Determinants of Microfinance Sustainability: An Empirical Analysis of Microfinance Institutions in Togo

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Abstract: *Microfinance has been globally accepted as a tool for poverty reduction by giving poor people access to financial services. However, Microfinance Institutions who are in charge of providing these services, in order to play their role and considerably help in reducing poverty, will have to exist and be able to serve the poor now and on a long term by assuring their longevity thus they must be sustainable. This paper aimed at identifying the factors that have an impact on the sustainability of microfinance institutions in Togo. It used a quantitative approach using panel data from 11 major institutions from 2006 to 2015. The study found that, outreach factors such as the number of active borrowers and the average loan size and also risk indicators such as the risk coverage and the write-off ratio affect the sustainability of microfinance institutions in Togo while other risk indicators such as the portfolio at risk>30 days and the loan loss rate were found insignificant.*

Keywords: Microfinance, sustainability, operational self-sufficiency, Togo

1. Introduction

Poverty alleviation through microfinance has gained importance in the past few years. Targeting the poor, Microfinance Institutions have been operating with that spirit of helping them out of their exclusion from the formal banking system. Microfinance can be simply defined as offering poor people access to basic financial services [8]. Through time, Microfinance has grown and came up with different approaches and offers which went from providing poor with credits to a wider and diversified range of financial services.Microfinance is referred to as all types of financial intermediation services; savings, credit funds transfer, insurance, pension remittances, provided to low-income households and enterprises in both urban and rural areas, including employees in the public and private sectors and the self-employed [26].

In fact, helping the poor is something that Microfinance Institutions must do in the long term and in order to do so, that they have to exist and be strong enough to continue serving them. The fate of the poor is then somehow linked to that of their helpers (The MFIs) and then comes the concept of sustainable microfinance Institutions. For microfinance institutions, sustainability is meeting goals now and in the long term [31]. This means that sustainability of a microfinance institution itself is a measure of how effectively it operates and serves the poor at the same time.

The road to sustainability is quite a tough and challenging one for every Microfinance institution and not all reach it. Sustainability has been at the center of many researches in the microfinance industry and most of them were mainly aimed at understanding and giving insights on its importance and on how to achieve it. There should be more focus on the sustainability of microfinance institutions since it is the only way for them to have a higher impact on their target population on the long run even on if it is on their own thus independently of subsidies [27] , [30].

In the same order of idea, the purpose of this paper is to identify factors and their impact on the sustainability of selected microfinance institutions from the Togolese microfinance sector. The general objective is to find out if risk and outreach affect the sustainability of selected MFIs in Togo and the specific objective is to study if the number of active borrowers, average loan size, portfolio at risk>30days, risk coverage, loan loss rate and write-off ratio affect their sustainability as measured by through their operational self-sufficiency. Similar researches have been conducted in different countries all around the world ([11], [37], [6], [7]); and based on its importance for MFIs we assume it will also have a practical significance in helping Togolese institutions achieve greater sustainability.

2. Conceptual Framework

A conceptual framework is an illustration of the relationship between variables (independent and dependent). In this case and as mentioned above, the paper aims at finding out if the independent variables (Risk and outreach), affect the dependent variable (sustainability) of microfinance institutions in Togo.
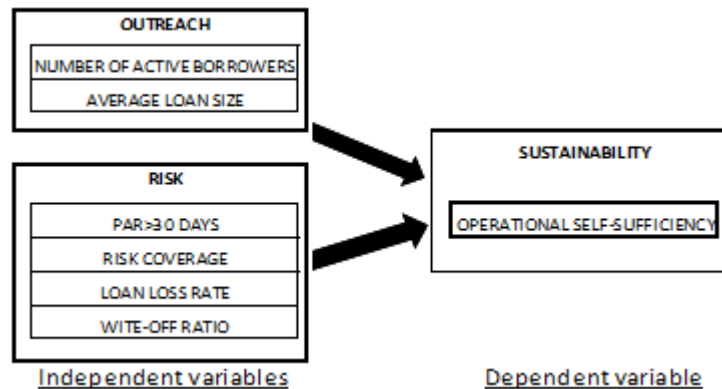
Figure 1: Conceptual Framework

