve the social reporting aspects of microfinance institutions.

I believe that this text will serve as a great reference material for all individuals interested in microfinance and the role information systems and technology will play in sustaining the growth observed during the last two decades. This edited collection should help inform the thinking of microfinance practitioners and technology professionals as they plan and implement the use of information systems and technology to improve the performance of their businesses. But most importantly it will help improve the lives of their customers around the world.

This book is a culmination of about two years hard work by several experts in microfinance and information technology. Editor-in-Chief Dr. Ashta managed the compilation, peer review and publication process extremely well by partnering with leading microfinance practitioners and researchers around the world to produce a timely and high quality publication. Presentation quality improvement efforts from Dr. Bryan Barnett, Prof. Karl Dayson and Mr. Godfrey Supka helped in meeting the higher quality assurance required for the publication of this book. This book is a valuable asset for microfinance institutions, investors, entrepreneurs and researchers with abundant reference information

pertaining to information systems and technology supporting microfinance.

## PREFACE

### ARVIND ASHTA

This preface is about my personal journey to editing this book and to organizing it, and will therefore refer a lot to my own work. A fairly exhaustive and far more balanced literature review on research in microfinance was provided by Milana and Ashta (2012) and a more balanced bibliography for Management Information Systems (MIS) issues in microfinance is available at the end of each chapter of this book.

This book was initiated thanks to the push from Carol Koulikourdi of our publishers. If she hadn't pushed, and if Stéphan Bourcieu, the Dean of our school and Sophie Reboud, then Research Director of our team at the Burgundy School of Business, had not supported her, it is probable I would have continued to stay in my routine of teaching and writing—a routine which is of immense pleasure to me. Instead, once again, I opted for the toil of editing a book and, once again, learnt more than I contributed. Once again, I was humbled by the number of persons who lent a hand to write and review chapters.

Why MIS for Microfinance? Why not something more sexy such as gender issues, for example? To understand this, it is essential to review the research I have been involved in with my co-authors, many of whom are researchers associated with the Banque Populaire Chair in Microfinance of the Burgundy School of Business. From my first paper on microcredit, which was my own introduction to this field (Ashta, 2009), I have been fascinated by this sector, not only because it is a social innovation (Ashta et al., 2013) and has potential for encouraging entrepreneurship (Ashta, 2013; Ashta, Couchoro and Musa, 2013) but also because it is a test for managing double bottom lines, enabling rich lessons to take to our classroom of budding managers and CEOs. Managing a double bottom line, even a triple bottom line, has become important to even mainstream business.

I initially looked at what makes microcredit succeed in some countries rather than in others (Allaire et al., 2009; Ashta and Fall, 2012). Don't look at the dates of the publications, because for some inexplicable reason, some papers are published faster than others, depending perhaps on the

journal one submits to, the reviewers, and many other factors. In any case, our search for broader influential factors focused on religion (Ashta and De Selva, 2011; Attuel-Mendes, Ashta and Pic, 2012), the state of the economy (Constantinou and Ashta, 2011), laws and ethics.

Notably, we were made to look at the social failure of microfinance, brought to the fore by Compartamos's IPO and the controversy it created: perfectly executed private equity model success on the one hand and debatable ethics of charging high interest rates on the other hand (Ashta and Bush, 2009; Ashta and Hudon, 2012; Hudon and Ashta, 2013). This in turn made us look at the need for high interest rates and whether ceilings were necessary. We found that removing ceilings does not lead to more microfinance (Attuel-Mendes and Ashta, 2008; Ashta, Attuel-Mendes and Ratsimalahelo, 2013); therefore, why not keep them? Moreover, we found that the ethical problems persist whenever high profit are made, even if interest rates/yields are lower than the global average of 27% per annum, as was the case of SKS in India (Ashta, Khan and Otto, 2011). Perhaps interest rate transparency would help (Attuel-Mendes and Ashta, 2013).

We came to the conclusion that the most important factors to make microfinance successful perhaps lie within the microfinance institutions and not just those in the environment. These factors could be cost management (Khan and Ashta, 2012) and the management of risks (Khan and Ashta, 2013).

