
Assessing the Effectiveness of Business Automation in Micro-Finance Institutions: Customers Perspective

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Abstract: The Automated Microfinance Institution (MFI) has been able to grow, to scale profitability and to become viable for the long in business service; this motivated some MFIs for adopting Business Automation (BA). However, once the automation process is completed, it is necessary to assess how effective is the business automation in Microfinance Institution, so that it may be recommended to other Microfinance Institutions. This research paper aimed to assess the effectiveness of Business automation in Microfinance Institutions with reflection of Customers Standpoint in Rwanda. A descriptive research design with a qualitative approach and a stratified sampling were adopted; Questionnaires, interviews and documentations techniques were used as data collection tools, whereas SPSS v25 was used for the data analysis. The research findings yields that the business automation is effective and operational at the average of 78.44% and complies with ICT policies and practices for IT service management (ITSM). Among other recommendations, government of Rwanda should continue to rationalize BA for all MFIs to embrace and continue to put in place infrastructure such as Fiber optics accessible to MFIs in the Country.

Keywords: Business Automation, Micro Finance Sustainability, Intelligent Business System, ICT

1. Definition of Key Terms

Business Automation (BA)

Business automation is defined as the way to eliminate manual, time consuming and costly tasks within an organization and replace them with automated processes that work faster while reducing redundancy in tasks and overall operating costs [11].

Microfinance

Microfinance is a set of financial practices designed to serve the unbanked poor and is seen by some as a magic wand against poverty that is supposed to solve it all [4].

Operational effectiveness

Any kind of practice which allows a business or other organization to maximize the use of their inputs by developing products at a faster pace than competitors or reducing defects, for example. Operational effectiveness is

often divided into four components: Leading and controlling functional performance, measuring and improving the process, leveraging and automating process and continuously improving performance [2].

Availability

Characteristic of a system that is committable, operable, or usable upon demand to perform its designated or required function. In the quality control the system availability is the ability of system to perform its designated function, whenever required [2].

Capability - Measure of the ability of a system to achieve its objectives, especially in relation to its overall mission [2].

Operational reliability

The ability of an apparatus, machine, or system to consistently perform its intended or required function or mission, on demand and without degradation or failure [2].

2. Statement of the Problem

The Automated Institution has been able to grow, to scale profitability and to become viable for the long term. Efficiency increases with growing competition, benefiting both the financial institutions and their clients [9]. It is argued that Information and Communication Technologies (ICTs) has been found to promote the dual objective of micro finance -sustainability and outreach to the poor people [10]. In microfinance handbooks it is noted that management information systems are essential in order for a micro finance institution to operate efficiently [5].

The Rwandan central bank indicates that the micro-finance industry has 470 institutions, including 18 limited companies, 416 Umurenge SACCOs and 36 non-Umurenge SACCOs. Up to the end of 2017, more than 96% of the total MFIs in Rwanda were using manual system (paper based) in their business [8]

RIM ltd, CLECAM EJOHEZA Ltd and Duterimbere IMF ltd have adopted the business automation after number of years of manual system. The automation process completed, assessing the level of business automation's effectiveness in some of MFI in Rwanda, so that it can be recommended to all microfinance institutions or suggest the way of its improvement.

3. Business Automation Perception

Technology is consistently cited as one of the greatest challenges faced by MFIs around the world; the efficient use of technology can help reduce costs, improve efficiency, and increase outreach, but many MFIs continue to make poor technology investments or simply do not invest in technology thus limiting their ability to grow and respond to demand [8].

The successful use of technology in MFIs stands as an exception rather than a ruling, despite the falling cost of hardware and connectivity [3].

Advances in ICT present unique opportunities for financial services sector development in Africa [6]. In a survey conducted in 14 African countries, researchers noted that ICTs play a role in reducing transaction costs (thereby increasing efficiency) and increasing market access [7].

