National Conference on Trends & Technologies in Multi-Disciplinary Research
Organized by A2Z Edu-LearningHub and
In Association with International Journal of Scientific Research in Science and Technology
Volume 9 | Issue 3 | Print ISSN: 2395-6011 | Online ISSN: 2395-602X (www.ijsrst.com)

Integration of Digital Technologies in the Indian Microfinance Sector

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ABSTRACT

The micro finance industry has a long and eventful history. It is evolved out of efforts to overcome poverty through capacity-building and women empowerment. Micro finance is now a major component of banking systems in the developing and under developing world. Microfinance institutions made their mark by using innovative approaches. These institutions gave small loans without collateral, to clients from low-income groups predominantly engaged in income-generating activities in the informal economy (Jayadev, 2016). For long time, it was believed that the free market could not provide financial services to the poor, effectively and efficiently. However, pioneers of microfinance such as those behind Bangladesh's Grameen Bank demonstrated that it was possible to have a 'social business' (Cull, et al. 2009). These organizations were able to provide financial services, most importantly credit, to the poor in a profitable manner that too on a large scale. The formal banking system repeatedly failed on these points because of imperfect information about the borrower's creditworthiness, high transaction costs and lack of collateral.

I. INTRODUCTION

Microfinance has always been seen globally as an important tool for alleviating poverty and financial development. The immense potential for improving financial access was seen as the key strength of the tool. It has been pointed out that that microfinance should not be seen only as an anti-poverty strategy but should be considered as an integral component of a developing country's broader financial development strategy (Barr, 2005). According to Barr (2005), this can take place in many ways. In addition to alleviating poverty and creating livelihoods, microfinance operations can promote market deepening that, in turn, advances financial development. Microfinance also accelerate the growth of the banking sector and help the financial market to mature, especially in developing countries. They can be part of strategies to promote financial reforms in the country as they tend to increase competition and bring about financial liberalization.

The microfinance sector is on the stage of transformation, worldwide, with the integration of digital technologies pushing the sector towards fundamental changes of its characteristics. In this manner. The paper attempts to understand how innovations in digital technology may help the microfinance sector better fulfill its role in the development of India.

The paper based on the framework in World Bank (2016) which identifies the mechanisms through which the developmental process namely innovation, inclusion and efficiency is unfolded. These three mechanisms have been integral to microfinance operations in the past and innovations in digital technology could open up yet another opening for microfinance institutions to promote development.

The digital revolution – digital technologies and pathways to development

Digital technologies are fast spreading across the world and are making their roads into all realms of human life. Digital innovations are creating new channels of engagement, expanding opportunities and increasing efficiency for individuals, businesses and governments. The microfinance industry across the world is also fast adapting itself to technology changes in the financial sector. There is also increased collaboration with fintech companies to better embrace technology. Migration of BC Finance (Myanmar) to a private block chain with the help of Japanese technology firms, and National Payments Corporation of India (NPCI) digitizing MFI transactions using its Aadhar Payment Bridge System (ABPS), are some examples of technology integration (PwC, 2017).

Increased connectivity and technological innovations allow a range of developmental benefits, (World Bank, 2016), which could boost growth, expand opportunities and improve service delivery. As seen in the following diagram Figure 1, digital technologies promote development through inclusion, innovation and efficiency. The improved information flow between different parties facilitates more transactions at reduced cost and risk. As the existing activities become cheaper and quicker, there is also an improvement in efficiency. This happens because growth in information and communication technology allows reduction of existing factors of production and augments the productivity of factors that are not substituted.

