Determinants of Financial Sustainability of Microfinance Institutions in Ethiopia

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Abstract

Microfinance promises to reduce poverty through the supply of loans, savings, money transfers, insurance and other financial services to those low-income and poor self-serving people. To achieve this objective sustainably, microfinance institutions are obliged to be financially sound, sustainable and capable from long term perspective. The purpose of this study was to empirically investigate the determinants of financial sustainability of MFIs in Ethiopia, where poverty is a serious problem. The study employed quantitative research approach with explanatory research design using a balanced panel data set of 120 observations from 15 MFIs over the period 2011-2018. The study found that there are negative and significant relationship between Operating expense and financial sustainability of Ethiopian MFIs, whereas Portfolio yield, Net profit margin, capital adequacy and GDP growth have positive significant effect on financial sustainability of Ethiopian MFIs. Since MFIs in Ethiopia are at early stage, the government and stakeholders should encourage the program by mobilizing funds to promote microfinance in remote areas to insure their social impact.

Key Words: Ethiopia, financial sustainability, MFIs, Poverty

1. INTRODUCTION

Microfinance institutions started in 1970s in Bangladesh and since the late 1990s they have evolved as an economic development tool intended to benefit low income people. Microfinance has become an important instrument for poverty reduction in many parts of the world. Microfinance is the supply of loans, savings, money transfers, insurance and other financial services to those low-income and poor self-serving people. According to Ledgerwood, (1999), the goals of microfinance institutions as development organizations are to service the financial needs of un-served or underserved markets as a means of meeting development objectives such as to create employment, reduce poverty, help existing business grow or diversify their activities, empower women or other excluded population groups and encourage the development of new business.

However, the positive impacts of microfinance institutions on the socio-economic welfare of the poor can only be sustained if the institutions can achieve a good financial and outreach performance.

Throughout the world, financial sustainability of microfinance institutions has been one of the issues that have recently captured the attention of many researchers due to its importance in the livelihood of microfinance institutions and necessary condition for institutional sustainability (Hollis & Sweetman, 1998). As it has been argued unsustainable MFIs might help the poor now, but they will not help the poor in the future because the MFIs will be gone (Schreiner, 2000). Moreover, it has been reported that it may better not have MFIs than having unsustainable ones.

In Ethiopia, improving access to financial services is taken as an important development tool, because it helps in creating job for unemployed and increase their income and consumption of the excluded population, which would in the final analysis reduce poverty and contribute to the implementation or realization of development plan. Consequently, microfinance helps in contributing a lot towards the overall development of the economy.

2. STATEMENT OF THE PROBLEM

Tilahun (2013) stated that the primary objective of the development strategy of Africa is poverty reduction and elimination as the empirical evidence establishes that less than 15 percent of the populations in developing countries have access to the conventional financial institutions.

According to the National Bank Report (2018) in Ethiopia, MFIs, which were mostly founded with the aim of fighting poverty, play a big role in addressing the financial needs of people ,who are considered ̵high riskø by commercial banks. In a country where over 77 percent of the population is unbanked, MFIs provide loans to large portion of the population with very few assets .This indicates that there is a clear need, first in establishing the viability and importance of microfinance as a poverty alleviation approach for low income groups.

To achieve their principal objective of alleviating poverty, it is a must for MFIs to provide financial services on a sustainable way. MFIs have to generate an income sufficient to cover their financial costs, costs of administration and loan loss provisions in order to be sustainable.

According to Cull et al. (2007) & Christen et al.(1995) several studies have been conducted to determine factors affecting financial sustainability of MFIs using large and developed MFIs in many countries, but the level of significance of variables in influencing financial sustainability of MFIs still varies with studies. Studies conducted in the areas of microfinance institutions in Ethiopia are inadequate and mainly focused on the performance of the MFIs. Whereas, only a few studies have been conducted concerning financial sustainability of Ethiopian MFIs with limited explanatory factors.

