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ABSTRACT

The microfinance industry provides financial services to the world's poor in hopes of moving individuals and families out of poverty. In 2013 there were 4.7 million active microfinance borrowers in Africa. This represents a smaller percentage of the population compared to other regions of the world, indicating the potential for rapid growth of microfinance in Africa. However, microfinance is maturing in part due to the adoption of information and communication technologies (ICTs). This research examines how ICTs are changing the microfinance industry given recent advancements in mobile banking, Internet usage, and connectivity. By examining the microfinance market structure, we determine that ICTs impact intermediation and market structure among various players in the microfinance industry. We use recent industry risk reports from 2011 through 2014 to inform our predictions of changes to the intermediation structure of the industry. We give particular attention to the impact of ICT on microfinance in Africa.

Keywords

Microfinance, intermediation, information and communications technology, ICT, Sub-Saharan Africa, poverty reduction.

INTRODUCTION

Global poverty and malnourishment rank among the largest humanitarian problems in the world today. An estimated 805 million, or 11.3% of the world's population, were classified as chronically undernourished in 2012-2014 (FAO, 2014). This problem is the most pronounced in Sub-Saharan Africa where 23.8% of the population is undernourished. Poverty ranks as the principal reason for malnourishment. In 2008, 1.35 billion people lived in poverty on $1.25 USD or less per day (PovcalNet, 2011).

ICT has been shown to have some impact on poverty at the micro, meso and macro levels (Hanna, 2003). Despite this slight improvement, some suggest there is an "indisputable link" between poverty and ICT (Flor, 2001). Countries that experience high poverty rates also have few telephone land lines and Internet service providers (Kiiski and Pohjola, 2002). This is part of the *digital divide* that describes the discrepancy of technology available to and used by the poor versus the wealthy (Dewan and Riggins, 2005). Low ICT capabilities also diminish the ability to use financial services to reduce poverty in developing areas.

The emergence of microfinance in the past three decades is viewed as another critical component in the fight against global poverty (Khandker, 2005; Mosley, 2001; Shaw, 2004). Microfinance is defined as the provisioning of financial services to poor or low-income clients, including consumers and entrepreneurs who would otherwise not be served by traditional financial institutions (Ledgerwood, 2000). Microcredit is a subset of microfinance where microfinance institutions (MFIs) administer loans to individuals and small businesses that would otherwise be rejected at a traditional lending institution due to perceived high risk or excessive loan administration costs.

Despite microfinance success stories, estimates reveal that 40% to 80% of the population in developing countries still does not receive basic financial services (Cull, Demirguc-Kunt, and Morduch, 2009). Some microfinance programs have found little success in reaching the poorest individuals, especially when MFIs favor financial performance goals (sustainability) over social performance goals (outreach). In an effort to increase social performance, MFIs are turning to new tools, methodologies, and assessment frameworks to reduce costs and extend their outreach (Bedecarrats, Angora, and Lapenu, 2009).

The Africa Market Profile from MixMarket.org reports that there were approximately 4.7 million active borrowers utilizing services from microfinance institutions in Sub-Saharan Africa. This represents a much smaller percentage of the population compared to other regions. For example, using 2015 MixMarket country and regions profiles and current world population statistics there are approximately 5 out of 1,000 people in Sub-Saharan Africa being served by microfinance institutions compared to approximately 33 out of 1,000 in Latin America and the Caribbean, 32 out of 1,000 in South Asia, and 7 out of 1,000 in Eastern Europe and Central Asia. As ICT continues to be adopted in Africa it is likely that the use of microfinance services will increase rapidly in the coming decade. Furthermore, the utilization of ICT in microfinance could encourage regional integration and efficiency in intra-Africa trade (Bankole, Osei-Bryson, and Brown, 2015).

Like other industries, ICT is having an increasing impact on microfinance. Many of the tasks that intermediaries perform are enabled or enhanced by various technologies. ICT has been shown to alter the roles of intermediaries and marketplaces in industries such as travel (Granados, Kauffman, and King, 2008), music (Bockstedt, Kauffman, and Riggins, 2006), and retail (Sarkar, Butler, and Steinfield, 1995). Kauffman and Riggins (2012) describe the current state of ICT in the microfinance industry and propose a number of research directions for this emerging area of IS research. As developing countries adopt ICTs and begin to bridge the digital divide, the impact of ICTs on the microfinance industry will also likely increase.

We pose the following research questions to examine how ICT impacts intermediation in the microfinance industry:

(1) how has ICT created opportunities for intermediaries in the microfinance industry?
(2) how does ICT fuel changes among intermediaries?
(3) based on risks and ICT's impact, what will microfinance intermediation look like in the future?
(4) what are the implications for microfinance market participants given these predictions?

We use market structure theory and research on the role of intermediaries to examine these questions in the microfinance industry. We make use of microfinance risk reports from 2011, 2012, and 2014 to inform our predictions of changes in the microfinance industry market structure and pay particular attention to the impact of ICT on the microfinance industry in Africa.

THEORETICAL BACKGROUND

We draw on elements of intermediation, electronic marketplace theory, and transparency theory in our analysis of ICT in the microfinance industry. Spulber (1996) defines an intermediary as "an economic agent that purchases from suppliers for resale to buyers or that helps buyers and sellers meet and transact." He outlines four key roles for intermediaries as:

(1) price setting and market clearing,

(2) providing liquidity and immediacy,

(3) matching and searching, and

(4) guaranteeing and monitoring.

Some intermediaries also function as electronic marketplaces. Bakos (1991) defines an electronic marketplace as an "inter-organizational information system that allows the participating buyers and sellers to exchange information about prices and product offerings." He claims electronic marketplaces share the five characteristics of:

(1) reducing information costs,

(2) benefitting from network externalities,

(3) imposing switching costs,

(4) participants benefitting from economies of scale, and

(5) uncertainty of actual benefits.

Much research in the IS discipline aims to determine if ICT diminishes the need for the 'middle man' (El Sawy, Malhotra, Gosain, and Young, 1999). Evidence of this can be found in certain industries such as music and print media. Prior to the Internet, portable e-book readers, and audio compression formats, many intermediaries existed between the artist and the consumer. In the late 1990s, artists could begin to sell their music and media directly to consumers. Those who benefit from this change are the artists who receive a greater percentage of the final sale and consumers who pay a lower cost and can deal with the artist directly. This comes at the expense of intermediaries who were *disintermediated* by these advancements (Bockstedt et al., 2006). In the same way, since ICT can diminish the *distance* barriers between lenders and borrowers (Cairncross, 2001), there is less need for intermediaries in the microfinance industry.