3. Literature Review

3.1. Sustainability

Sustainability in simple terms refers to the long-term continuation of the Microfinance program after the project activities have been discontinued. [16],define it as the ability to continue operating as a development financial institution for the rural poor. [19], defines financial sustainability as ensuring the longevity of the organization. Sustainability in microfinance actually goes beyond the financial perspective and could be also appreciated under different aspects like the institutional, market, legal policy environment, and impact aspects.[29], found "narrow" the definition of sustainability taking into account the only financial aspect of the institution and integrates amongst other criteria obtaining funds at market rate and mobilization of local resources. According to [25] sustainability in microfinance can be considered at several levels of institutional, group, and individual and can relate to organizational, managerial, and financial aspects.This paper will focus on investigating the financial sustainability which can also be regarded as a parameter reflecting the institutional sustainability of microfinance institutions.

In fact there are two measurable levels of financial sustainability namely operational self-sustainability (OSS) and financial self-sustainability (FSS) [12]. FSS is achieved when the institution is profitable enough to maintain and expand its services without continued injections of subsidies and OSS is achieved when the institution's operating income is sufficient enough to cover its operating costs, including salaries and wages, supplies, loan losses, and other administrative costs.

Financial self-sustainability is of a big importance for any microfinance institutions but it obviously comes with many and high level standards which can be hardly reached by all microfinance institutions thus only few MFIs become financially self-sustainable. Also FSS promotes the "independence" of the MFIS but cannot assure their "longevity".

Many indicators have been used by researchersto appreciate the sustainability of Microfinance institution but the most commonly used ones are Adjusted return on equity, Adjusted return on assets, Operational self-sufficiency & Financial self-sufficiency[28].

3.2. Risk

In the effort to achieve self-sufficiency, many MFIs have become commercial institutions. If successful at this change, MFIs will no longer be reliant on government grants or below market-rate loans. But like all commercial lending institutions, commercial MFIs must manage risk. Micro-financing is thus inherently risky.

First of all, risk is the biggest obstacle to overcome to reach the poor [2]. Generally, outcomes from micro entrepreneurial activities are more volatile and sensitive to market changes. Coupled with high operational costs derived from the small size of transactions with micro enterprises, the risk will lead to the situation which was predominant prior to microfinance – poor and low-income households are tagged as by the conventional banks "too risky and too costly". Therefore, despite success at reducing poverty through the employment of a group-lending methodology, MFIs may face some risks if they are to continue operations since they may not always be able to rely on government or donor assistance. As MFIs continue to grow and expand rapidly, serving more customers and attracting more mainstream investment capital and funds, they need to strengthen their internal capacity to identify and anticipate potential risks to avoid unexpected losses and surprises. This illustrates a change nowadays in the risk profile of Microfinance institutions. Microfinance institutions should normally cope with their new environments and take into account the new risks but as mentioned by [14] it is noticed that regardless of the growth and development of Microfinance institutions, their internal risk management systems are often a step or two behind the scale and scope of their activities.

Risks in microfinance must be managed in a systematic manner and the importance of risk management will further increase as the industry matures further and microfinance markets become more competitive [24]. There are different types of risks faced by microfinance institutions. [14] cited financial, institutional and strategic risks. [9], in addition, listed four risk categories, namely: institutional risks, operational risks, financial management risks, and external risks. For any financial institution offering financial services, the most important risk it faces resides in the quality of the services it offers. Giving the poor access to credits (loans) is the main activity of many MFIs thus the quality of the loan portfolio is crucial and the related risk (credit risk) has to be

mitigated as to make it possible for them to keep up with their activity.

In fact, Credit risk; a financial risk faced by microfinance institutions is the risk to earnings or capital due to borrowers' late and nonpayment of loans obligations [14]. It involves both transaction risk which refers to the risk in individual loans, and portfolio risk which refers to the risk inherent in the composition of the overall loan portfolio.

Many indicators such as the portfolio at risk (PAR>30 days, PAR>90 days), provision expense ratio, risk coverage, loan loss ratio and write off ratio are often used as risk and portfolio quality indicators in microfinance.

3.3. Outreach

A simple definition of outreach was given by [4] who referred it to the number of clients served by a microfinance institution. Outreach is often perceived under two aspects namely breadth and depth of outreach [10], [17]. They define breadth of outreach as reaching a large number of people or clients by MFIs and depth of outreach as reaching the poorest of the poor.

