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# Applying Technology: Issues in Microfinance Operations

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**Abstract:** This paper identifies and analyses the issues surrounding the current operation of the microfinance institutions. A review of past literature was conducted and it was found that the issues of data flow and security, access to credit, as well as cost were restricting the microfinance institutions from properly adopting technology into their operations. Hence, proper structuring of both core and additional system of technology had been proposed through the implementation of Management Information System, client-facing technology and also process automation technology. Hence, proper structuring of both the core and additional systems of technology has been proposed through the implementation of the Management Information System, client-facing technology, as well as process automation technology. Although the findings reveal that the loopholes caused by the various issues surrounding Islamic microfinance operations could be solved with the advancement of technology, many microfinance institutions are rejecting the implementation of technology due to the realisation of the high cost and lack of participation from clients, which, in turn, affects the demand and supply in the market.

**Key words:** Issues · Microfinance · Technology

## INTRODUCTION

Microfinance is defined as a small-scale financial service for both credit and deposits specifically designed for individuals who farm, fish or herd; operate small or microenterprises that produce, recycle, repair, or trade goods; work to gain wages or commissions; gain income from renting out small amounts of land, vehicles, draft animals, or machinery and tools in developing countries, both in the rural and urban areas [1]. It is a provision of financial services for the poor, in which microfinance products are tailored to meet the needs of the poor by using collateral substitution, client participation and taking the service to the poor [2]. It is also an attempt to improve access to small deposits and loans for the poor living in both the urban and rural settings, as they are often neglected and denied such services by the formal financial sector [3]. With the existence of microfinance products, poor people are able to protect, diversify and increase their source of income, eventually emerging from the trap of poverty and hunger [4]. This is where the allocation of a small amount of money that can be borrowed by the poor can be put to good use, such as taking up a new business opportunity, paying for school fees and health care, or even starting to save to purchase assets that are important for their living. The importance of microfinance in alleviating poverty is first to provide loans and open business opportunities, as other improvements in healthcare, nutritional advice and education would only be achieved with the increment of household earnings and control over financial resources [4].

The research by Kulik & Molinari [5] found that the major reason for the poor performance of microfinance worldwide is due to the lack of access to technology by the microfinance institutions; limited financial resources, which makes them dependent on government funding; high cost of servicing a larger number of clients; and the limited outreach of microfinance products. The issue of the lack of technology is supported by Mishra & Chowbwy [6]. They argued that the issues surrounding the failure of the emergence of microfinance in India was caused by insufficient availability and use of technology. It was argued that there was no mechanism for reporting

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that was able to adequately capture performance data. In addition, the information obtained concerning financial and operational performance of microfinance institutions (MFIs) was paper intensive and not timely. Furthermore, the data it contained was incomplete and unable to be independently verified. The paper-based operations currently applied by the microfinance institutions have been found to be ineffective, as they consume a significant amount of the time of the loan officers. With this extreme consumption of time, most microfinance institutions are finding it difficult to implement sufficient communication and interaction among the head office, branch offices and loan officers in the field. Hence, many bank officials agree that the usage of technology does have the capability to reduce the transaction cost, total cost and bad debts.

At present, the disbursement and payment of microfinance funding are accelerated through cash and cheque-based economies [7]. However, the paper-based system is deemed to be slow and prone to human error, as well as requiring a major annual reconciliation process that involves clients submitting their passbooks to calculate and update their interest charges. This issue of credit access has been argued to be more significant than the cost of providing credit to the poor, as the former would increase the Non-Performing Assets for microfinance institutions [1]. This is supported by Kanayi [8], who argued that the initial investment cost and its subsequent maintenance fee by the technology provider were the elements that had caused microfinance institutions to shy away from incorporating technology into their operations. With the lack of funding and the geographic gap between microfinance customers and the existing network, microfinance institutions are often left out as the entrance fees and other requirements for participation are considered too high for these organizations [9]. Despite these limitations, significant progress has been made in the development of cashless or electronic payment systems. For example, the Postbank project in Kenya has been successful in making a transition from the usage of passbooks to card-based and technology driven transactions [10].