Electronic-enabled intermediaries have also impacted businesses and industry via *re-intermediation* as new intermediaries emerge to fill critical roles in the changing industry. This poses a threat to traditional businesses that rely on brands and distribution relationships (Ghosh, 1998). While it is true that many traditional intermediaries risk extinction due to advances in ICT, some intermediaries maintain relevancy by proactively "reinventing their value logic" (El Sawy et al., 1999). Their traditional roles of distributing

goods to other market players shift to roles including service support, transaction processing, and contract enforcement.

Transparent markets are characterized by complete and unbiased information which promotes increased competition (Porter, 2001). The travel industry experienced a move toward transparency when price search engines such as Expedia, Orbitz, and Priceline were made available to consumers in the 1990s. Consumers benefit from competition through lower product pricing, but sellers may resist increases in transparency. The same is true in the microfinance industry where large profits can be made by profit-maximizing MFIs that lend in markets where competitors and borrowers have limited access to market information. To combat this, organizations such as MixMarket and MFTransparency work to promote transparency in this industry. As evidenced in Wilson, Dahl, and Demcey (1999) the financial benefits of adopting a non-transparent strategy among profit-maximizing MFIs decline as other MFIs become more transparent. Consumers are not the only players that experience benefits from transparency. Sellers may also benefit with enhanced electronic representation of products (Granados, Gupta, and Kauffman, 2006 and 2010).

Transparency can mitigate corruption (Boehm and Olaya, 2006), which is a prime concern in the microfinance industry and the countries in which they operate. Another benefit of transparency is improved liquidity of a product for sale as in the airline industry (Granados et al., 2008). Technologies like the Internet allow consumers to determine sellers' costs or allow them to acquire several bids. Consumers pay lower prices thereby increasing their consumer surplus. In the context of microfinance, a borrower could review interest rates and loan products of several MFIs before making their borrowing decision. This may lead to increased willingness-to-pay, which may lower the elasticity of demand in transparent markets (Granados et al., 2008).

Another important point is that not all market players prefer transparency. Some sellers prefer not to join an electronic marketplace with high price transparency since high transparency increases competition, lowers prices, and decreases profit margins. This has further ramifications with consumers, who are less likely to participate in an electronic marketplace where fewer sellers are involved (Soh, Markus, and Goh, 2006). For example, airlines may be reluctant to join a service like Expedia if the increased transparency leads to lower margins. Consumers, in turn, will not want to visit a website that only compares airfares for a limited amount of airlines. Microfinance institutions may elect not to participate in a transparency-promoting website or database if they fear that their financial and loan portfolio data are unfavorable or if they make themselves a target for competition.

RESEARCH METHOD

We used exploratory research methods, including the use of secondary data collected over multiple years, to determine the structures in traditional, current ICT-enabled, and future predicted ICT-enabled microfinance market intermediation. This analysis views the changing industry from the perspectives of several players in the microfinance industry. Bockstedt et al. (2006) used a similar approach by analyzing the impacts of ICT on the music industry's market structure. They compared the traditional market structure with an ICT-enabled market structure.

For the traditional and ICT-enabled structures, we utilized observations of the market in its past and current forms. For the future predictive model, we relied on three recent industry risk perceptions reports from the Center for the Study of Financial Innovation (CSFI) (Lascelles and Mendelson, 2011 and 2012; Lascelles, Mendelson, and Rozas, 2014). The data and methodology of these reports are discussed in a

later section. We make an assumption that players in the microfinance industry will adapt to address these risks and that those adaptations will cause changes in intermediation market structure.

ANALYSIS OF MARKET STRUCTURE AND ICT

Traditional Microfinance Market Structure

The traditional pre-ICT microfinance market structure in Figure 1 depicts a subset of the microfinance industry microstructure proposed in Kauffman and Riggins (2012). Relationships between market players are represented by arrows, which denote both the type of good transmitted (funds or information) and the direction of the relationship.

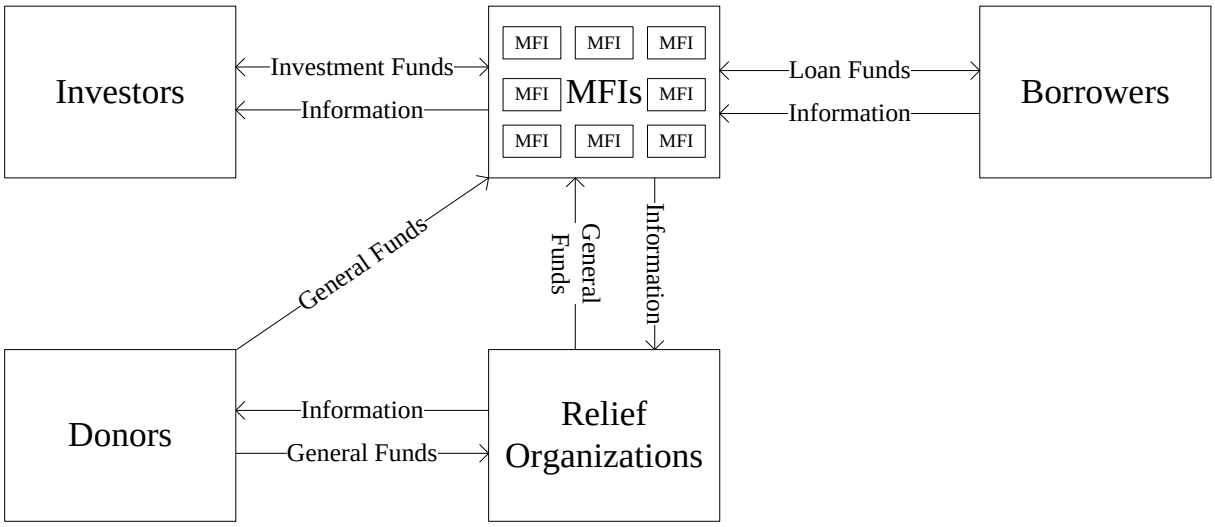

Figure 1. Traditional microfinance market structure (adapted from Kauffman and Riggins, 2012)

Not every market player is an intermediary. In the traditional structure, only two players function as intermediaries, MFIs and relief organizations. Visually, these are the market players that have arrows going both into and out of them and reside between two other market players. Donors, for example, do not qualify as an intermediary, since they do not fulfill any of the roles, and they do not reside between two market players with respect to funds or information. Table 1 notes which of Spulber's (1996) four intermediary roles are satisfied by each of the two traditional microfinance industry intermediaries. MFIs administer financial services to clients and relief organizations provide support, training, and funds to MFIs with donations received from donors. MFIs and relief organizations are intermediaries by definition since they fulfill one or more roles of intermediaries.

