

A study on outreach and sustainability of Microfinance Institutions in Africa region

¹Dr. V. Umasri, Asst. Professor, Management (Finance), Pondicherry University.

²Dr. Chinnasamy Agamudainambhi Malarvizhi, Associate Professor, Faculty of Management, Multimedia University, Malaysia

ABSTRACT

Sustainability is an ability to survive without subsidies i.e. operational self-sufficiency. The primary and financial objective of Microfinance is outreach and sustainability. MFIs are urged to meet the challenge of achieving social and financial objectives (Gutierrez-Nieto, 2007). In the long run, many MFIs are facing problem of financial sustainability with increasing outreach. Therefore, this study intends to examine the relationship between Outreach and Sustainability of MFIs in Africa region.

Key words: Microfinance, Outreach, Sustainability

PART I - INTRODUCTION

Outreach: According to Lariviere and Martin (1999), outreach is “the ability of an MFI to provide high quality financial services to a large number of clients” There are two aspects of outreach i.e., breadth and depth. Breadth of outreach indicates size of customers i.e., Number of Active Borrowers and Number of Depositors. Depth of outreach indicates serving to the Poorer and Women Borrowers (Schreiner 2002). The Average Loan Balances per Borrower and Average Deposit Balances per Saver are indicators of serving to the poorer with the assumption of smaller size of loans and deposits are the sign of depth of outreach (Bhatt and Tang 2001). Number of Women Borrowers is also an important aspect for depth of outreach (this aspect has been used as a tool in many studies). Therefore, Average Loan Balance per Borrower, Average Deposit Balance per Depositor and Women Borrowers are taken as the parameters for measuring depth of outreach in this study.

Sustainability: Sustainability of MFI is an ability to survive without subsidies i.e., meeting operating cost by generating adequate revenue from offered services. Operational self-sufficiency is a universally accepted indicator. The formula for Operational Self Sufficiency (OSS) is “*Total operating income/Total operating expenses*”. (Note: Operating expenses include administrative expenses, interest expenses, and loan loss provision). The indicators of profitability variables namely, Return on Assets (ROA), Return on Equity (ROE), Profit margin and Yield on Gross Loan Portfolio are also taken as indicators of Sustainability with the assumption of profitable MFIs could have potential of surviving.

PART II - REVIEW OF LITERATURE

Frederick Nyanzu (2019): The paper examines the effect of regulation on microfinance institutions’ (MFIs) sustainability and outreach in Sub-Saharan Africa (SSA). The regulatory quality has a positive impact on outreach and sustainability. **Sefa Awaworyi Churchill (2018):** The study used a sample of 206 MFIs from 33 African countries and find that there is a trade-off between sustainability and depth of outreach. Empirical results also confirm that there is a positive association between interest rates and profitability. **Tadesse Abate G.T., Borzaga C., Getnet K. (2014)** study aimed to analyze whether there was a tradeoff or complimentary between financial sustainability and outreach of 107 MFIs in Ethiopia during the study period. Also, it aimed at establishing whether ownership (organized/unorganized) affected the costs. The result advocated that there was contradictory between outreach and financial sustainability and that the depth of outreach (average loan balance per borrower and catering to the women borrowers) was lower in the best practicing MFIs. **Shakil Quayes (2012)** study investigated the impact of financial sustainability on outreach of 702 MFIs in 83 countries. The study revealed that there was positive relationship between depth of outreach and financial self-sufficiency for the high disclosure (transparency) MFIs. Low disclosure MFIs had no impact. **Sefa Kwami Awaworyi and Ana Marr (2014):** The study examined and compared the relationship between sustainability and outreach of MFIs in Latin America & Caribbean region and South Asia region. It revealed that there was trade-off between outreach and sustainability in both the regions. **Tadesse Abate G.T., Borzaga C., Getnet K. (2014)** study aimed to analyze whether there was a tradeoff or complimentary between financial sustainability and outreach of 107 MFIs in Ethiopia during the study period. **Shakil Quayes (2012)** study investigated the impact of financial sustainability on outreach of 702 MFIs in 83 countries. **Bereket Zerai & Lalitha Rani (2012)** study aimed to scrutinize the tradeoff between outreach to the poor and financial sustainability of 85 MFIs in India by applying correlation matrix. **Thun, V, Phum, S., & Say, S. (2010):** The study evaluated the depth of outreach of MFIs in Cambodia. It concluded that AMK achieved the social bottom line in terms of poverty outreach.