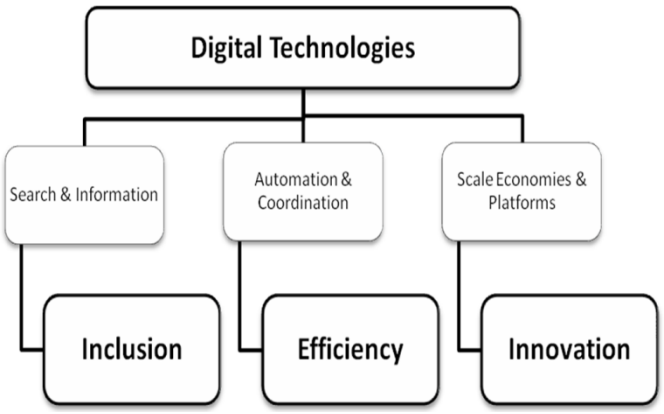

Figure 1: Development mechanisms of digital technology

Source: Adopted from World Bank (2016)

II. INNOVATION

Morduch (1999) comments that, "the promise of microfinance was founded on innovation: new management structures, new contracts, and new attitudes." Mersland and Strom (2012) identify five categories of innovation in microfinance: targeting of poor customers, targeting of women, new lending technologies, new organizational solutions and new sources of funding.

Microfinance provides a solution to traditional problems faced by the banking sector. Before emergence of microfinance, poor customers were served by money lenders or state- owned banks in a situation that was far from an efficient social equilibrium. State-run banks depended heavily on subsidies to cater to this section of customers but had low penetration and repayment rates. Lack of collateral was a large drawback and excluded the bulk of poor. The moneylender loans were more easily available but with high interest rates and a negative impact at large on the society.

On the other hand, Microfinance loans targeted high-risk borrowers, especially women. There was no need for collateral and solved the problems of screening, repayment and auditing. The loans were small and were given for income-generation activities. MFIs also used dynamic incentives, regular repayment schedules, and collateral substitutes to help maintain high repayment rates (Morduch, 1999). The targeting of women was another innovative approach.

The advantages of women-centric businesses were many: from a social perspective, it promoted gender equality, poverty reduction and provided more positive externalities for society and economy.

Much has changed in the microfinance industry over the last two decades: microfinance institutions are no longer exclusive, with the participation of commercial banks increasing. The sector also saw increasing convergence in regulations in the financial sector.

The sector is experiencing what can be termed a 'technological transition' (Geels 2002) - implying not only technological changes, but also changes in user practices, regulation, industrial networks, infrastructure, and symbolic meaning (Geels 2002). The microfinance sector will also have to follow the current trend of integration of digital technology into mainstream financial services, even though they differ. Unlike the financial services sector where there are innovations in both, product and process, the MFI sector is witnessing largely a process innovation (Tidd et al., 2005) with significant improvements in the production or delivery method. Evidently, these changes are not a single event of technical advance but are part of an ongoing cumulative technological advance (Nelson and Winter, 1982) characterized by continuous evolution where new evolves out of old.

III. EFFICIENCY

The biggest roadblock to efficiency in any market is high transaction costs and inefficient use of factors of production. As discussed earlier the financial sector had failed to provide banking services to a large number of people: inefficiencies made transactions in the markets expensive, distorted prices and excluded potential participants. Microfinance lowered transaction costs and made more efficient use of resources employed. These efficiency gains were not limited to the financial sector but included consumers and the larger economy as well. Increased credit availability meant increased economic opportunities and reduced deprivations which could back development.

With commercialization and increased competition, the efficiency in operations which used to characterize microfinance activities came under threat; imposition of rate caps etc., caused a decline in margins in many countries. The Indian case, which we discuss in a later section, is an example for how inefficient operations of even a few in the face of commercialization could create a crisis in the entire sector. Also, as Kent and Dakin (2013) point out, the norms for behavior in microfinance have become less distinguishable from mainstream commercial banking across the world. They have to adhere to standards similar to those in the banking industry and yet deliver in their traditional markets. The fact that the cost of funds to microfinance institutions is much larger compared to their banking competitors complicates it further and warrants significant improvement in efficiency in all realms of operation.
Technology has potential to aid the industry through improvements in efficiency: there is potential to lower transaction costs and increase the productivity of existing factors of production. It has been reported that MFIs handling small transactions for dispersed populations tend to have operating costs in the range of 12-15%, while the same for banks is less than 5%

(Moro Visconti and Quirci, 2014). In the case of MFIs, operating expenses are the most important cost component. Kneiding and Ignacio (2009) based on a sample of 1,003 MFIs in 84 countries find that the three main drivers of operating expense ratio (OER) are relative loan sizes, ages and scale. As per this study these variables impact efficiency in three ways. Firstly, higher numbers of loans may drive scale economies; secondly, higher average loan sizes may improve the cost structure and finally, more knowledge about customers may streamline processes.