Intermediary	Price setting & market clearing	Liquidity & immediacy	Matching & searching	Guaranteeing & monitoring
Microfinance Institution (MFIs)	✓	✓	✓	✓
Relief Organization			✓	

Table 1. Traditional microfinance intermediaries

MFIs

As shown in Table 1, MFIs perform all four intermediary roles. For example, they set interest rates for loan products by gathering supply and demand information as well as comparing competitors' rates. They adjust rates based on economic conditions to clear markets. They provide liquidity and immediacy by holding cash on hand to lend to borrowers. MFIs that receive donations from donors fulfill the matching and searching role by lending to individuals that align with the goals of the MFI. These goals motivate donors in their choice of MFI. Also, MFIs monitor the repayment of loans by their borrowers and investments made by investors. Finally, they guarantee repayment to the best of their ability given market risks.

Relief Organizations

Many donations and investments to the microfinance industry prior to ICT occurred through relief organizations. Relief organizations were seen as intermediaries since many donors did not have knowledge of highly localized MFIs or a means of transmitting funds directly to them, whereas experienced relief organizations possess knowledge of and relationships with MFIs. Relief organizations do not conduct microfinance transactions directly with borrowers, but instead support networks of MFIs worldwide by providing capital, training, and other resources. They fulfill the matching and searching intermediary role by helping donors find MFIs that meet their criteria for donations and by helping MFIs locate donors to increase their capital stock. This practice results in a mutually beneficial relationship for both donors and MFIs, which are the market players that reside on either side of relief organizations.

Donors and Investors

Philanthropists donate funds to MFIs so that they can help alleviate poverty through their financial services or cover their operational expenses. Investors invest funds in MFIs with the expectation of earning a profit from a share of the MFI's interest revenue. Prior to ICTs, donors and investors relied on the MFIs themselves or relief organizations to determine the extent of an MFI's financial performance (of interest to investors and donors) and social performance (of interest to donors).

Borrowers

The final type of market participant in the traditional market structure shown in Figure 1 are the borrowers. Although we use the term "borrowers," this group could also be called the end-users of other microfinance products such as savings accounts or insurance. In the traditional market structure, borrowers have limited knowledge about the market and competition since they only interface with MFIs. They accept loan disbursements and make loan repayments to MFIs and in some instances receive training or other services provided to them by MFIs.

ICT-enabled Microfinance Market Structure

The microfinance industry has experienced steady adoption of ICT for several years. These ICTs have created new opportunities for some market players while diminishing the need for others. Figure 2 reveals the microfinance market structure in the presence of ICT. We used individual rectangles within the MFI box to depict the individual MFIs that make up this intermediary in order to compare it with the future predicted structure. Since banking correspondents and mobile service providers share similar roles as intermediaries, we depicted those as a single split intermediary. This market structure shows several new intermediaries. Table 2 notes which of Spulber's (1996) four intermediary roles are satisfied by each new entrant.

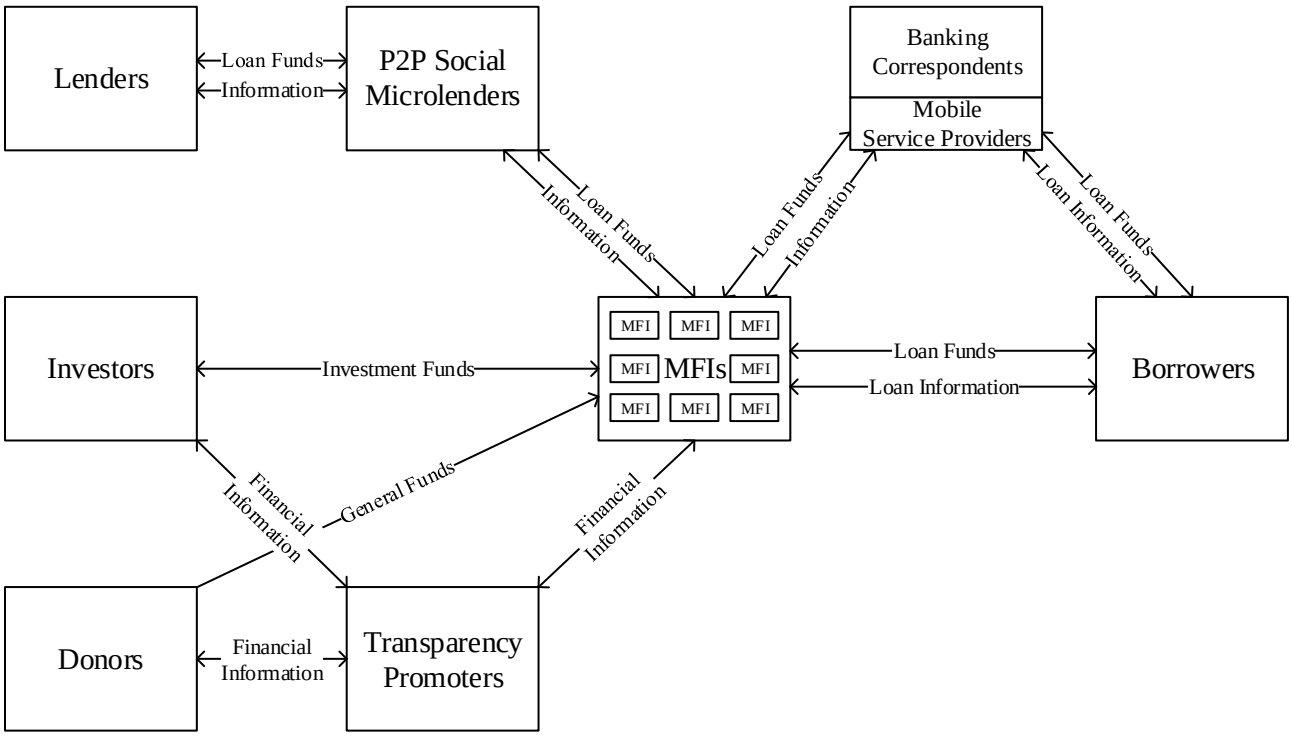

Figure 2. ICT-enabled microfinance market structure

Intermediary	Price setting & market clearing	Liquidity & immediacy	Matching & searching	Guaranteeing & monitoring
P2P Social Micro-lender (new)	✓	✓	✓	✓
Transparency Promoter (new)			✓	✓
Banking Correspondent (new)		✓		✓
Mobile Service Provider (new)		✓		✓
Microfinance Institution (MFIs)	✓	✓	✓	✓