How can costs be reduced? We have been gradually led to the conclusion that the most important factor is the use of technology. We had been looking at internet technology in what used to be called online lending, social lending or P2P lending, now treated as a part of crowd funding (Ashta and Assadi, 2010a, b; Johnson, Ashta and Assadi, 2010; Assadi and Ashta, 2009, 2012). Based on our research, I decided to edit a first book on advanced technologies for microfinance (Ashta, 2011). The research indicated that besides what is being done on the Internet (Assadi and Hudson, 2010; Ashta and Assadi, 2011; Brett and Stefanakis, 2011), there is a great role for MIS (Augsburg, Schmidt and Krishnaswamy, 2011; Das, 2011; Khan, 2011; Musa and Khan, 2011; Nyapati, 2011; Quadri, Singh and Iyengar, 2011) and mobile banking (Jawadi, Jawadi and Ziane, 2011; Kulkarni, 2011; Morawczynski, 2011; Shrivastava, 2011), as well as for new techniques such as credit scoring (Simbaqueba, Salamanca and Bumacov, 2011) and fuzzy models (Lozano and Fuentes, 2011), and also for new applications (Estapé-Dubreuil and Torreguitart-Mirada, 2011; Hettihewa and Wright, 2011; Sim and Dayson, 2011).

Based on that book, and my conversations with leading MFI managers, I became convinced that the single most important factor for scalability

and cost management was a good MIS. Delving deeper, I learned that the MIS is not only an aid to control and performance measurement, but also yields information for strategic decision making. At times, the MIS may even be a strategic strength, enabling a firm to outcompete (Barua, Kriebel and Mukhopadhyay, 1991; Brown, Gatian and Hicks Jr, 1995). While MIS technology by itself is not the panacea (Clemons, Reddi and Row, 1993) except in certain sectors (Clemons and Row, 1991), 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. Moreover, I discovered that social innovations and cost sharing could become possible through cloud computing and Software as a Service (Ashta and Patel, 2013).

This led me to ponder if indeed MIS was as dry a subject as I had thought, and whether something eclectic was not happening in this sector. Hence the choice of theme for this book. The quest for managing the double bottom line of sustainability and social ethics required focusing on cost reduction, through social innovation enhanced by high technology. Indeed, what could be sexier than a foray into such a field at the border of many interacting disciplines? Figure 1 resumes the discussion.

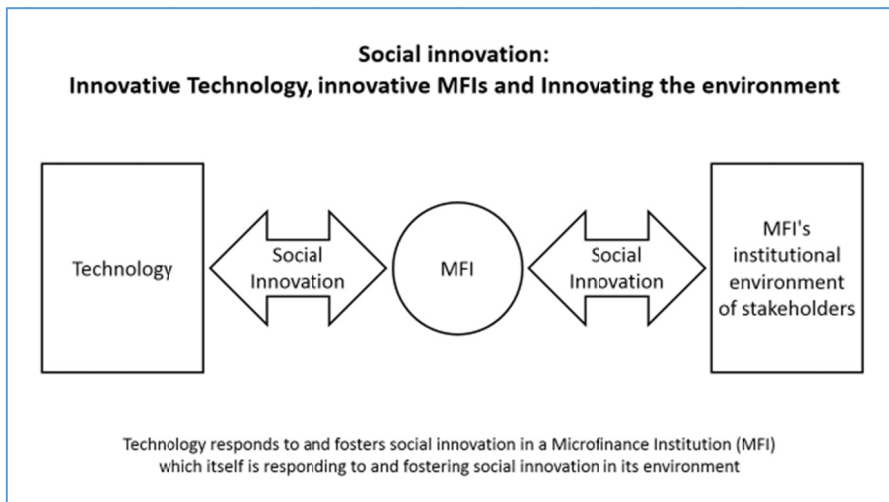


Figure 1

It would be appropriate here to define social innovation. Schumpeter (1951, 1989) considered innovation as "a historic and irreversible change in the way of doing things" (p. 138): the introduction of a new product, new method of production, the opening of a new market, the conquest of a new source of raw material; the creation of a new organization. The innovation could be technological, but it may equally be social.

"Whereas technological innovation is concerned with application of new technology, social innovation deals with application of new social patterns of human interaction." (Holt, 1971, p. 235)

Holt (1971) was dealing with social innovations within organizations, notably new management practices. Other authors even consider social innovation to be intra-organizational (Westley and Antadze, 2010). It can include new arrangements in society which help to meet unmet social needs, and these actions could take place on local, regional, national or even global levels (Moulaert et al., 2005).

Social innovation requires the creation of new social relations to overcome economic and social exclusion and create collective empowerment by boosting the confidence of the excluded and providing them hope of success through better governance structures (Moulaert et al., 2013), including through interaction with eminent but locally embedded actors or "known strangers" (Marti, Courpasson and Dubard Barbosa, 2013). The social innovator may require external partnerships to break the vicious circle (Nurkse, 1952) since they cannot achieve anything alone, but they require the aid of a multiplicity of local actions that permit bringing together not only financial, technical and human capital, but also bridging, bonding and linking social capital (Gerometta, Häussermann and Longo, 2005; Lybbert, 2008) which, on his own, the social innovator lacks. Once a social innovation has been introduced, others may replicate it.