PART III - RESEARCH METHODOLOGY

Objectives of the Research: This study is to find out the association between outreach and, sustainability indicators.

Sample design: The population of this study was considered as those Microfinance Institutions in Sub Saharan Africa region reported in the Microfinance Information Exchange (Mix Market) database. **Sampling Procedure and data:** The study is based on cross market analysis for certain period which necessitated balanced panel data for the analysis of relationship between outreach and sustainability over the period of time. The selection of sample MFIs are based on the information available in the MIX-market website. Totally, 126 MFIs with 630 (126 *5years) observations for the period of 2012-13 to 2016-17 are taken as sample for this study in the Mix market database and the selected number of MFIs for the same period.

Model Specification:

Association between Indicators of Outreach and Indicators of Sustainability

The canonical correlation coefficients measure the extent of overall relationships between two sets of variables. Hence, the canonical correlation analysis is preferred in analyzing the strength of association between two concepts, outreach and sustainability. Canonical correlation analysis aims to find out all possible pairs of linear combinations between the groups of variables that are highly correlated. These linear combinations are called canonical variants. Five outreach variables and five sustainable variables are used in this study. Hence, there are five pairs of canonical variants or five canonical roots. The statistical software package of **SPSS - 16 version** (syntax command) is adopted to apply the analysis of Canonical correlation.

PART IV - HYPOTHESIS TESTING:

The hypothesis is tested through multivariate statistics of the Wilks' Lambda test statistic which is equal to likelihood ratio and it is the product of the values of one minus canonical correlation square. Wilks' Lambda test statistics is calculated by SPSS-syntax to test the total model fitness. The other multivariate test statistics such as Pillai's Trace, Hotelling-Lawley Trace, Roy's Greatest Root are calculated through SPSS –syntax.

The hypothesis statement is as follows:

- $H_0 = 0$: There is no significant linear relationship between outreach and sustainability variables.
- $H_1 \neq 0$: There is a significant linear relationship between outreach and sustainability variables.

PART V - STUDY LIMITATIONS

- Period of the study is limited to 5 years from 2012-13 to 2016-17..
- MFIs are taken for the study only those who had reported in the MIX market database.
- The Data is retrieved from the database of MIX market only.

PART VI - EMPIRICAL RESULTS AND INFERENCES OF SUB SAHARAN AFRICA

The study period is five years from 2012 - 2013 to 2016 - 2017 and the average of five years data is taken from 126 MFIs in the region of Africa, for this analysis. **Table-6.I.a.1** portrays the Descriptive statistics of the two variable sets namely **Outreach** (out1 – Number of Loan Account, out2 – Average Loan Account Balance, out3 – Number of Women Borrowers, out4 - Average Deposit Account Balance and out5 – Number of Deposit Accounts) and **Sustainability** (sus1– Operational Self Sufficiency, sus2 - Return on Assets (ROA), sus3 - Return on Equity (ROE), sus4 - Profit margin and sus5 - Yield on Gross Loan Portfolio).

Table-6.I a.1 Descriptive statistics

D. Var.	Obs.	Mean	SD	Min	Max	C. Var.	Mean	SD	Min	Max
out1	126	47672	119490	338	871962	sus1	1.063	0.395	0.32	3.93
out2	126	715	977	22	7539	sus2	-0.026	0.113	-0.43	0.22
out3	126	29777	70357	0	448695	sus3	-2.602	28.42	-319	2.04
out4	126	106	137	0	769	sus4	-0.263	1.183	-9.68	0.56
out5	126	131888	489549	0	5214671	sus5	0.46	0.268	0.12	2.14

The mean score and standard deviation of Out5 (Number of Deposit account) is the greatest among “**Dependent**” variable. The mean score of Sus1 (OSS) is the greatest among “**Covariate**” variable. It may be noted that the standard deviation of Sus3 has highest variance among sustainability variables.