Table 2. ICT-enabled microfinance intermediaries

Peer-to-Peer (P2P) Social Micro-lenders

In 2005, Matt Flannery and Jessica Jackley suggested a new approach to social micro-lending. Their idea evolved into Kiva, an organization that operates a peer-to-peer (P2P) social lending site that connects individual Western lenders with entrepreneurial borrowers in developing countries. Kiva.org posts loan-funding requests from MFIs on their website for lenders to browse. Lenders can invest any amount in $25 increments up to the remaining amount of the loan. Once the loan is fully funded, Kiva transfers the funds to the MFI who in turn loans the funds to borrowers. The MFI administers the loan and enforces loan

repayment. As the loan is repaid, principal funds are transferred back to Kiva and eventually back to the lender. In the case of Kiva, the MFI retains interest earned on the loan.

This P2P approach to microfinance poses a significant change to the market structure allowing entry of individual lenders into the market. Prior to the Internet and electronic funds transfer, the notion of a loan administered to an entrepreneur in a developing country funded by dozens of western borrowers would have been impossible due to high transaction and administration costs. Similar to MFIs, P2P social micro-lenders fulfill all four of Spulber's (1996) intermediary roles as shown in Table 2. They primarily provide liquidity and immediacy to MFIs by providing capital stock for funding. They also provide matching and searching services to lenders interested in making a loan to individuals that meet their criteria for lending. Finally, P2P social micro-lenders monitor MFIs by ranking them according to financial and social performance.

Transparency Promoters

ICTs also enable a new way for investors and donors to make investment decisions. Industry transparency promoters like MixMarket and MFTransparency offer a means of consolidating financial and loan portfolio information on MFIs, funders, service providers, and networks. Investors and donors can use this information to decide which organizations will receive their funds.

Donors and investors can make funding transactions independent of the transparency promoters and transact directly with MFIs. Thus, the need for relief organizations diminishes with ICT, and they are shown as disintermediated in our ICT-enabled market structure. We also witness this change in the industry by observing many relief organizations that have established their own MFIs instead of continuing to fund others. For example, relief organizations founded three of the largest MFIs in Cambodia: VisionFund was established by World Vision, Kredit Microfinance by World Relief, and Hattha Kaksekar Limited (HKL) by Save the Children. Today, relief organizations are being forced to shift to a new intermediary role or risk disintermediation as ICT-enabled donors establish direct communication channels with MFIs.

Transparency promoters fulfill matching and searching intermediary roles in the microfinance market while helping investors and donors locate MFIs that meet their criteria by allowing users to filter lists of MFIs. Similar to a P2P social micro-lender, they monitor MFIs by ranking MFIs transparency with a diamond rating and by making social performance reports publicly available for download.

Banking Correspondents

Banking correspondents are existing commercial entities like post offices, general stores, or Internet cafes that partner with an MFI to administer loans to and collect payments from borrowers (Kauffman and Riggins, 2012). Banking correspondents allow MFIs to expand their geographic outreach to remote villages without having to open branches. As long as the banking correspondent is connected to a central MFI via phone or the Internet, MFIs require only occasional visits to banking correspondents to collect aggregated payments. The fees that MFIs pay to banking correspondents are lower than the costs of establishing a local branch with a facility, infrastructure, and staff. Safety is also improved since currency travels less distance for both borrowers and MFIs.

Banking correspondents fulfill the liquidity and immediacy intermediary role since they can administer loan funds to borrowers more quickly and receive loan repayments from borrowers faster than if the borrower transacted with the MFI directly. They also fulfill the monitoring role by tracking loan payment history.

Mobile Service Provider

Another type of technology being used by MFIs is mobile payments. Mobile payments enable borrowers to receive loan disbursements and make loan payments using their mobile devices. M-pesa is the name given to the mobile payment capability of Safaricom, a Kenyan mobile service provider. Several African MFIs use M-pesa to disburse loan funds to borrowers and accept loan payments from borrowers.

This particular technology enables MFIs to lend to individuals that are geographically too distant to coordinate with efficiently. It also saves borrowers the costs of travelling to an MFI branch to conduct a transaction or check a balance (Donner and Tellez, 2008). Since MFIs do not provide mobile services or lease phone traffic on cell towers, they rely on mobile service providers to fill this gap. Most mobile service providers already have capabilities for fund transfer, so the additional cost of coordination with MFIs is minimal.

Mobile service providers fulfill two intermediary roles: first, they provide liquidity and immediacy to borrowers and MFIs by allowing transactions to occur immediately without lags due to travel and transaction processing times. Second, they monitor loan payments by providing a transaction history that is automatically linked to a database without the need for manual entry required in traditional loans.

Lenders

The entry of P2P social micro-lenders creates a new group of individual lenders. It also shifts the role of some market players from being donors to being lenders. The difference is that donors give to a cause or an organization that will in turn make loans to a poor population. Loan decision rights remain with the MFI. P2P social micro-lenders allow individuals to play a direct role as a lender to individual loans. Lenders make capital funding decisions and accept the risks (and in some cases the benefits) of default and interest earnings. Investors, on the other hand, invest money and expect interest or a financial return in the future.

Future Predicted ICT-enabled Microfinance Market Structure

While the benefits from microfinance have resulted in considerable industry growth, this growth brings a number of risks to the industry. The Consultative Group to Assist the Poor (CGAP) in partnership with the Centre for the Study of Financial Innovation (CSFI) has studied these risks by administering the *Microfinance Banana Skins* survey since 2008. The 2014 report (Lascelles et al., 2014) lists the following types of microfinance industry participants as respondents to the survey (this breakdown is similar to previous years): service providers (35% of respondents), support providers (19%), investors (19%), observers (13%), regulators (4%), raters (3%), and other participators (7%). Survey questions aim to rank the severity of the greatest perceived risks (banana peels/skins) threatening the microfinance industry in the next two to three years. The 2014 survey had 306 respondents from 70 countries (Lascelles et al., 2014). This report states that the high growth rate in the industry is the cause of difficulties with respect to their clientele, management, back office, resource management, and mission. The report lists the top 19 risks and compares them to prior versions of the survey conducted in 2011 and 2012 (Lascelles and Mendelson, 2011 and 2012).