Hence, the objective of this study is to identify the issues surrounding the current operation in microfinance institutions from previous research, particularly relating to their disbursement and payment, data gathering and dissemination systems. The study will then explore previous literature that proposed the usage of technology for improving the operations of microfinance institutions enabling them to perform better and achieve their aim in reaching out to the poor. This paper is further structured as follows: Section 2 discusses the various issues being raised regarding the effectiveness of microfinance institutions in the current environment; Sections 3, 4 and 5 highlight several microfinance institutions that are benefitting from the advancement of technology and propose the types of technology and system that could be implemented as a solution to the issues being raised. Further, Section 6 describes the benefits of technology to microfinance institutions. Section 7 presents the issues that have been restricting microfinance institutions from making full use of technology in their daily operations. Finally, the concluding remarks are drawn in Section 8.

**Issues Surrounding Microfinance Operations:** Several issues have emerged, which have hindered the successful implementation of microfinance to assist the poor. This is because to ensure that the microfinance industry is in line with the current needs and demands, the microfinance institutions must achieve financial self-sustainability and reduce their dependence on donor funding [11]. However, currently, there are several issues that are restricting microfinance institutions from achieving their objective of being self-sustainable in their effort to help the poor without depending on external funds, especially from the government. Being self-sustaining is important to microfinance institutions as it enables microfinance providers to focus on expanding their services to better-off clients to gain economies of scale that would reduce the total expense per loan [12]. With the reduction of costs, the burden of recipients in making repayments of their loans would also decrease, thus increasing the probability of repayment [13]. Furthermore, by having their costs covered, microfinance institutions would be able to expand their scope of activities and, consequently, enhance their outreach to more potential recipients in the long term. This argument is supported in a study by Louis, Seret & Baesens [14], who found that there was a significant positive relationship between outreach and the financial performance of microfinance institutions. Hence, several researchers have urged for a move towards cashless transactions in an effort to support microfinance institutions to reduce their transaction costs as well as their demand for labour [7].

According to Asiama & Osei [15], credit delivery and management is causing a problem in the current disbursement and payment process in microfinance institutions, which is an important issue to tackle, as conventional microfinance institutions generate most of their income from the interest earned on loans, thus

making it one of the success factors of microfinance institutions [16]. This is more pertinent to Islamic microfinance, as its products try to avoid being interest-bearing. The current methodology of credit delivery, which focuses on individual loans in conventional microfinance and group-based lending in Islamic microfinance, has been argued to be insufficiently diversified or efficient, making microfinance institutions unable to fully meet the demand of the market and different categories of end-users [17]. These methodologies, in which loans are delivered by hand to individuals or groups that are evaluated based on their ability to assure repayment, are prone to fraud and robbery. This possibility could reduce the confidence in the clients being able to make investments after multiple financing, as the voluntary savings collected would not be mobilised in an effective way. This voluntary saving would act as a safety net if an individual or member of a group is unable to make repayments for a particular week, rather than being spent for purposes of investment that would actually benefit the clients. The microfinance institutions would then be forever dependent on subsidies and not be able to meet demand, as they have capital constraints.

This is supported by Mutua *et al*. [18] who argued that ineffectiveness could have a huge impact, particularly on the operations of Islamic microfinance institutions, where its credit delivery and management policy are based on brotherhood or group support, rather than the group or peer pressure approach that is practiced by conventional microfinance. This is because the institutions would face difficulty in balancing their traditional welfare objectives with the goal of maintaining sustainable credit programmes. In addition, the slow and inefficient way of money transfer through the collection of cash in groups is also a problem [19]. The person collecting large amounts of cash is highly vulnerable to the risk of being robbed and even of committing fraud themselves. Hence, Robinson [20] suggested a shift from having subsidised credit delivery programmes to adopting commercial financial intermediation through the application of technology in reducing transaction costs and informational asymmetry. This is where mobile and Internet banking come into place [21]. With the advancement of information technology, a person is able to make instant money transfers and pay bills, as well as use credit or debit cards for purchases made from anywhere across the globe [22]. The microfinance would then be the intermediary to facilitate the transfer of funds, hence creating resources for investment.