Outreach as an indicator of the social performance of MFIs is a broad one thus it's a multidimensional concept as mentioned by [21].Assessing or measuring the outreach of MFIs will then require a deeper analysis by integrating other aspects. In that same order of idea, [23], [32] for more insights listed in total six dimensions of outreach: Worth, Cost, Scope, Depth, Length and Breadth of Outreach.

Regardless of this the widely used outreach indicators are the percentage of active clients reflecting the number of active borrowers, the percentage of women clients reflecting the participation of women, the average loan size reflecting the number of loans served and the branch distribution reflected by the number of branches established. The participation of women is also considered as important while assessing the social performance of MFIs because women are believed to have more difficulties than men in having access to financial services and also, as mentioned by [18]; increase in women's income benefits the household and the community to a greater extent than an equal increase in men's income would do.

3.4. Factors influencing the sustainability of MFIs

As mentioned before, reaching sustainability is of a big importance for any microfinance institution looking forward to considerable poverty alleviation and so, identifying factors affecting it do matters when it comes to finding out how to better achieve it.

[20], sought to establish the factors affecting sustainability of microfinance institutions operating within the Murang'a Municipality. He found out that financial regulations, number of clients served, financial coverage and volume of credit transacted were the factors that highly affected the sustainability of microfinance institutions and suggested that MFIs open many branches to reach as many people as possible and ensure they conform to rules and regulations.

Some other factors such as factors such as Service delivery, branch network, staff training and capital adequacy were found having an impact on microfinance institutions in Kenya [33].In his study conducted on a population of 135 lower and middle managers from Kenya Women Finance Trust deposit taking microfinance (KWFT) he concluded that improving the quality of service delivered to attract new customers through advertising, opening more branches country wide in order to get closer to the people and hence increase the number of customers, staff training and covering the default in loan portfolio with sufficient capital would help KWFT maintain sustainability.

[22], in an attempt to identify the determinants of financial sustainability using the Financial self-sufficiency (FSS) aspect of MFIs in Bangladesh came to the conclusion that the size of MFIs, Cost per Borrower, Personnel Productivity Ratio, Yield on Gross loan Portfolio, positively affected their FSS while average Loan Balance per Borrowers, Age of MFIs, Debt to Equity Ratio, Operating Expense Ratio, and Number of active borrowers, have a negative effect on it.

Breadth of outreach, depth of outreach, dependency ratio and cost per borrower were identified by [3] as factors affecting the financial sustainability of MFIs in Ethiopia using a panel data set of 126 observations from 14 MFIs over the period 2002-2010. However, no significant association was found between capital structure staff productivity and financial sustainability of MFIs in Ethiopia.

[1], tried to figure out the factors affecting the sustainability of MFIs in Bangladesh and India. By using financial data from these institutions, he found out that capital/asset ratio, operating expense to loan portfolio and PAR>30 days were the main factors influencing the sustainability of those institutions.

Moreover, number of studies such as [11],[35], [6], [7], and [34], had been conducted to identify the determinants of the sustainability of Microfinance institutions across various countries but the nature of these determinants and their significance defer from a study to the other.In fact, as found by [35], [6], some factors might be found significantly affecting the sustainability of MFIs and be applicable in one economy while this evidence can't be proven nor applicable in others. There are many factors influencing the sustainability of MFIs and as we can see from the previous researches, even though there are often some similarities in the identified factors, results for some reasons differ from a sector to the other or from one country to another making it impossible to give a generalized point of view on the matter.

4. Data and Research methodology

This study was concentrated on 11 major microfinance institutions in Togo namely CECA, FECECAV, FUCEC Togo, MGPCC DEKAWOWO, MICROFUND, MUTUELLE AKWABA, TIMPAC, UCECTO, UCMECF-TO, UMECTO, WAGES. These institutions are all regulated institutions authorized to operate [22], and occupy about more than 90% of the microfinance market share in Togo. Data collected for this were from the Mix Market Inc.