In this section, we used the results of the 2014 CSFI report to frame our discussion and inform our predictions for ICT-enabled intermediation in the near future. We assumed the players in the microfinance industry have a vested interest in addressing these risks where possible and that change to the

intermediation structure is likely to be a part of risk mitigation. Many risks mentioned in the report can be mitigated with intermediation that is not enabled or enhanced by ICT. While these changes are of interest to the industry, the focus of this section is on ICT-enabled intermediation.

In our reading of the CSFI report from 2014, we applied the previously discussed theories related to ICT-enabled intermediation to derive potential new industry intermediaries that could help mitigate the identified risk. For example, the report states, "MFIs have inadequate information and control systems, and lack the resources and skills to improve them. Poor systems lead to inefficiency and weak risk management, increasing the danger of losses" and "… the emergence of technologies which are reshaping the provision of banking services, particularly online and mobile … touches on a whole new phase of microfinance evolution which could make or break many institutions" and further as one NGO respondent was quoted "MFIs could fail to fully embrace technology. It will disrupt current delivery models and that can feel threatening, but without major change too many clients will remain unserved." (Lascelles et al., 2014, p.50-51). New MFI management practices, ICT tools, and transparency promoting intermediaries will likely result from such trends discussed in the report. We discuss seven predictions in the subsections below and show how they lead to our predicted future market intermediation structure. We narrowed down the list of 19 risks to 11 based on the relevance and applicability they exhibited with our predicted intermediary changes. Table 3 summarizes our seven predictions and which of the 11 risks (including their survey ranking) inform our predictions. We will discuss each of these predictions shortly and include ample quotes from the three most recent survey reports to highlight our predictions and put these market structure changes into context for the continent of Africa.

Risk (2014 survey rank)	Credit Rating Organizations	Transparency Promoter Role Shift	Operations Outsourcers	Remote MFI Mgmt	Mobile Provider MFI	Commercial Bank Entrants	MFI Conglomerates
Over indebtedness (1)	✓	✓					✓
Credit Risk (2)	✓		✓				✓
Competition (3)	✓	✓	✓	✓	✓	✓	✓
Risk Management (4)	✓	✓		✓			✓
Strategy (6)	✓			✓			
Management (8)			✓	✓	✓	✓	✓
Regulation (9)	✓				✓	✓	
Staffing (10)			✓	✓	✓	✓	✓
Technology Management (15)			✓		✓	✓	✓
Income volatility (16)	✓		✓	✓	✓	✓	✓
Transparency of objectives (17)	✓	✓					

Table 3. MFI risks and intermediation prediction

A market structure diagram with our future predicted microfinance market structure is shown in Figure 3. In this model, several market players act as MFIs or provide services to MFIs that are not intermediaries to other players, so they are shown in the MFI box. We depict the shift from many, smaller MFIs to fewer, larger MFIs by the quantity and size of the MFI boxes. Finally, the breakdown of banking correspondents to mobile service providers is depicted by the size of the box dedicated to each intermediary. They both play similar roles, serving as intermediaries with funds and information between MFIs and borrowers. Our predictions include a greater role for mobile service providers than banking correspondents; hence, less space is dedicated to the latter.

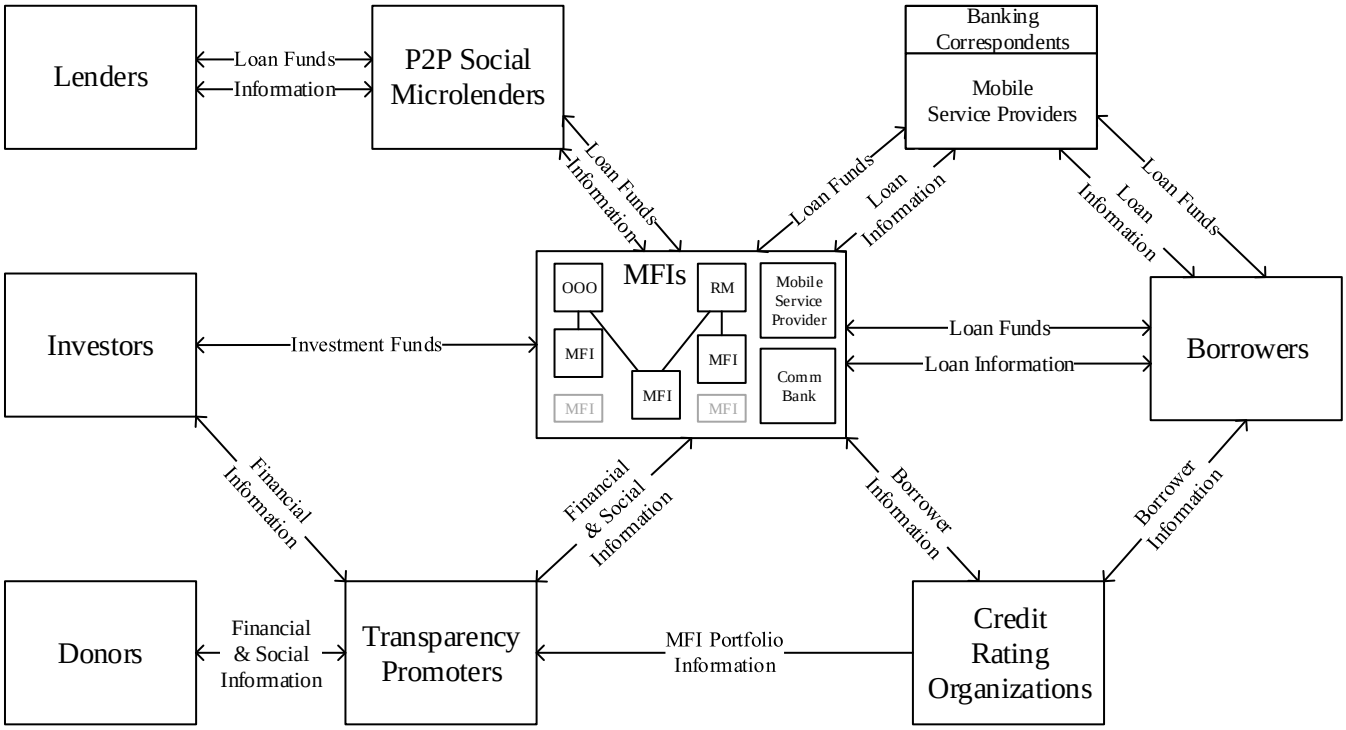

Figure 3. Future predicted ICT-enabled microfinance market structure

The future predicted market structure describes three new intermediaries with each playing different intermediation roles. Table 4 notes which of Spulber's (1996) roles are satisfied by each new entrant.