A lot of research is being done on seeking competitive advantage through radical technological innovation either by incumbents or by disruptive outsiders (Christensen, Bohmer and Kenagy, 2000), through creating new markets (Christensen, Johnson and Rigby, 2002) rather than just entering the low-end of existing markets. Now, a new sub-category of disruptive innovation, termed catalytic innovation, has been applied to social change (Christensen et al., 2006). The social change to meet an unmet social need is served through a low cost or simpler but satisfactory model, by tapping resources in manners that are initially unattractive to incumbent competitors or their existing business model. Once a workable solution is found, it is scaled through replication.



There are many case studies of successful social innovation bringing out some aspects of the theoretical developments indicated above, including not only microcredit (Yunus, 2003; Maak and Stoetter, 2012; Khavul, Chavez and Bruton, 2013), but also venture philanthropy (Wagner, 2002), participatory budgeting in local finances (Novy and Leubolt, 2005), and urban governance (González and Healey, 2005). In this book we are looking at MIS and a number of chapters address new information needs, new technology adoption and innovations in implementation. The ensemble of these chapters allow us to study whether MIS can help to catalyze the social innovation, which means initiating as well as scaling it, by creating a competitive advantage for those microfinance institutions who invest in such systems. This is not totally novel since it is a continuity of the literature which emerged from notions of competitive advantage linked to strategic planning (Gluck and Kaufman, 1980) and corporate strategies linked to sharing rather than diversification (Porter, 1987), but also linked to other aspects, notably information (Porter and Millar, 1985). Notably, it was found that new IT technology alters industry structure, supports cost differentiation strategies and spawns totally new businesses. In this book, we can see how MIS, notably with new technologies, but even in implementation of existing ones, may create competitive advantage in a socially innovative sector. All this reflects the final sub-title of the book (*Catalyzing Social Innovation for Competitive Advantage*) which emerged from brainstorming with the authors, the reviewers and the publishers once the book was complete.

As a result of the call for papers with the main title (*Management Information Systems for Microfinance*), I received 31 abstracts and draft papers. Of these, sixteen have made it to the final lap. Some dropped off at the abstract stage; this is not unusual. Others submitted a paper which was reviewed by a team of academic and practitioner reviewers—all volunteers—whose specific mission was to help authors develop their papers further. Most of the authors continued with these revisions, but some were unable to find the time or inclination to revise it and dropped out. The revised paper was then sent back to the reviewers, sometimes to new reviewers as the old ones had run out of their volunteer time. These second stage reviewers then either approved the paper or suggested further minor modifications. The end result of the process is before you. My thanks to all of these as well as to those who submitted work that nonetheless was not included in the final book. The latter encouraged us, by their presence—however brief. The former pressurized me to find the time to complete this work, and not wander off into other pursuits in microfinance. And of course my thanks to all the reviewers.

Brainstorming with Anabela Mesquita, the co-editor of the International Journal of Technology and Human Interaction (IJTHI) provided me with a clear perspective on how to divide the chapters for this book into different parts. An introduction to each of the parts, by eminent specialists, will provide more detail of the chapters enclosed therein, but I provide a one-line introduction to each, in recognition of the enormous efforts made by these authors.

The two introductory chapters obviously came first. In Chapter 1, Saleh Khan and I present the microfinance sector and its evolution so that a layman gets a brief introduction to the sector. In Chapter 2, Sunder Annamraju, who spent considerable time leading and guiding MIS implementations and technology-led business transformation programs within the financial services industry, provides his perspective on how MIS evolved in the financial services sector in the developed world. This provides the reader with a general idea of a benchmark on what he could expect in microfinance. Karl Dayson provides an introduction to these two chapters.

For the remaining chapters, I used the following Figure 2 on the stakeholders of microfinance to bring clarity to my thoughts on how to order the parts.