website (www.themix.org/mixmarket) over the period of 2006-2015. The collected data is a multi-dimensional data frequently involving measurements over time usually referred to as panel data and this as a matter of fact led us to use a panel data regression model approach to analyze it. Regardless of the fact that unbalanced panel data can be handled by different software such as SAS, Stata, LIMDEP and SPSS; it is sometimes difficult to compute and estimate. When selecting the appropriate software to use to analyze our data we were somehow constrained by a choice between STATA 12 and SPSS 21. [24],while reviewing software issues in panel data analysis, found that SAS, Stata, and LIMDEP provide the procedures and commands that estimate panel data models in a convenient way while SPSS on the contrary has limited ability to analyze panel data. Thus we estimated that STATA 12 was appropriate for data analysis in this study. The general regression model equation used is of the form:

$$Yit = \alpha i + \beta X'it + uit \quad (1)$$

Yit representing the value of the dependent variable of a unit i at time t ($i= 1 \ldots$ N and $t= 1\ldots$T$)$
αi representing the constant term
$X'it$ representing a vector of explanatory variables and β its coefficients
uit representing the error term ($uit= \mu i$ (within-entity error) + vit (between-entity error))

Table 1: Description of variables

Nature	Indicator of	Selected Measurement Variable
Dependent	Sustainability	Operational self-sufficiency (OSS)
Independent	Outreach	Natural Log of Number of active borrowers (NAB)
		Natural Log of Average loan size (ALS)
	RISK	Portfolio at risk>30days (PAR30)
		Risk coverage (RICO)
		Loan loss rate (LLR)
		Write-off ratio (WOR)

As mentioned in (Table 1) which gives the description of the variables we included in our model for this study;Operational self-sufficiency (OSS) as a measure of how MFIs are able to cover their costs through operational revenues was chosen to measure sustainability. In terms of potential factors that might affect sustainability; outreach indicators such as the number of active borrowers (NAB) and the average loan size (ALS) and also risk indicators such as portfolio at risk>30days (PAR30), risk coverage (RICO), loan loss rate (LLR) and write-off ratio (WOR) were selected. The NAB an outreach indicator defined as the number of individuals who currently have an outstanding loan balance with the MFI is expected to have a positive impact on the sustainability even though some studies such as [13], [15], [22], found no significant impact of it on sustainability. ALS is also expected to have a positive impact on sustainability since bigger loans might increase operating revenues thus increase sustainability. (PAR30) considered a risk indicator in this study, is defined as the outstanding amount of loans that have one or more installments of principal past due by 30 days and is expected to negatively affect sustainability. (RICO) shows how much of the portfolio at risk is covered by a microfinance

institution's loan loss provision and how well it is prepared to absorb loan losses thus it is considered to have a positive impact on sustainability.(LLR) measures loss from unrecoverable loans and is expected to have a negative effect on sustainability. (WOR), representing the amount of MFIs' loans that have been removed from the balance of the gross loan portfolio because they are unlikely to be repaid is expected to have a negative relationship with sustainability since higher WOR equals collection issues.

After defining our variables, our model used in this study can be rewritten as follows:
$$OSSit = \beta 0 + \beta 1(NAB) + \beta 2(ALS) + \beta 3(PAR30) + \beta 4(RICO) + \beta 5(LLR) + \beta 6(WOR) + u ; \quad (2)$$
With $i= 1\ldots11$ and $t= 2006$ to 2015.

Data collected for this study can be categorized as unbalanced panel data since it shows some missing observations. Also the number of time periods *(t)* in our data are not the same for all MFIs *(i)* taken individually. It is then important to find the reason for the absence of the data and figure out whether they are randomly missing (Random effect) or non-randomly missing (Fixed effect). To this end we used the Hausman test which helps us to choose between fixed effect and random effect regression models. Result of the Hausman test was not significant and our null hypothesis (random effect is appropriate) has been accepted. We further compared the random effect regression model and a simple OLS regression using the LM test and the results showed that there is evidence of significant differences across MFIs. The null hypothesis (random effect is not appropriate) has in this case been rejected making the OLS regression inappropriate in our case. Thus in sum, our study used a random effect regression model usually called RE model.

5. Data analysis and findings

Impact of each variable on the sustainability of MFIs has been assessed through coefficients and their significance at 1%, 5% and 10% and those significant at 1% were considered having the highest impact. Also the multicollinearity between the different variables was tested using a VIF test and results showedno evidence of multicollinearity since their tolerance values (1/VIF) are greater than 0.1. Results of the RE model test are presented in the table below.

Table2: Summary of the Results of the RE GLS regression test for the different variables.