Prediction 1: Emergence of Credit Rating Organizations

A number of identified risks lead us to believe that countries will introduce new credit rating systems or extend current credit rating systems to microfinance end-users and providers.

Over indebtedness or credit risk have been the highest rated risks in the past three surveys (Lascelles and Mendelson, 2011 and 2012; Lascelles et al., 2014). Credit risk was evident as a major concern in all global regions and is highly correlated to competition. In the early years of microfinance, portfolio risk was largely due to macro level economic impacts as developing economies are more prone to economic spikes and shocks than their developed counterparts. However, due to increased competition in the industry, a greater concern now is the risk of loan default of the borrowers. For example, borrowers now have more opportunity to borrow from multiple lenders and may use one MFI loan to pay off another. A managing

director of a Columbian MFI reported that the number of MFIs servicing the average customer increased from 1.5 to 4 in recent years and that 75% of their MFIs borrowers were also borrowing from other institutions (Lascelles and Mendelson, 2011, p.21).

Intermediary	Price setting & market clearing	Liquidity & immediacy	Matching & searching	Guaranteeing & monitoring
Credit Rating Organization (new)			✓	✓
Mobile Service Provider MFI (new)	✓	✓	✓	✓
Commercial Bank MFI (new)	✓	✓	✓	✓
P2P Social Microlender	✓	✓	✓	✓
Transparency Promoter			✓	✓
Banking Correspondent		✓		✓
Mobile Service Provider		✓		✓
Microfinance Institution	✓	✓	✓	✓

Table 4. Future predicted ICT-enabled intermediary roles

Another risk informing this prediction is the declining reputation of the microfinance model due to problems already mentioned. Steve Hollingworth, the president of Freedom from Hunger shared his concerns that the "brand of microfinance is deeply damaged. For many traditional and committed supporters of microfinance, the industry no longer appears committed to working with, and improving the lives of poor and food insecure populations. The balance has shifted too far to focus almost exclusively on profitability. We need to refocus on the core mission, creating sustainable approaches that impact the lives of poor clients" (Lascelles et al., 2014, p.15). This threatens to limit outside funds entering the microfinance industry. MFIs and their staff are also under pressure and incentivized to make loans to individuals who might not need them. According to Kalpana Sanka, the chair of Hand in Hand in India, "We are being compelled to be aggressive and I don't want our clients to be over-indebted. I am not sure whether I will be able to withstand the pressure of the stake holders who fail to understand how I feel about the issue" (Lascelles, et al, 2014, p. 14]. If outside parties know that lending decisions are vetted with a credit rating system, MFIs will experience greater confidence by outsiders and an improved reputation.

Credit rating organizations can help governments encourage proper governance and risk management within MFIs. Kevin Fryatt, director of technical assistance at MFX Solutions is quoted in the more recent report saying that "The paramount risk facing the microfinance sector in Sub-Saharan Africa is that of governance, and more precisely risk governance. Within governance, there is a lack of appreciation and understanding of the role that risk management should play within a financial institution" (Lascelles et al., 2014, p.22).

The third highest rated risk is increased competition which also informs this prediction. In the early stages of microfinance, investors saw competition having a positive impact on the industry, viewing it as improving innovation and efficiency. Increased competition has several negative ramifications including (1) loan sharking, (2) poaching of clients and staff, (3) deceptive advertising, (4) loan officers incentivized

to acquire new clients regardless of borrower need, (5) loans made for personal consumption instead of business growth, and (6) lending to customers that are urban and less poor. Loan officers often neglect to perform time-consuming background checks on clients for fear of losing a commission. Mounkaila Garba, director of credit at Taanada S.A. in Niger said, "rich institutions, especially from northern countries, are setting up in developing countries, putting at risk the viability of local institutions with little means" (Lascelles et al., 2014, p.22).

Other risks leading to credit rating system adoption include inappropriate regulation, since regulators will know which MFIs to regulate more heavily depending on the credit scores of their loan portfolios. Transparency promoters can make the average credit ratings for MFIs publicly available and reveal which MFIs are most guilty of multiple lending. The risk of fraud will encourage adoption of a credit rating system since it will be more difficult for credit officers to manufacture clients if the MFI runs credit checks on each borrower. Finally, strategy risks are mitigated since additional adequate knowledge about customers will assist MFIs in developing their strategy, especially if credit scores can be aggregated by village or region.

Credit rating organizations fulfill two of Spulber's (1996) intermediary roles. First, they provide matching and searching services to MFIs and help them analyze the creditworthiness of potential borrowers without the need for personal visits and interviews. Second, monitoring of borrowers improves with credit rating organizations, since MFIs report on the repayment of loans at the end of the loan term.

Prediction 2: Emergence of Mobile Service Providers as MFIs

Mobile service providers will enter the microfinance industry as MFIs, providing loans directly to borrowers. While this trend has already begun to some minor extent (see Figure 2), we expect this trend to continue to grow and become an important part of microfinance in the future.

The first risk that informs this prediction is the risk of managing technology. Small MFIs cannot manage technology as well as mobile service providers. Mobile service providers work primarily in technology and the technological cost of offering loans is minimal compared to the costs of an MFI entering the mobile services market. Mobile service providers already maintain established information systems from their current operations. In 2013, nine African markets had more mobile money accounts than bank accounts, compared with only four in 2012 (Ledgerwood, 2013). The CSFI 2014 report states that, "By the end of the decade, 300 million Africans are expected to have a smart phone. The development of M-banking, market/value chain applications, biometric identification, agent models, point of sale devices and near field communication, 3G Internet outreach and the affordability of cloud-based information systems even for small institutions will provide cost reduction and outreach which were unthinkable only a few years ago (Lascelles et al., 2014). Staff members employed at mobile service providers possess more experience with technology. With the declining reputation of MFIs, mobile service providers can lead customers away from MFIs for financial purposes. Additionally, mobile phone providers possess greater brand awareness than MFIs. The marketing of the phone services will leak over to increase awareness of their mobile payment and microfinance services.