The one of the biggest challenges of microfinance institutions is to find the most cost-effective way to serve a large market of low-income clients [1]. Automation is one way to speed services and increase output, which can easily lead to greater outreach. But since technology is expensive, and MFIs want to reduce costs, these present a big challenge [1].

In Rwanda, it is reported that the Government of Rwanda invests more in ICT as key factor that can help to achieve objectives of the long-term economic development plan, vision 2020. From the beginning of this plan, the ICT has integrated through the National Information Communication Infrastructure (NICI) plan [6].

This lead to the initiative taken by different MFIs to adopt the full use of Information Technology (IT) tools in their business.

The cases for this research are Le Réseau interdiocésain de microfinance – RIM Ltd, Duterimbere IMF ltd and CLECAM EJOHEZA LTD which are three of eighteen microfinance institutions in category of limited companies where all of MFIs in this category use automated system.

The stated MFIs have adopted the business automation after number of years of manual system and now the automation process was completed, however there is a need to assess how effective is the business automation of MFIs in Rwanda so that the findings can be used as tool to recommend all microfinance institutions or suggest the way of its improvement on the basis of predefined compliance.

The business process automation is a way by which companies take out the complex, most redundant steps from their processes and streamline them for simplicity. In plain terms, BA is a hands-free, innovative approach to systematize critical business processes [4]. Automating the management and workflow of a business process improves control and enforcement and reduces exposure to costly delays, errors and omissions. In other word, BA enables the organization to achieve its prime objective which is creating value for the Availability, Capability and Reliability of automated system in MFIs and business benefits arising from effective ICT generally relate to the reliable and consistent matching of ICT services to user needs. These benefits are achieved through increasing service availability and quality to users, better match of capacity of requirements, more efficient handling of problems and reduce risk of failure, minimizing the effect of such failure [7]

Availability is a key requirement from the user's perspective. It is an evident that in order for a system to be effectively used, it must be available for the intended users. Availability is a function of a distance the user needs to travel in order to access services, is a function of time taken (transport time + queuing time) and a function of the cost incurred [1]

The paper-based operations applied by the microfinance institutions have been found to be ineffective, as they consume a significant amount of the time. He added that many bank officials agree that the usage of technology does have the capability to reduce the transaction cost, total cost and bad debts (Nabilah et Al, 2013).

4. Methodology

Research Design

The study was conducted during April period, 2018 in Rwanda, on RIM ltd, CLECAM ltd and Duterimbere IMF operating in Nyarugenge, Gasabo, Kamonyi, Muhanga and Ruhango districts, The study adopted a descriptive research design with a qualitative approach, the data were collected using questionnaire, interviews and documentations techniques and the analysis of data was done via SPSS v25.

The researcher used the purposive sampling to select clients of MFIs participating in the research. The main characteristic of purposive sampling is that it is a type of non-probability sampling in which people with a particular characteristic are purposively selected for the inclusion in the

sample.

The sample size for this study is determined using the Slovin's formula; $n = N / (1 + Ne^2)$ whereby n : is the sample size, N : is the total population, e : is the margin of error [9] for the case of this research $N=200,000$ for clients, taking the confidence level of 90% that is with a permissible error of 10%, $e=0.1$. Therefore, $n = 200,000 / (1 + 200,000 * (0.1)^2)$ this gives $200,000 / (1 + 200,000 * 0.01) = 200,000 / (1 + 2,000) = 200,000 / 2,001 = 99.9$ roughly equals to 100 respondents *purposively selected from RIM ltd, CLECAM ltd and Duterimbere IMF.*

Validity, reliability of research instruments

The validity of the collected information through the questionnaire is guaranteed by the appropriate respondent and the comfortable place and time. While these instruments helped the researcher to obtain in depth and valid answers but also the reliability has been verified by pretesting data collection instruments in order to make sure that the instruments were relevant and understandable.

Data analysis

Data from questionnaires have been compiled, sorted, edited, classified and coded into a coding sheet and analysed using a computerized data analysis package known as Statistical Package for Social Science (SPSS) version IBM SPSS Statistics V25.0.