Variables	Unstandardized coefficients	Std. Error	Standardized coefficients	z-statistics	P>z
NAB	.65184	.0223368	.288	2.75	0.006***
ALS	.1366073	.053215	.300	2.57	0.010**
PAR30	-.0372916	.3316622	-.015	-0.11	0.910
RICO	.4606575	.2544849	.190	1.81	0.070*
LLR	-.0787359	.2157002	-.043	-0.37	0.715
WOR	-1.654488	.6943434	-324	-2.38	0.017**
***Significant at 1%; **Significant at 5%, *Significant at 10%					
R-sq: within= 0.0927; between= 0.9106, overall= 0.3789					
Prob Chi> chi2= 0.0000					

In terms of outreach; the coefficient for number of active borrowers (NAB) is positive and statistically significant at 1%

(table 2). This means that the number of active borrowers positively affects the sustainability of MFIs. The higher the number of active borrowers for an institution, the more sustainable it is. This must be due to the fact that an increase in the number of active borrowers might increase the number of services sold and thus an increase in operating revenues. Results for average loan size (ALS) indicate a positive relationship between the average loan size and sustainability; relationship significant at 5% level of significance. As average loan size increases, sustainability increases since the interests (revenues) increase due to bigger loans.

With respect to risk; results for (PAR30) show a negative coefficient indicating a negative impact of the portfolio at risk>30days on the sustainability of MFIs. Regardless of this, the test result indicated that the portfolio at risk>30days was negatively related to sustainability but not significant even at 10% significant level. The negative coefficient of this variable indicates that, although the effect was not material, an increase in portfolio at risk>30days will decrease the sustainability of Togolese MFIs.

Risk coverage (RICO)'s coefficient is positive meaning that risk coverage improves sustainability. It is calculated by dividing the loan-loss reserve by the portfolio at risk. According to our test results, this relationship is significant at 10%. This somehow related to the portfolio at risk and can be explained by the fact that a MFI which is well prepared to absorb loan losses by covering a high proportion of their portfolio at risk with their provision for loan losses will end up being sustainable.

Calculated by dividing the total write-offs by active portfolio, Loan loss ratio (LLR) has a negative relationship with sustainability (negative coefficient) buttheir relationship is not significant at even 10%. Regardless of the insignificance of their relationship, the negative coefficient means that an increase in the number of unrecoverable loans will have a bad impact on sustainability.

Write off ratio (WOR) as a risk indicator is annually calculated in microfinance by dividing the period's Write Offs by its Average Gross Loan Portfolio. When a delinquent loan reaches a certain age in arrears, an MFI may write it off. Our test results show a negative coefficient indicating the negative relationship between (WOR) and sustainability. This relationship is significant at 5%. This implies that a good control of loan delinquency and loan default will reduce the amount of loans written-off which will then improve sustainability.

Finally, having a look at the R Squared presented in our test results we can see that it passes the reliability test mentioned by [5]assuming that for a panel data it should be more than 0.2 for conclusions to be reliable. Thus we can say that the above conclusions made from the test results can be considered reliable.

6. Conclusion

Based on the results we got from our analysis, the conclusion would be that all the outreach factors namely the number of active borrowers and the average loan size and

also some risk factors namely the risk coverage and the write-off ratio have been found having a significant impact on the sustainability of microfinance institutions in Togo. Other variables such as the portfolio at risk>30 days and the loan loss ratio were found not important in determining the sustainability since they had no significant relationship with it.

These conclusion will lead us to recommend that MFIs in Togo should first increase their number of active borrowers since it is has a high impact on their sustainability. This will lead to an increase in the number of outstanding loans and an increase in loans served should obviously come with greater abilities to collect them back. Secondly, they should increase their average loans sizes this will lead to an increase in operating revenues leading to sustainability but they should have a close look at loan delinquency and loan defaults while doing so. This will help them reduce the amount of loans likely to be written-off thus reduce their write-off ratio. Then they might increase their provision for loan losses which could help them increase their risk coverage and thus achieve sustainability.

However, it is also important to mention that on a general point of view, outreach factors have a higher impact on sustainability of microfinance institutions in Togo as compared to risk factors. Thus we can assume that there is a greater relationship between outreach and sustainability of MFIs in Togo.

7. Limitations

This study focused only on a number of 11 selected institutions operating in microfinance sector in Togo and involved a number of selected factors. Future research may consider increasing the sample size and add more variables such as provision for loan losses, Portfolio at risk>90 days, MFIs age, capital structure to their analysis for more insights on the determinants of the sustainability of MFIs in Togo.

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