Based on these risk factors, mobile service providers may realize they can provide loans directly to subscribers in their pre-established and extensive networks, bypassing MFIs altogether to earn higher revenues. MFIs rely heavily upon on mobile phone service providers to process loan payments and disbursements. Ashta (2011) considers mobile phones the single most important delivery channel for the poor. The services of mobile providers prove invaluable to MFIs since they reduce the time, communication, and transportation costs associated with servicing borrowers that are geographically distant or hard to reach. The mobile service providers benefit from this arrangement by earning revenue

from a percentage of the funds transferred or by charging a fixed amount per transaction. The MFI, however, still retains all of the profits for themselves. We expect mobile service providers will seek these profits for themselves as well.

Another factor driving this prediction is that mobile service providers are typically more innovative and willing to try new business models compared to the industry MFIs, which may lack strategic direction, and the regulators, which may not understand technology capabilities. Henry Mbaguta, assistant commissioner at the Ministry of Finance in Uganda says "I am a little uncertain as to the future of the mobile money revolution. Mobile banking seems to be growing at a faster pace than the imaginative capacities of the regulators. The tendency is therefore to wait first as the service providers experiment" (Lascelles et al., 2014, p.43).

Finally, mobile service providers are not regulated like banks and MFIs with respect to banking service provision, which affords mobile service providers a unique advantage. This likelihood of this prediction occurring is therefore greatly dependent upon the extent to which governments seek to regulate such newcomers to the financial services industry.

Prediction 3: Commercial Banks will Aggressively Enter Market Space Traditionally Held by MFIs

Based on the risks facing the microfinance industry, MFIs will not only experience competition from mobile service providers, but also from traditional commercial banks as they increasingly realize the profit potential in micro-lending. The CSFI report from 2014 indicated a trend towards the commercialization of microfinance, with fast-growing, profitable MFIs becoming the most popular recipients of funding from investors (Lascelles et al., 2014).

MFIs are experiencing increased aggressive competitive pressure from commercial banks. "The growth of competition stems mainly from the entry of new institutions into the microfinance market, many of them commercial banks seeking a share of the action" (Lascelles et al., 2014, p.34). Banks are able to borrow from the public to raise funds unlike non-profit or privately held MFIs. Banks are also less likely to be driven by social performance goals. When asked, "what keeps you up at night," an independent consultant responded, "good organizations with good services, well-designed for a poor, vulnerable or hard-to-reach populationwill be pushed out of business because they can't compete with the big boys in the more lucrative markets and can't cross-subsidize their work with the poorest" (Lascelles et al., 2014, p. 14).

The increased level of competition from these new entrants is what is feeding the most prominent risks facing the industry according to the CSFI 2014 report: over indebtedness and credit risk. Idowu Oshokoya, the managing director for Echo Microfinance Bank in Nigeria is quoted as saying "the main risks … include competition risk, due to new entrants into the industry, like the commercial banks, the mortgage banks and other non-registered deposit and loan institutions" (Lascelles et al., 2014, p.16). This trend is likely to continue as these entities see the potential to increase market share at the expense of inefficient MFIs.

With respect to management quality, staffing, back office, and technology, commercial banks are better equipped than MFIs (Tchakoute-Tchuigoua, 2010; Tucker and Miles, 2005). Since the microfinance industry is more transparent with transparency promoting infomediaries, commercial banks will learn about their competitors and position themselves to maximize profits. Finally, in some countries the regulatory requirements MFIs face can be particularly costly relative to those encountered by traditional banks (Cull, Demirguc-Kunt, and Morduch, 2011).

Prediction 4: Transparency Promoters will Increase Emphasis on Social Performance

Transparency promoters present ample financial and loan portfolio data of MFIs to interested parties. The industry relies on these organizations to increase the confidence of investors and customers. In their current state, they present little data on social performance. Several identified risks indicate that transparency promoters that currently rate sustainable economic performance will likely shift toward presenting more information about MFI social performance.

Reputation risk informs this prediction because when information is presented publicly on an Internet platform MFIs will be incentivized to protect their reputations. Similarly, dangers arise with increased competition because it can cause MFIs to take greater risks and abandon their social mission. While competition drives MFIs to explore untapped market segments, which is beneficial because it improves outreach, it can be detrimental since little is known about these new market segments.

Another risk informing this prediction is mission drift. MFIs may start out with intentions of social performance, but drift toward serving individuals not among the neediest if enticed by financial incentives. In the presence of transparency promoters that provide social performance data, disincentives arise for mission drift. Another form of mission drift is a shift in lending from small businesses to general lending for consumption purposes which can harm the industry's reputation. MFIs can forgo their traditional low-income business clientele and to seek consumer and small business finance. One US-based microfinance observer commented, "Competitive pressures to grow portfolios and institutions have forced some MFIs to go overboard with their lending activities" (Lascelles, et al., 2014, p.8).

Another risk informing this prediction is fraud risk, which would decrease if transparency promoters indicate both financial and social performance. If transparency promoters employ a rigorous audit procedure for social performance, MFIs will be dis-incentivized for fraud and have more opportunities to showcase their social impact.

Prediction 5: Emergence of Operations Outsourcing Organizations

Due to increased competition, maturation of the industry and the need to improve social performance while increasing economic sustainability, MFIs will outsource more IT and related information management tasks.

With increasing industry competition, interest rates decline and the economy becomes more demand-driven. Borrowers benefit since lower interest rates result in increased consumer surplus. For MFIs, competition challenges their ability to maintain sustainability with declining interest rates and forces them to seek lower costs. Respondents mentioned staff capability frequently in their responses, referring to a lack of talent and competent manpower. Internal operations technologies at MFIs that would increase efficiency are often lacking at smaller MFIs. Operations outsourcers can pool transaction processing tasks and allow small MFIs to benefit from their economies of scale. A portfolio manager at Development Bank shared, "Some MFIs are not concerned enough about efficiency and internal controls; they appear to be more concerned about doing "good". When we try to explain that they will not do 'good' long-term if today they are not running an extremely efficient and well-managed mass scale lending operation, we frequently get negative reactions. There is clearly a confusion between sustainability and profit maximization, and social impact can be used as a poor excuse to avoid the topics/actions" (Lascelles, et al., 2014, p.14).

This is also the case in Africa where a respondent from Kenya to the CSFI 2014 survey said "most MFIs are faced with serious problems installing internal control systems and they have no measures to assess the institutional and business risks that are inherent in their operations" (Lascelles, et al., 2014, p.21/35).