Asiama & Osei [15] also argued that the approaches in data gathering and dissemination at a national level are not standardised, which makes it difficult to centrally monitor progress of the sub-sector of microfinance institutions. It was found that there is a lack of a well-defined reporting system from both the government and development partners relating to their interventions. Hence, the presence of adequate data was not available for any purpose of decision-making and planning. At the institutional level, data and information gathering were found to be weak within and between institutions [22] and, consequently, the lack of common benchmarks, methods for measurement and also information sharing had inhibited the performance of the sub-sectors. The usage of a paper-based data collection method being used by many microfinance institutions also lowers the speed and ability to collect and deliver client information [23]. In addition, staff would face difficulty in dealing with large bulk data. Manual data collection and gathering would limit the effectiveness of microfinance institutions in keeping track of the current records of disbursement and repayment being made to and from the various recipients that the institutions have.

**Solving Issues with Technology:** A study by CGAP [24] has found that technology were being used for three different purposes of microfinance worldwide, which are M-commerce, E-money and as a branchless banking channel. M-commerce is the application of current and emerging information and communication technology that includes landline telephone, fax, mobile phone, electronic mail and other internet-based services to conduct businesses [25]; while E-money, or popularly known as e-cash, is a digital equivalent to paper currency and coins that enables secure and anonymous purchases to be made on various items online [26]. Further, a branchless banking channel is a channel that delivers financial services outside the context of conventional bank branches by means of information communication technologies [27].

In Japan and the Nordic countries, mobile phones are being used in their M-commerce application, where the clients' phones are linked to credit cards or bank accounts, which are used to make small payments, such as payment for transportation and vending machines. To add to that, customers of Safaricom in Kenya are able to use their virtual money to repay loans to, or make deposits in microfinance institutions through their mobile wallet service of M-PESA [28]. Almost 15 million out of 19 million Safaricom subscribers use M-PESA in many

transactions, being from paying utility bills to paying school fees by having a text-based menu that is accessible to most mobile phones [29]. Further, customers of WIZZIT or MTN Banking in South Africa are using their phone as a banking channel to access their bank account. By this, customers would load cash into their bank accounts at branches or automatic teller machines (ATMs), or through a direct deposit of salary. After that, they would use their mobile phone to purchase airtime and make payments, transfers and balance inquiries. The service providers views this implementation of technology as being less costly than bank branches and many poor people would be more comfortable using mobile phones to do their banking activities.

For the application of E-money, Globe Telecom in the Philippines had enabled its clients to load cash into their mobile phones at partner merchants or Globe outlets [28]. This loaded cash has real value that can be stored and withdrawn as hard cash, transferred to a friend across town or across the world, or used to pay for products at restaurants and stores. Similarly in the Philippines, the leading microfinance provider, CARD MRI, had introduced electronic banking to its rural and poor clients through the launch of Matapat ATM Savings Account in 2012, which aimed to provide low cost financial services to low-income individuals in these rural areas [30].

On the other hand, Pakistan had recently been recognized to be one of the fastest growing branchless banking markets in the world, with an increasing number of partnerships between microfinance institutions and branchless banking provider [31]. This is evident with the collaboration between Telenor and Tameer Microfinance Bank through a product called Easy Paisa; also the collaboration of Orascom Telecom, through its Mobilink product and Waseela Microfinance Bank to start a licensed microfinance operation through a branchless banking platform called Mobicash. Both Easy Paisa and Mobicash allow its clients to gain access for services of utility bills payment, domestic remittances and M-wallet [32, 33]. Another product by Pakistan's National Database and Registration Authority (NADRA), which is e-Sahulat, had been designed to provide online payment and collection facility to benefit the general public and participating organisations [34].

**Types of Technology Used:** In enhancing the operation of all microfinance institutions, the European Microfinance Network [35] suggested three types of technology that could be put in place – technology for running the business, client-facing technology and process automation technology. This advancement is applicable for both Islamic and conventional-oriented microfinance institutions.

In running the business, a thorough Management Information System should be in place to ensure that automatic data flow is generated from portfolio management applications to the financial accounting software without any fear of data entry duplication [35]. The function of the Management Information System is also important for providing easy access, detailed and up-to-date information on clients' accounts, balance of disbursements and payments [36]. This is important so that staff can keep track of loans that need follow-up and monitor the daily progress of the institution. Other benefits of having a good Management Information System include more interactive, accessible and transparent services being provided; easier cash-flow management and forecasting; timely information regarding portfolio risk; real-time performance update; more efficient accounting procedures; and simplified external reporting [37].