IV. INCLUSION

The microfinance sector pioneered financial inclusion with its extension of financial services to the unbanked. The growth of sector was rapid across the world especially in neglected rural areas and among women, both novelties in pro-poor banking initiatives at the time (Mersland and Strom 2012). Microfinance operations, recognized importance of women's participation in financial services and the attendant social benefits. Owing to their participatory nature microfinance operations also successfully complemented the formal banking system and brought more people into its fold. The extensive networks of microfinance organization and unique strategies to cut cost and risk aided the banks in deepening their presence.

As the competition in the sector grew, the social aspect began diminishing as microfinance institutions increasingly targeted clients who were easier to access (Kent and Dakin, 2013), shifting new additions to the consumer pool to the better-off among the poor, or from urban areas, or those who were involved in businesses with rapid turnover, such as retail (Kent and Dakin, 2013). Chasmer (2009) terms this tendency of shifting business to wealthy clients as 'mission drift'. While commercialization and increasing competition may be the most cited reasons, this could also have arisen from the necessity to conform to stringent regulatory requirements such as capital adequacy ratios (Chasmer 2009). It is at this juncture that digital technologies become important, as they provide a means to reach out to the margins and adopt a broader, inclusive business model.

The spread of digital technology will improve inclusion in both, new and existing markets. The World Bank (2016) argues that this happens because some transactions did not exist previously. This could be either because parties of potentially beneficial transactions did not know each other or when one had more information than the other. Digital technologies can solve these problems because they provide access to information and enable searches. The problems in above mentioned cases were not as much related to cost as they were to trust and transparency. Technology innovations make monitoring and sharing of information much easier. User-specific information allows the firms to use newer risk mitigation strategies and provide more individualized services. The increased use of credit bureau data in the Indian market is a good example. The MFIs are actively availing the service of credit bureaus and also contribute to them. Integration with the credit bureau system is highly beneficial to the consumer also, as it considerably eases future engagements with mainstream financial actors.

Advances in technology also allow adoption of a broader view of financial inclusion, taking it beyond mere provision of financial services to the unbanked. Financial inclusion does not mean just access to financial services, but also ensuring continuous and efficient use of these services, which depends on both demand and supply (Demirgüç-Kunt, et al. 2007). Technology innovations have immense potential to address the under banked who might be voluntarily or involuntarily excluded from the system. These innovations differ from others in that they can be more rapidly adopted, and are pioneered largely by

new and small players. MFIs can easily collaborate with the new crop of players to usher in new models of operation and service delivery.

Following the recommendations of the Malegam Committee, the Reserve Bank of India came up with a detailed set of guidelines for the industry and created a new non-banking category for MFIs known as NBFC-MFIs, which has drastically changed the industry's character. Despite its growth, questions remain about the nature of growth and financial inclusion. A quick analysis reveals that the industry is heavily skewed towards large NBFC-MFIs with others lagging behind. As per Sa-Dhan (2017), the total debt funds received by the sector during 2016-17 was close to Rs. 26236 crores excluding SFBs. Out of this 95% went to NBFC-MFIs. In terms of size, the majority of funds (84%) went to large MFIs with a portfolio size above Rs. 500 crores. The industry is also experiencing an escalation in cost of funds: in 2015-16, the cost of funds for MFIs in India ranged from 11% to 15% for different institutions with a median of 13.3% (for all segments) (Sa-Dhan, 2016 b).2 Data from microfinance institutions network (MFIN), the industry body of NBFC-MFIs shows that the average cost of funds has consistently been much smaller for large NBFC-MFIs when compared to midsized or small size institutions (MFIN, various years).

On the inclusion front, the industry had witnessed a brief stagnation in client outreach, especially in 2012 and 2013, but has been growing since then. An important feature of this growth is that the sector has shed its image of being rural phenomenon. The rapid increase in share of urban clientele is certainly noticeable. The share of rural clientele, which was 69%, came down to 33% in 2015. This certainly hints at the possibility of the mission drift (Chasmer 2009) discussed above.