Further, a microfinance inspector from Rwanda said "institutions are not able to afford competent staff, and the boards of directors most of the time lack governance and financial skills. As a consequence, institutions are exposed to governance and operational risk. The sector is not able to stand the competition posed by bank institutions" (Lascelles, et al., 2014, p.21).

Increased credit risk also informs this prediction. Since it is difficult to enforce repayment, MFIs could employ collection agents to locate delinquent borrowers with more efficiency than the MFI's own loan officers. MFI back office employees often lack appropriate skills. Respondents to the risk survey cited stories of poorly managed MFIs losing track of their borrowers and the repayment status of their loans.

With respect to mission drift, most MFIs find their core competencies not in their operations but in their ability to meet borrowers' needs. MFIs that outsource their operation activities can focus their efforts and energies on their mission and clients. Finally, respondents shared that MFIs can prevent fraud by tightening internal controls, centralizing staff records, and installing stronger systems.

Therefore, we expect to see the industry respond to these risks by outsourcing many of their operations tasks including background checks, transaction processing, payment collection, and fund disbursement. Outsourcing organizations could benefit from economies of scale, access to technologies that would be prohibitively expensive to a small MFI, and staffed with experts in their respective area.

Prediction 6: An Increase in Remote MFI Management

Similar to operational difficulties, challenges arise with inadequate MFI management. This was identified as the fifth greatest risk facing MFIs in Africa (Lascelles, et al., 2014). The report indicated there was inadequate MFI management skills in such areas as succession planning, training, and the knowledge increasingly needed to run the complicated systems required in today's microfinance institution. Due to the need to cut costs and improve efficiencies, we expect MFIs to utilize ICT tools that will allow MFIs and their branches to be managed remotely.

The main risk informing this prediction is management quality. Several statements from the risk survey indicated a need to greatly improve MFI management. A development bank respondent from Southeast Asia said, "The main challenge is that most MFIs have laudable social objectives, but lack the professionalism to grow and manage risk properly" (Lascelles, et al., 2014, p.41). This need is becoming particularly important as MFIs grow in size such that an attitude of professionalism is needed as much or more than that of philanthropy. Risks of mission drift and strategy loss become mitigated with remote MFI management. Getaneh Gobezie, a microfinance expert in Ethiopia says "when an operation is small, it may be easy to ensure a 'shared' vision/mission with all the staff (at board, management, middle level, and front line), and it may also be easier to monitor performance … As their operations expand, the MFIs need a different management style" (Lascelles, et al., 2014, p18).

Another factor that can lead to outsourcing operational management expertise and remote MFI management is the difficulty in obtaining and retaining talent. Fonahanmi Idris, deputy general manager at Safetrust Mortgage Bank in Nigeria is quoted as "most microfinance lenders/promoters cannot attract and retain qualified and skillful key staff; they prefer paying peanuts and always having high staff turnover" (Lascelles, et al., 2014, p.45).

Further informing this prediction is the fact that MFI leadership is often unable to provide a meaningful strategic direction for the organization. A respondent in Africa shared, "Many MFIs are running without strategies. They respond as events unfold" (Lascelles, et al., 2014, p.38).

Prediction 7: An Increase in MFI Conglomeration and Mergers

This prediction is informed by comments made in the 2011 CSFI report associated with the lack of strategic planning. An Egyptian respondent in that survey noted that "badly managed MFIs will feel more challenged and mergers might be more and more common in the market" (Lascelles and Mendelson, 2011, p.34). We predict fewer, larger MFIs in the microfinance industry. This may result from mergers and acquisitions among MFIs and conglomeration of several MFIs. "The [microfinance] industry is coming to the end of a period of rapid and easy growth, and will have to restructure to survive [by] consolidating smaller MFIs and specializing larger ones" (Lascelles and Mendelson, 2011, p.36). ICT drives consolidation since ICT reduces coordination costs. Smaller MFIs are finding it increasingly challenging to compete in the market. In the most recent survey, a London-based banker said that microfinance "is diverging into two streams, the larger and more commercial players that 'get' broader financial inclusion and carve a leading role, while the smaller organizations do not yet understand the financial inclusion ecosystems in their countries" (Lascelles, et al., 2014, p.39). They also experience greater difficulty in acquiring funding than their larger counterparts.

MFIs face challenges of competition and shortcomings in staffing, management, technology, and back office capabilities. If several MFIs in a geographic region conglomerate they will have stronger infrastructure to deal with a large number of transactions. Larger MFIs benefit from more robust MIS, which is considered the most important technology for scaling (Ashta, 2011).

CONCLUSION

The research presented in this paper applies theories related to intermediation and a recent industry risk analysis to make predictions about the impact ICT will have on the microfinance industry. These predictions include (1) new entrants of credit rating organizations, operations outsourcing organizations, and commercial banks, (2) role shifts of transparency promoters and mobile service providers, and (3) other predictions including MFI conglomeration and remote MFI management. These predictions offer a basis for making recommendations and implications for market players affected by the future market changes.

As the microfinance industry matures and adopts more sophisticated ICT tools, MFIs will need to adapt. With the entry of commercial banks and mobile phone service providers as competitors and credit rating organizations increasing market transparency, MFIs will need to become more efficient in their operations. They will need to carefully manage their dual responsibilities of social performance and financial sustainability. Using ICT tools for better management, outsourcing internal operations and IT capabilities to emerging service providers, and knowing when to collaborate and merge MFIs will need to understand how to navigate a more complex environment.

It is our hope that other IS researchers understand the value and interest of the microfinance industry as a unique research context. The future predicted market structure provides a basis for suggesting new studies and determining if our predictions hold. Indeed, other theories could be used to explain similar predictions in this industry. Additional research is needed to apply other theories to this market and to test our predictions.

Researchers can engage in country-specific case studies where credit rating organizations are rolled out to MFIs and determine how they impact transparency, outreach, interest rates, and loan portfolios at participating MFIs. Additionally, researchers can evaluate the historical breakdown of banking correspondents and mobile service provider use among MFIs to conclude if there is a shift occurring and if so, what are the implications for MFIs and borrowers. Researchers can also determine how to best

coordinate the information and data stored by transparency promoters and credit rating organizations to see if a mutually beneficial relationship can exist between the two. Furthermore, researchers can examine whether ICT-enabled transparency promoters and credit rating organizations will take the place of government regulation. Another interesting study might explore the impact of social performance information on the investments and giving by investors and donors, respectively.

Finally, researchers can determine if MFIs are utilizing efficiency and effectiveness gains from operations outsourcing organizations, remote management, and conglomeration to compete with commercial banks and mobile service providers.

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