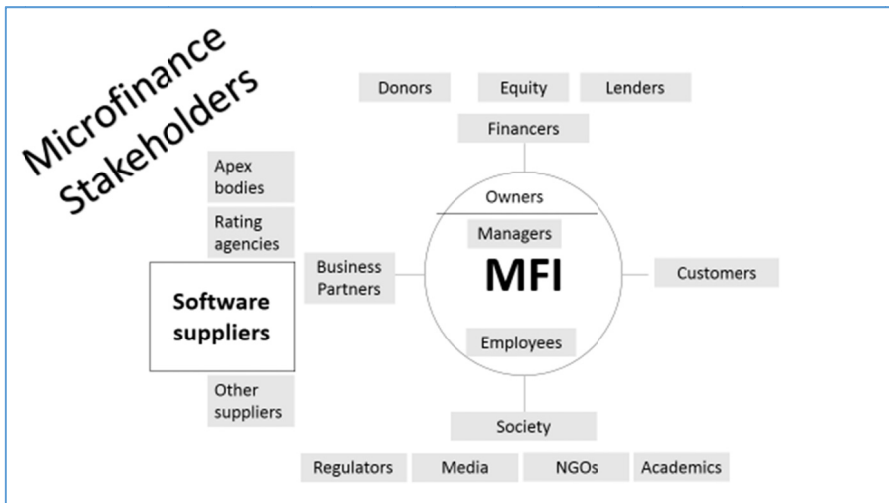


Figure 2: Adapted from Milan and Ashta (2012).

Clearly, microfinance has many stakeholders (see shaded boxes) with different information requirements. This was the demand side for information and obviously required to be spelt out first, and we take this up in part I, introduced by Glòria Estapé-Dubreuil. These stakeholders are the institutional partners that need to be satisfied to allow microfinance to innovate successfully. We start, in Chapter 3, with the information requirements on a double bottom line presented by Frances Sinha, Rupal Patel and Nitin Madan, a team from EDA Rural Systems who have considerable experience in this line. Then, in Chapter 4, Glòria Estapé-Dubreuil, Consol Torreguitart-Mirada and Maria Rosa Rovira-Val, all from the Universidad Autònoma de Barcelona, show us how including a third bottom line, that of sustainable development, would further increase the reporting requirements. Finally, in Chapter 5, Djamchid Assadi, Sharam Alijani and Satchidananda Sogala, a partnership of academics with a practitioner consultant, focus on just one stakeholder, the customer, and propose a customer-intelligence-based model to improve the distribution of financial services to the rural population.

Along with these innovations on the information demand side, there have been developments in the supply of information systems, where software suppliers are bringing their own innovations into the process. This supply side of information tools therefore became the second part, introduced by Marc Ingham. We start, in Chapter 6, with Godfrey Supka, a long-time executive with Fern, supplying software to the microfinance sector. He studies MFIs and indicates how MFIs select the software which would produce the information required by the different shareholders. As opposed to the look at MFIs, in Chapter 7, Gaurav Sinha looks at the software vendors themselves and the challenges they face while dealing with MFIs. Then, in Chapter 8, I team up with Vitalie Bumacov, who has now started his own MFI in Moldova, and Mikhail Cherkas and Dinos Constantinou, who are Microfinance Strategy consultants in Switzerland, and we go further to study the features of a large range of software, necessitating incremental innovation and differentiation to retain competitive advantage. In view of the cost of such software for small MFIs that comprise the majority of MFIs, in Chapter 9, Vitalie Bumacov and I team up with Frederic Lanet of Airdie, which was the first MFI to experiment with the first open-source software, Octopus, to understand whether the open-source attitude of microfinance can be combined with the open-source attitude of free software. In Chapter 10, I present a different kind of technological innovation, that of SaaS, and discuss how it would change social relations between the suppliers and the MFIs as well as relations between the MFIs, disrupting the competitive advantage

equation. Finally, in Chapter 11, Bryan Barnett, a long time consultant in IT in the microfinance sphere, cautions that cloud computing technologies, such as SaaS, carry their own risks.

Irrespective of the kind of software adopted, bought, rented, free or home-grown, the proof of the pudding is in the eating. Part III, introduced by Gaurav Sinha, looks at the implementation of software in MFIs. In Chapter 12, Krishna Nyapati and Sandeep M.S, with considerable experience in IT, start the ball rolling by indicating the success factors for implementing MIS and examine a case study of MIS implementation in an Indian MFI, BSFL. In Chapter 13, Mawuli Couchoro studies the difficulties of MFI software in coping with the rapid growth of microfinance in Togo. In perhaps the most challenging work, in Chapter 14, Jacques Bongolomba Isoketsu is joined by a team of researchers including Gaurav Sinha, Sunder Annamraju, Rakesh Sud and Aishwarya Srinivasan to comment on the need for information systems to help overcome client over-indebtedness in the war-torn Democratic Republic of Congo, perhaps the poorest country on the planet. The over-indebtedness problem is perhaps the most important problem facing microfinance today, leading to reputation risk as well as credit risk for the sector (CSFI 2011, 2012).