5. Findings

Findings on the Availability, Capability and Reliability The system availability

There may be a number of technical problems within the system including; electrical power problem, software problem, hardware problem and connection problem and those issues cause the unavailability of system to the clients.

According to the information given by IT managers from consulted MFIs, the main issue is the slowness of the system and the network problems is the major cause of that slowness. The respondents said YES for the existence of such problem and said NO for rejection but for better analysis those YES and NO have presented as 1 and 0 respectively.

Table 1. Technical problems faced by automated MFIs.

Technical problems	MFIs			Percentage
	RIM	DUTERIMBERE	CLECAM	
Slowness	1.0	1.0	1.0	100.0
Unplanned shutdown	0.0	0.0	0.0	0.0
Loss of data	0.0	0.0	0.0	0.0

Source: Primary Data, 2018

Table 2. The causes of technical problems.

Cause of slowness	MFIs			Percentage
	RIM	DUTERIMBERE	CLECAM	
Internet Connectivity	1.0	1.0	1.0	100.0
Many transactions at time	1.0	0.0	0.0	0.0
Low capacity of hardware equipment	0.0	0.0	0.0	0.0
Unknown cause	1.0	1.0	1.0	100.0

Source: Primary Data, 2018

There are also internal activities such as system restarting and insufficient of money which require to stop serving clients and the service provider declare the system problems for better understanding but really which was not a technical problem.

The below table shows the responses from requested clients, those who said YES, they faced the case where they had been requested to patient for a moment due to a technical problems and those who said NO, they didn't ever face that

problem but for better analysis those YES and NO have presented as 1 and 0 respectively. If the answer was YES, the respondent had to specify the time taken to solve that problem and this can help to analyse those cases for availability investigation. By analysis, it not possible to solve a system problem in the less than 20 minutes that is why all cases where the problems were solved in <20M was not considered as real system problems.

Table 3. Existence of technical problems and time it takes to get solved.

Answer	Frequency	Percent
YES	56	56
NO	44	44
Total	100	100

		The time taken to solve the problem			Total
		<20 MIN	30 MIN -1 HOUR	> 1HOUR	
The existence of technical problems of the system of MFI	YES	35	20	1	56

System Capability

The system to be effective, it should be capable of doing all required tasks within institution. The system owner is the one who can prove its capability that is why the researcher have investigated this property through the management of

MFIs. By using the minimum standards capabilities of a modern banking system, the respondents said YES for the available services and said NO for unavailable services. For better analysis those YES and NO have presented as 1 and 0 respectively.

Table 4. *Capability (Level) of Business Automation at MFIs.*

Capabilities of BA	MFIs			Percentage
	RIM	DUTERIMBERE	CLECAM	
Teller services	1.0	1.0	1.0	100.0
Loan management	1.0	1.0	1.0	100.0
Accounting system	1.0	1.0	1.0	100.0
Money transfer services	1.0	0.0	0.0	33.33
Mobile banking services	0.0	1.0	0.0	33.33
ATM machine	0.0	0.0	0.0	0.0
Average	0.7	0.7	0.5	61.11

Source: Primary Data, 2018

The above table represents the responses from consulted MFIs, The results shows that all three MFIs have the computerized teller services, loan management and accounting system. The money transfer service is available at RIM ltd, mobile banking is only available at DUTERIMBERE and ATM machine are not available at all three consulted MFIs.

The interpretation is that CLECAM has 50% of modern banking capabilities and DUTERIMBERE and RIM have 70% of those BA capabilities. The researcher tried to analyse the capability of MFIs with the client’s generation; therefore, below tables are the needed features and the age of clients at each consulted MFI.