V. DIGITAL TECHNOLOGIES AND MICROFINANCE

It is at this juncture, that the development in digital technology assumes importance: following prevailing trends in the financial sector, microfinance companies are also rapidly adopting digital technology. The need to integrate technology with microfinance operations has been a major policy agenda since the late 2000s. Prior to this, the institutional support programs for MFIs were largely directed at demand-side issues and human resources capacity-building. To understand how technology as a theme permeated into the microfinance sector, past issues of Status of Microfinance3 reports, Bharat Microfinance reports and Inclusive finance reports were analyzed. Technological innovations were found to be a consistent theme in capacity-building programs from the 2003-04 onwards. The aim was to adopt innovations that support outreach and sustainability. This period saw various pilot projects to promote technological integration such as Computer Munshi,4 e-Grama and branch automation.5 While e-Grama was a program for setting up village information centers, the other two aimed at improving the book-keeping and efficiency of field workers. Technology was seen as an instrument or means to improve efficiency, particularly of back- end operations. The clear incentive in terms of efficiency gains was attractive and there was widespread adoption of Management Information Systems (MIS), Automatic Teller Machines (ATMs), Interactive Voice Response (IVR) systems, etc. Specialized software for loan management, accounting, human resources management and monitoring were other technology-based additions introduced during this period. Delfix Nano, Bijli, Ganaseva, Efimo are some examples of software which were adopted by MFIs (Srinivas and Mahal, 2017).

Official policy documents reflect this approach. The Rangarajan Committee Report (2008) on financial inclusion which states the need to leverage technology-based solutions saw it primarily as a tool to reduce transaction costs. The Committee noted that operating costs of small credits were high and varied widely across institutions depending on operating models and cost structure. The recommendations of the Committee also led to the setting up of a Financial Inclusion Technology Fund (FITF) to enhance investment in Information and Communication Technology (ICT).

An important push for technological adoption for many MFIs came via the banking correspondent (BC) partnerships with commercial banks. A technology-based model aimed to increased access of people in remote areas to formal financial institutions (Sa-Dhan, 2017), BC activities have been part of Indian financial services industry since 2006. In this model, the banks are allowed to outsource financial services through business correspondents and business facilitators. MFIs, which had extensive rural networks soon emerged as preferred allies leading to the emergence of 'partnership models' (Nair and Tankha, 2014). The partnership between ICICI Bank and Cashpor with FINO as technology provider is an example of such a model (Nair and Tankha, 2014). The model, mostly promoted by private banks, flourished until the Andhra Pradesh crisis. The BC business thereafter was largely led by corporate BCs (mostly technology service providers) but could not be sustained. With the emergence of NBFC-MFIs, partnership models were eventually revived with more opportunities and increased role for MFIs. Currently, the BC portfolio is one of the most important for MFIs constituting 21% of the total portfolio and 69% of the managed portfolio (Sa-Dhan, 2018a). The BC model also, in many ways, pushed the switch of MFIs to digital as the partnership emerged as a profitable business domain with good returns, especially for the smaller MFIs. As banks had already moved ahead with the use of technology in operations, the BC partnership provided the incentive, motivation and much needed familiarization for MFIs to migrate to newer technology. General Packet Radio Service (GPRS) enabled mobile- based online applications, portable printing devices synchronized with mobile handsets, real- time data transfer to servers, biometric smart cards were a few technology additions whose popularity can be ascribed to the BC role of MFIs and their engagement with banks (Sa- Dhan, 2016). While, on the one hand the BC model fast-tracked adoption of technology-led models in microfinance institutions, it also familiarized the clientele, most importantly rural population, with digital financial services.