Recognizing these risks, a number of researchers and policy makers have suggested that credit bureaus be introduced to overcome information asymmetry faced by microfinance institutions in the wake of competing MFIs lending to the same borrowers. Part IV, introduced by Krishna Nyapati, looks at these macro-industry needs and the rapid response of the industry to provide these macro-industry information systems. In Chapter 15, Sudeep Krishnan and Debdatta Pal review the literature and interview experts to propose a distributed system designed for Microfinance Credit Bureau Management Information Systems. Finally, in a sharp response to theory, Alok Prasad, the head of the Microfinance Institutions Network and consultant Vibhu Arya show how the institutional work of creating and developing credit bureaus in India at a rapid pace was supported by the microfinance industry, in an effort to reduce the risks and convey to the stakeholders that the message had been heard.

This rapid capability of an industry to come together to address industry issues perhaps reminds us that competitive advantage is important but continuing a social innovation which serves so many is even more important. Thus information systems at the firm level as well as those at the industry level are both required.

I hope that you will enjoy reading the book and find it useful.

*Dijon, France, 2013*

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# PRELIMINARY BACKGROUND

## INTRODUCTION

KARL DAYSON

*'People asked me: "How did you figure out all those rules that you say you developed?" I tried to explain, but they didn't understand what I was saying. So now I put it a different way. I tell them that whenever I need a rule in a particular situation, I just look at how the conventional banks do it. After all, they have been in business for a long time. When I find out how they do it, all I have to do is do the opposite! And it works beautifully.'*  
(Mohammed Yunus, Egon Zehnder International Speech, January 2009).

As Yunus highlights, microfinance is inherently contrarian. To understand it requires knowledge of the mainstream banking system and how it functions, but to act involves ignoring its assumptions and ideology. These first two chapters explain each side of this dichotomy. Annamraju details the banks' long-standing investment, punctuated by periods of both technological innovation and sclerotic technology, caused by their thirst for merger and acquisitions-driven expansion. By contrast, Ashta and Khan describe the spectacular and predominantly organic growth of the microfinance sector. Both, though, indicate the dangers and risks ahead for microfinance as it begins to morph into a larger, more consolidated industry.

But first let's take a step back and address the question central to the Preface, introductory chapters and the wider book. Should technology matter to microfinance institutions? As a social scientist, one is always wary of technological determinism and narratives that justify action on the basis of a specific manufactured innovation. Sociology emerged from the furnace of the Industrial Revolution and has struggled with the question about whether technology drives societal change or whether societal change enabled the space for the adoption of new technologies. The answer is probably far more complex. But that debate explains why this book matters and why the introductory chapters are necessary.

Microfinance was invented (or more accurately, re-invented) in the period following decolonisation and emancipation of the developing world. Mohammed Yunus found that economic freedom only applied to some, specifically men and the new ruling elites. As in Orwell's parable '*Animal Farm*,' these elites replicated the practices and institutions so reviled under the *ancien régime*. This meant local and national banks served their interests and ignored the needs of the poor, particularly women, crashing into the gender uprising of the 1970s when women from across the world began to assert their rights and demand equality. Starting in South Asia, microfinance spread throughout the developing world, eventually reaching Europe following the collapse of the Eastern Bloc in 1989.

Meanwhile, the Cold War, driven by the arms and space race, had become a technology sprint as both sides sought to deliver more powerful weapons, satellites and rockets. Ideological and financial inducements pushed the Americans to realise the benefits of the microchip and the Internet long before they became available to consumers. Enabling this was an open scientific community where challenge and criticism were embedded in the culture, and along with enforced patent laws created an environment where design and development processes could respond quicker to IT inventions. When discussing the relationship between IT and microfinance, it is prudent to be mindful of these societal factors. Technology is not a random thing; it is a function of ideology, finance, anticipated return and some degree of transparency. It could be argued that the evolution of microfinance has the same characteristics.

Viewed through a societal lens, we are able to see why technology matters to microfinance. The data used by Ashta and Khan is from MIX Market, a non-profit foundation based in Washington DC, reporting on about 2000 microfinance providers and with an avowed objective of strengthening the sector by promoting transparency. The design of the website makes MIX an essential and flexible tool to help managers and investors to compare performance and identify good practice. With every territory having its own regulatory framework it would be almost impossible to bring these information sources together in a comparative form without the innovation of MIX Market.

By empirical capture of evidence around good practice, MFIs are able to improve profitability and provide a better return for investors. This in turn establishes a virtuous circle where good returns encourage further investment, which in turn enables management to invest in management systems that can better monitor and improve financial performance. As Annamraju indicates, not all IT investment systems produce such an