Client-facing technology is important to enable microfinance institutions to automatically collect client application data [35] In addition, this technology could be applied for the disbursal of loans and collection of loan payments through cashless or electronic payment channels, such as mobile banking, Internet-based banking, Automated Teller Machines (ATMs), debit and credit cards, also Point of Sale (POS) devices at retailers. Accordingly, the activities of disbursements, repayments, deposits, withdrawals and money transfers could be completed faster outside of the branch offices of microfinance institutions, with better control and minimum room for error [38].

Finally, process automation or workflow technologies make use of client relationship management systems and mobile solutions in automating several aspects of the loan application process, which includes data gathering, analysis and credit assessment to easily monitor, change and improve process flows [35]. Hence, both Management Information Systems and client-facing technology can be integrated and connected to reduce the need for manual processes and minimise the risk of error by the automation of the workflow [39].

**System Needed to Accomplish Goal:** As microfinance institutions are not standardised in size and complexity, the suitability of technology integration should also be considered accordingly to suit each organisation's needs [35]. These differences include volume of transactions,

methodology, regulatory environment, infrastructure and overall readiness for change, as well as the resources available. A complete information system, which includes both manual and computerised systems, are used by institutions in generating information that would serve as guidance for the decisions and actions made by the management. This system is categorised into the core system and the additional system.

The core system is the foundation system for financial institutions globally in running business, serving clients and providing differentiated products and services to gain competitive advantage [40]. Hence, this system would enable Islamic microfinance institutions to perform their daily core operations, such as loan portfolio management, accounting functions, also managerial and financial reporting functions [35]. Hence, computerised accounting functions would record accounting details and provide tools for financial management, while the deposit tracking function would manage all the transactions that are related to savings. Meanwhile, being the core business of microfinance institutions, the portfolio function would manage all the transactions that relate to the loan portfolio of all the clients being served by the institutions. With the implementation of an effective core system, a framework is provided with the increment of transparency and the improvement of business quality management [39].

Using additional systems, such as customer relationship management system and mobile solution system, staffs are able to monitor, change and improve their process flows through a graphical interface [41]. The client information system would provide detailed information on customers that could be used to understand the client base, while the reporting system would generate reports within each subsystem, where it would be necessary to extract data across subsystems and recombine these data for purposes of more complex reporting requirements. With the application of these additional systems, real-time transactions could be done effectively, in which all transactions could be accounted for and reconciled within the microfinance institutions.

**Benefits of Technology Toward Microfinance Operations:** With the efficient use of technology, it has been said that costs could be reduced, efficiency could be improved and the outreach could be increased [35] In Nigeria, O'Flynn [7] found that the means of electronic payment had been increasingly helpful in tackling issues of inflation that make cash transactions a burden to the microfinance institutions as well as the recipients. The issue of inflation arises, as with more recipients being brought in, there will be more cash to be handled and, hence, an increment on the cost of cash administration and management [42]. The migration to cashless payment increases personal security thereby reducing the need to carry large quantities of cash and promotes efficient, secure and convenient transactions. Furthermore, the inducement of cashless transactions provides a route to access and engage the nation's diverse unbanked population in the national finance system. By reducing the physical cash flow in the economy, the financial access for people with limited or no access to a bank will be improved, hence complying with the key objective of governments to reduce the flow of physical cash in the economy and upgrade its financial access for individuals with no or limited access to banks. Hence, many banks have introduced SMS alerts, mini statements and fund transfers, bill payments and ATM recharge.

In India, the study of Mishra & Chowbwy [6] found that the adoption of technology in microfinance encourages an increment on their fund returns, productivity of employees and also the productivity of each branch. Technology was also found to have helped microfinance institution officers in better satisfying their clients through their improved performance in providing quick transactions, loan amount assessments, processing of loans, transfer of funds and other financial services. It was also found that there was an improvement in the disbursement, average debt per borrower and recovery percentage as the monitoring of borrowers became faster than before.