A major shift in the approach towards adoption of technology in the MFI sector, however, came only when there was large scale penetration of mobile-based technology at various levels of operation. The larger penetration of mobile technology, internet and mobile banking aided the process, making it clear that technology was the key driver for promoting financial inclusion. In this phase, attention focused on the impact on inclusion, of technology. It was also the period of recovery for the MFI industry as the institutions were actively looking for alternative operational models to improve their reach. This allowed digitization of front-end activities through real-time data entry, geo-tagging, financial literacy videos to educate clients, etc. An early example of mobile technology adoption was that by Sonata Finance Pvt. Ltd. (Sa-Dhan, 2015). One of the first few to use mobile technology in loan approvals and disbursal, the large scale adoption of mobile technology brought in multiple benefits as it allowed the company to track transactions on a real time basis, fetch real-time reports, digitize physical records and improve transparency and process efficiencies (Sa-Dhan, 2015).

Recently a series of innovations is rapidly changing processes within the industry. An example would be increased adoption of cash-lite models for disbursements and repayments by MFIs of all sizes despite concerns of high upfront costs. While these are partly prompted by ongoing innovations in the financial services sector, there are also some other, equally important drivers. The State is a major actor as there is an ongoing policy push for digitization in the country. The Indian Government has pushed digital transformation in the country through initiatives such as Digital India, Digidhan mission, Jan Dhan, JAM trinity. The development of a neutral and open payment ecosystem in the country has proved to be beneficial to the MFI sector. The increased adoption of Immediate Payment Services (IMPS), Unified Payment Interface (UPI) and National Unified USSD Platform (NUUP) is enabling MFIs to provide multiple products and reap the benefits of digital finance. A visible example of transition to digital finance is the increasing proportion of cashless disbursement in total loan disbursement. Sa-Dhan (2018 b) reports that during Q4 of the financial year 2017-18, 45% of the total amount disbursed was cashless. The cashless mode is gaining traction so much that, there have been reports of institutions completely shifting to through cashless mode for loan disbursal and other digital initiatives such as E-KYC (Sa-Dhan, 2017).6 Technological integration is also taking place in the bank-linked SHG sector which tends to lag behind MFI institutions in this respect. The EShakti7 programme of NABARD which attempts to attempts to promote digitization among self-help groups is a noteworthy initiative: the programme aims to address issues of quality of book-keeping, multiple membership of SHG members, credit history of members, etc. Here, technology promotes access to affordable credit by removing information asymmetries holding SHGs back from becoming part of the larger banking system.

Similarly, MFIs are now entering into collaboration with fintech companies. PwC (2017) reports that there are multiple examples of collaboration of MFIs and fintech companies in India for customer on-boarding, credit assessment, loan disbursal and collections. The Entrepreneurial Finance LabEFL, a psychometric credit assessment company providing credit assessment services to Janalakshmi Financial Services (an MFI), partnership between Oxigen Services and Sonata Finance Limited (an MFI) to deliver mobile financial services and education to the latter's clients, Artoo, a technological company helping Ujjivan (an MFI, and now a Small Finance Bank) to on-boarding customers are some of the examples of such collaborations8 (PwC, 2017). These collaborations have not only been innovative but also added to the efficiency of operations and help achieve the objective of the financial inclusion agenda. A major characteristic of these innovative partnerships is that along with improving the current products, they also make a wide array of new financial services accessible to the previously excluded. The growth in credit plus activities (Sa-Dhan, 2107) in India such as micro-insurance and micro-pension are some examples. As of 2017, MFIs had enrolled 14.68 lakh clients for health products and about 51.1 lakh clients for non-health products (Sa-Dhan, 2107).

As discussed earlier, rapid integration of digital technology is causing a process innovation in the industry: field workers may not be displaced completely but their relevance would clearly diminish. The growth in cashless operations and digital payments will curtail the risks of cash-based operations and improve operational efficiency and cost savings. The service provision and risk management would no longer solely depend on physical outreach as many insights can be drawn from the digital data produced in the course of operations. MFIN (2017) reports that organizations which adopted 'cash-lite' models reported reduction in

turnaround time, reduction of risk of errors and fraud in disbursement and repayment, and reduction of reconciliation tasks owing to data shared by technology service providers. Also, there has been considerable change in the engagement strategy of institutions as tools for financial literacy improved significantly. Technology-driven change is taking place not only on digital field applications to on-board customers or improve lead management activities (PwC, 2016) but also through automation and increased reliance on analytics. The ongoing integration of credit bureau data, E-KYC, Aadhar-enabled payments, adoption of self-service options, e-payments, are some other elements of the ongoing transition in the sector. The rapid spread of enabling architecture such as Aadhar and E-KYC will bring huge gains in operating expenses but also might change the drivers of operating expense reduction. A labour-intensive industry, MFI operations also have high costs associated with workforce and their operations. In India, 60% of the total staff is field staff, and the increased use of technology channels such as ATMs, POS machines, mobile banking, etc., can bring about gains in efficiency.