Table-6.I.a.2 reveals the test results of significance of all canonical correlations. Wilk's Lambda and corresponding *F*- tests, evaluate the null hypothesis that canonical correlations coefficients for all functions are zero. The commonly used test is Wilk's Lambda and all these test statistics are significant @ 5% level of significance. It shows the fitness of the total model. **Table-6.I.a.3** shows the Pearson correlations of the pairs of canonical variates. The canonical correlation coefficient of first pair of variates is 0.43663 and it shows moderate value. It is a linear combination of outreach and a linear combination of sustainability. The correlation coefficients of second pair, third pair, fourth pair, and fifth pair are 0.48297, 0.24051, 0.14210 and 0.09716 respectively.

Table-6.I.a. 2 Tests of significance of all canonical correlations						Table-6.I.a.3 Eigenvalues and Canonical Correlations			
	Statistics	df1	df2	F	Prob>F	Root No.	Eigenvalue	Canon Cor.	Sq. Cor
Wilks' lambda	0.657	25	432	2.073	0.002	a	.23555	.43663	.19064
Pillai's trace	0.385	25	600	2.001	0.003	a	.19185	.40121	.16097
Lawley-Hotelling	0.461	25	572	2.111	0.001	a	.02363	.15195	.02309
Roy's	0.191					u	.01006	.09979	.00996
e = exact, a = approximate, u = upper bound on F						5	.00013	.01160	.00013

Table-6.I.a.4 depicts five possible roots, of which only first root is significant with $p < 0.05$. Since this model contains five outreach variables and five sustainability variables, SPSS extracts five canonical roots or dimensions. The first root is significant $p < .05$ ($f = 2.073$). **Table-6.I.a.5** denotes the effect of within the cells of dependent variables set. The p value of the "F" statistics shows that all variables are significant except out5.

Tables-6.I.a.6&7 portrays "Raw Coefficients and Standardized Coefficients" of dependent variables and **Tables-6.I.a.8&9** depicts "Raw coefficients and Standardized coefficients" of covariate variable. The "Raw" canonical coefficients are weights of the *dependent* variables and the *covariate* variables, which maximize the correlation between two sets of variables. It indicates how much each variable in each set is weighted to create the linear combinations that maximize the correlation between two sets. The

Table-6.I.a. 4 Dimension Reduction Analysis					Table-6.I.a.5 EFFECT .. WITHIN CELLS Regression (Cont.) Univariate F-tests with (5,120) D. F.							
Roots	Wilks L.	F	DF	E. DF	Sig.	Var.	Sq. Mul. R	Adj. R-sq.	H. MS	E.MS	F	Sig.
1 TO 5	.656	2.073	25	432	.002	out1	.15600	.12084	9.194	2.072	4.436	.001
2 TO 5	0.811	1.584	16	358	0.07	out2	.10968	.07258	3.05	1.031	2.956	.015
3 TO 5	0.967	0.442	9	287	0.911	out3	.10460	.06729	10.67	3.807	2.803	.02
4 TO 5	0.989	0.302	4	238	0.876	out4	.10060	.06312	6.889	2.566	2.684	.025
5 TO 5	0.999	0.016	1	120	0.899	out5	.07746	.03902	21.257	10.548	2.015	0.081