This is supported by Nyokabi [43], who found that technology is indeed efficient in alleviating some of the issues faced by microfinance institutions through the provision of secure, low cost and reliable means of transactional data capture and the successful transfer to these institutions. The implementation of technology was found to improve the institution's service delivery as the local community is being served with services that are cheaper, more efficient and faster. As an example, the application of Mobile Money Transfer into the operation of microfinance institutions enabled citizens to gather relevant information and carry out transactions on a 24-hour basis. In addition, this application is particularly good for simple transactions, such as the disbursement and repayment of funds.

Furthermore, additional systems would allow microfinance institutions to provide clients with better service at their own convenience [35]. Technologies would enable microfinance institutions to increase their targeted outreach with a fraction of traditional channel costs, in providing convenience to clients. Systems, such as a customer relationship management system and mobile solution system, would allow institutions to automate certain aspects of the loan application process, such as, data gathering, analysis, storage, underwriting, collections and security, which, ultimately would lead to cost reduction.

**Issues Restricting the Implementation of Technology:** Many microfinance institutions are still facing difficulties in utilising technology. Hence, technology is often said to be one of the biggest obstacles faced by modern microfinance providers worldwide. A survey undertaken by the European Microfinance Network [44] showed that 81.3 per cent of respondents agreed that the lack of funding was the main constraint that microfinance institutions face in making better use of technology in supporting the organisation's operations. This was followed by the ability to define requirements adequately (37.5 per cent), fear of making poor choices (12.5 per cent) and not being sure of the benefits of technology to the institution (6.3 per cent). Other issues being highlighted include costs, security, qualified personnel, ability to connect between systems and client awareness. This issue is supported by CGAP Microfinance Getaway [44], who argued that the successful use of technology in microfinance stands as an exception rather than a ruling, despite the falling cost of hardware and connectivity. This study highlighted the capacity of financial service providers, infrastructure, policy environment, consumer and staff literacy, as well as sound information system as factors that restricted the advancement of technology to be successfully implemented in the microfinance industry.

Another study, by Ahmad [45], identified various issues that surround the slow progress of technology in microfinance institutions. These include the insufficient organizational and human capacity; unavailability of suitable applications for microfinance; diversity in business processes and frequent changes in procedures; risk of technological failure; diversity of geography and language; unavailability of vendors and their capacity to implement and support technology solutions; high cost of technology for microfinance institutions; lack of commitment of management and key decision-makers within microfinance institutions; and also the lack of awareness about the importance of technology. It was argued in this study that the unique and evolving structure of the microfinance industry were making the microfinance institution struggle in implementing technology, as it lacks standardisation in procedures, methodologies, customer characteristics, as well as in its type of transactions and reporting.

**Concluding Remarks:** Looking at the work of past researchers, it is evident that the microfinance industry has good prospects, especially when it comes to applying the advancement of technology to the current operation system. Frankiewicz [46] argued that the emergence of information technology can be a strategic tool for microfinance, if it is properly and consistently implemented. The application of information technology would allow for more efficient and effective collection, processing and use of recipients' data and enable microfinance institutions to start offering new products and better customer service, facilitate expanded outreach, as well as the integration of microfinance institutions with the other elements of the financial sector.

From the review, many researchers were found to have emphasized that microfinance institutions are having problems in managing their credit delivery to clients and also in gathering data of clients. Both these problems hinder microfinance institutions from providing a proper analysis of the loan portfolio and, consequently, affect the management's ability to have a timely and proper decision-making process. With the advancement of technology, these issues can be solved with the introduction of systems to adequately synchronize the data management of the microfinance institutions so that they could effectively keep track of clients' disbursement and repayment of credit. Hence, the objective of microfinance institutions to help improve the lives of the poor in developing countries would be greatly achieved.

Although many academicians are confident that the introduction of technology would improve the operations of management, many regulators and microfinance regulators are concerned that the cost of supplying these technologies would not be sufficient to help them encounter their outstanding issue of capital deficiency. Hence, to ensure the success of this new introduction of advancement, the issues surrounding its application must be addressed together with new benefits that can be reaped extensively for the benefits of Islamic microfinance institutions and their clients alike.

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