Table 5. *Clustering Clients needs and service packages per Age.*

		Age				Total
		Below 25	25-35	36-45	Above 45	
RIM	ATM	0	3	5	0	8
	Mobile banking	0	1	1	1	3
	Mobile banking and ATM	3	9	15	1	28
	None	1	1	3	6	11
	Total	4	14	24	8	50
DUTERIMBERE	ATM	0	0	2	0	2
	Money transfer	1	4	2	0	7
	Money transfer and ATM	0	2	7	0	9
	None	0	0	5	2	7
	Total	1	6	16	2	25
CLECAM	ATM	0	0	3	0	3
	Mobile money	0	1	1	0	2
	Money transfer	1	5	1	0	7
	Money transfer and ATM	0	1	4	0	5
	Money transfer, Mobile Money and ATM	0	0	4	0	4
	None	0	1	1	2	4
Total	1	8	14	2	25	

System reliability

The system reliability is very critical issue for banking industry which should be tested even before the implementation. The researcher asked respondents if they did or not faced the error (mismatching) on their account or in

their loan payment, for better analysis, the respondent who said YES which mean that he/she had faced the error, he/she was requested to specify the period of in which that error had occurred. The below tables are the responses from consulted MFIs one by one.

Table 6. *Thee existence of error end the period.*

		The existence of errors on client's account			The period of errors		
		Frequency	Percent	Valid Percent	Frequency	Percent	Valid Percent
RIM	YES	6	12	12	Before BA	6	100
	NO	44	88	88	After BA	0	0
	Total	50	100	100		6	100
DUTERIMBERE	YES	5	20	20	Before BA	5	100
	NO	20	80	80	After BA	0	0
	Total	25	100	100		5	100
CLECAM	YES	7	28	28	Before BA	7	100
	NO	18	72	72	After BA	0	0
	Total	25	100	100		7	100

In summary, the study revealed that the reliability of BA at consulted MFIs is excellent with average of 100% due to zero errors in the system, the automated system availability at

MFIs is better but not enough with average of 78.66% due to the number of technical problems existing in the system. The study revealed the serious issue on the capability of BA at

MFIs which is medium with 56.66% due to the absence of some needed services like; money transfer, mobile banking and ATM machine.

Findings on ACR of automated system in MFIs

About the availability, it was founded that the average of 78.66% of respondents confirm the availability of automated system at consulted MFIs because some of them didn't ever faced the system problems and others they have been told that there was a technical problem but really it was not the system problems due to the time taken to solve the issue.

About the capability, based on the responses from consulted MFIs, it is founded that all three MFIs have the computerized teller services, loan management and accounting system. The money transfer service is only available in 1 of 3, mobile banking is also available in 1 of three and ATM machine are not available at all three consulted MFIs. It is again founded that clients suggest their MFIs to introduce some innovative technologies such as ATM, Money transfer service and Mobile banking where they are not available. Those needs have a relationship with the age of respondents where it was founded that almost clients with above 45 are satisfied at all. The interpretation is that BA should always upgrade to accommodate the needs of each generation.

About reliability, 100% of respondents confirmed that there was no error in their accounts after Business Automation (BA). While existing research noted that the management, staff, and customers may doubt the reliability of some technologies, and the long-term effect of automation on the overall culture of the MFI is another unknown [1], the findings show that the reliability of BA at consulted MFIs is 100% due to the tests done before implementation.

6. Conclusion and Summary

The research revealed that the business automation is effectively operational at all three MFIs on the average of 78.44% and complies with the number of ICT policies. However, it was also instituted in the interview that the lack of fund and the high cost of ICT infrastructures and software Systems are major factors that limit the adoption of Business Automation.

The study recommends that automated Microfinance Institutions should keep forward in the process of Automation because there are some missing features like;

money transfer services, Automated Teller Machines to be deployed, e-banking and mobile banking. It also recommended to the non-automated Microfinance Institutions that they should not only consider the implementation cost of business automation but also the associated benefits. The government of Rwanda should continue to mobilise and support all Microfinance Institutions for automation activities and continue to put in place many supporting infrastructure such as Internet Connectivity accessibility with Fiber optic.

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