Dep. Vars.	Table-6.I.a.6 Raw Canonical coefficients for Dependent variables					Table-6.I.a.7 Standardized coefficients for Dependent variables				
	1	2	3	4	5	1	2	3	4	5
out1	0.7387	-0.2152	0.7275	0.5650	0.4627	1.1343	-0.3304	1.1170	0.8675	0.7104
out2	0.2767	0.7209	-0.0485	0.0507	-0.8886	0.2919	0.7604	-0.0511	0.0535	-0.9373
out3	-0.0229	0.1951	-0.8244	-0.3352	-0.2899	-0.0463	0.3942	-1.6656	-0.6773	-0.5857
out4	-0.1016	0.0765	-0.4262	0.6129	0.5932	-0.1681	0.1267	-0.7055	1.0144	0.9819
out5	-0.1066	0.1498	0.1707	-0.4162	-0.0348	-0.3533	0.4962	0.5655	-1.3788	-0.1154
Cov. Vars.	Table-6.I.a.8 Raw Canonical coefficients for Covariate variables					Table-6.I.a.9 Standardized coefficients for Covariate variables				
	1	2	3	4	5	1	2	3	4	5
sus1	2.8480	-0.5063	-0.5276	0.3682	-1.3425	0.9891	-0.1758	-0.1832	0.1279	-0.4662
sus2	-0.0905	-0.1705	-0.6679	0.4692	-0.3898	-0.1772	-0.3338	-1.3074	0.9186	-0.7631
sus3	0.4031	-0.2065	-0.2825	-0.3136	1.0423	0.5478	-0.2806	-0.3839	-0.4261	1.4164
sus4	-0.0668	-0.1747	-0.8183	-0.7825	-0.6940	-0.0884	-0.2313	1.0832	-1.0358	-0.9187
sus5	-0.0781	-1.1473	-1.4400	1.0707	0.0737	-0.0384	-0.5639	0.7078	0.5263	0.0362

significant linear combinations of raw canonical coefficients and standard coefficients are highlighted in this table. The strongest influence on first root is Number of Active Borrowers variable and it is followed by second root i.e., Average Loan Account Balance. Similarly, sus1 (OSS) and sus5 influences strongly the canonical root1& root5 respectively. In this case, if a unit increases in first root, out1 (Number of Active Borrowers) leads to increase 0.7387 units in the first canonical variate (OSS), and a unit increases in out2 (Average Loan Account Balance) leads to increase 0.7209 units in the second canonical variable (ROA). Similarly, in covariate variables, a unit increases in first covariate variable sus1 (OSS) leads to increase 2.848 units in first canonical variable, out1 (Number of Active borrowers). The standard coefficients are interpreted as a unit of standard deviation increases in out1 (NAB) leads to increase **1.13** units standard deviation in the first canonical variate sus1 (OSS).

Tables-6.I.a.10&11 denote the correlations within and between sets of variables in which the highlighted variables are highly correlated. The correlations of first and second canonical root and covariate set are highly correlated. Hence, the association between outreach and sustainability is good in the region of Africa.

Table-6.I.a.10 Correlations between DEPENDENT and canonical variables						Table-6.I.a.11 Correlations between COVARIATES and canonical variables					
Var.	1	2	3	4	5	Cov.	1	2	3	4	5
out1	.89716	0.111	-0.03005	-0.23227	0.35771	sus1	.92749	0.20347	0.08970	.18156	-.23947
out2	.01325	0.816	.16942	.39248	-0.3869	sus2	-.31046	-.76270	-.50612	-.14465	-.21172
out3	.71027	-.04070	-.52357	-.42748	.19233	sus3	.01764	-.77626	-.30647	-.44103	.32965
out4	-.20504	0.754	-.10958	.23177	0.56779	sus4	-.18711	-.69470	-.07962	-.63193	-.27696
out5	.06524	0.676	.16425	-.47567	0.5333	sus5	-.03745	-.71405	.45677	.50766	.14956

PART – IV FINDINGS AND CONCLUSION

The first pair of Canonical Correlations Coefficients is 0.437 indicates moderate correlation between outreach and sustainability based on Wilks'Lambda, Statistics and

F-test at 5% level of significance. There are five canonical roots or dimensions (Dimension Reduction Analysis), of which, only first root is significant. The number of significant linear combinations of raw canonical coefficients for dependent variables i.e. outreach is 2. The number of significant linear combinations of raw canonical coefficients for Covariate variables i.e. sustainability is 2. The Number of Active Borrowers (out1) increases Operating Self Sufficiency (1: 0.7387). It is the strongest influencing variable. African MFIs have high positive correlation between outreach and sustainability.

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