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VI. CHALLENGES

While innovation and integration in digital technology has benefits, there are also challenges, some of which are already emerging. The gains from technological integration are far from homogeneous, with mainly the large companies making noticeable efficiency gains. For example, the number of active borrowers served by a single credit officer is more for bigger institutions when compared to their smaller counterparts (Sa-Dhan, 2017). This is because MFIs with large scales of operation were able to put in place systems and processes that significantly reduced the time that credit officers spent with the client (Sa-Dhan, 2017), while the small ones could not do the same. This situation can change if there is larger permeation of cost-effective technological innovations.

Another issue that is plaguing the sector is coping with reducing the 'human touch' element in microfinance operations that distinguished it from the mainstream banking sector, as operations gets increasingly digital. As the sector dealt almost exclusively with small and uncollateralized credit to clients from low-income groups for income-generation activities in the informal economy, it always had the human touch, was, by nature participatory and bottom-up. Though there were only three or four broad models of operation, the way in which each institution approached these models often varied in terms of governance structure, channel and method of delivery, accountability framework and product. The success of the organization depended on how well it understood the clientele and geography in which it is operated. It has been suggested that performance of microcredit organizations not only relies on the macroeconomic and formal institutional environment, but is also closely related to social

beliefs, particularly trust and norms of cooperation (Berggren and Burzynska, 2014). Networks and trust were important to microfinance operations at multiple levels of interaction and were crucial in defining the outcomes. Most importantly, this web of networks built over trust and peer pressure was critical to the efficiency of the firms' operation. Another crucial cog in this ecosystem were field agents and loans officers who built and maintained vital client interfaces that ensured institutional survival (Siwale and Ritchie, 2012). In their primary role as facilitators, field workers ensured extension of micro financial services in an area by helping overcome clients' reluctance to participate, helped loan officers reduce the probability of delinquency and ensured high-quality services (Siwale and Ritchie, 2012) (Fisher and Sriram 2002). The increased adoption of digital technologies threatens the very fundamentals of the industry. How the industry will cope with the changes remains to be seen.

The sector is also facing increased competition from technology-driven fintech companies and universal banks as there is an increasing overlap of markets. Fintech lenders such as Capital Float, Neo Growth Credit Limited, Indifi Technologies Pvt Ltd. are also providing micro credit to under-served and un-served markets (PwC, 2017). The increased collaboration between commercial banks and fintech startups also intensifies the competition. These new partnerships allow banks to overcome the earlier drawbacks of cost and informational asymmetry to better target previously left out clients. Though the indirect competition is not intense at the moment, digital innovations are fast blurring the boundaries within and outside the market.

VII. CONCLUSION

The microfinance sector is on the cusp of a transformation, worldwide. The integration of digital technologies is pushing the sector to a transformation which might affect its fundamental characteristics and organizational processes. While the integration of technology can promote development through innovation, efficiency and inclusion, the path ahead for the sector may not be smooth. How the innovations will pan out and impact the sector warrants more detailed enquiry. While the quantum of benefits is unclear, it can be said with certainty that technological advancement alone will not bolster development. What is equally important is the nature of competition and challenges. There is possibility of a digital divide (Word Bank, 2016) as bigger firms are in a better position to integrate technology faster and more efficiently. Inequality in access and barriers to productive use are also stumbling blocks in realizing efficiency gains put forth by technologies. Such problems are more pertinent in case of technologies whose gains are a consequence of networks effects that arise when a large number of people use it. The skills and logistics already in place are thus very crucial. It has to be remembered that the realization of developmental benefits is far from automatic and depends on the country-specific business climate, regulatory framework and skill level of labour force.

VIII. REFERENCES

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