Similar and related empirical studies such as Hossain.et.al (2016), Tilahun (2013),Silashi (2015) & Khathomi (2017) are worth to mention. However their findings were inconsistent with each other in significance level and directions in terms of capital structure and macro-economic variables. Whereas, study made by Solomon et al., (2019), Abiyu (2016),Abebaw (2014) and Sima(2013) also revealed inconsistent findings in significance level and directions considering the above variables .

The researchers finally believe that these studies did not give such an emphasis and convincing findings for determinants of financial sustainability and fail to consider the effects of net profit margin and portfolio yield. In addition, there were inconsistent findings on macroeconomic factors, debt to equity, operating expense and capital to asset variables. Therefore, determining factors of financial sustainability of Microfinance Institutions in Ethiopia has roots in the existing literature, but as far as the researcherøs knowledge is concerned it needs further research and explanation especially in Ethiopian case because the empirical literature shows the problem is done with limited explanatory variables and more focused on performance of the MFIs. Hence, to bridge the gap in previous researches and to arrive at convincing results, this study uses recent data from the year 2011 to 2018 and identified the critical factors that determine financial sustainability of MFIs in Ethiopia by considering additional explanatory variables which are missed from most of previous empirical studies namely, Net profit Margin and Portfolio Yield in addition to Debt to equity ratio, Operating expense ratio, Capital to asset ratio , Inflation and GDP growth rate.

3. OBJECTIVE OF THE STUDY

The general objective of this study is to identify the determinants of financial sustainability of Microfinance Institutions in Ethiopia. The specific objectives of this study are to examine the performance of financial sustainability of MFIs in Ethiopia by empirically testing the effect of Debt to Equity Ratio, Operating expense, Capital Asset Ratio, Portfolio Yield, Net profit Margin, GDP growth rate and inflation on financial sustainability of MFIs in Ethiopia.

4. REVIEW OF LITERATURE

This section discusses the literature concerning the financial sustainability of microfinance institutions in Ethiopia. This review of literature establishes framework for the study and highlights the previous studies, which in turn, helps in clearly identifying the gap in the literature.

Different authors and organizations have defined Microfinance institutions in different ways. However, the concept or the meaning of the definitions is usually the same in which microfinance refers to the provision of financial services; mainly savings and credit to the poor and low-income households that donøt have access to commercial banks service. Consultative Group to assist the poor CGAP (2012) defined õmicrofinanceö the provision of formal financial services to poor and low-income people, as well as others systematically not benefited from the financial system. As noted, õMicrofinanceö it is not only providing a range of credit products (for consumption, smoothing for business purposes, to fund social obligations, for emergencies, etc.) only, but also savings, money transfers and insurance.

The popularly known institution which is Microfinance information exchange (MIX) defined the microfinance institutions as a variety of financial services that target low-income clients, particularly women. Since the clients of microfinance institutions have lower incomes or poor and often have limited access to other financial services, microfinance products tend to be for smaller monetary amounts than traditional financial services. These services not only provide micro credit service for those having lower incomes but also include loans, savings, insurance, and remittances. The aim of Access to financial services for poor people is to help to alleviate risks, build their assets, improve their income, and furthermore contribute to development of the local community.

4.1 Financial Sustainability of Microfinance Institutions

Financial sustainability refers that the ability of a microfinance provider to cover all of its costs on an unsubsidized basis or without accepting donation. According to the United Nations sustainability is necessary to reach a larger number of people on an on-going basis (Elia, M.2006). If MFIs remain dependent on limited donor funding, they will be able to reach only a limited number of people.

As per the MIX Market definition the term financial sustainability is defined as having an operational sustainability level of 110% or more, while financial sustainability is defined as having an operational self-sufficiency level of 100% or more. MFIs are financially self- sufficient when they are able to cover from their own generated income, both operating and financing costs and other form of subsidy valued at market prices.

4.2 Profitability Theory

Not all MFIs are sustainable, able to generate a profit, or even to break even and therefore still depend on help from donors and subsidies. The rapid growth in the industry is not due to a golden õone-way-roadö to profitability since there is still big diversity or difference between the MFIs and their operations (Joergeson, 2011).

Profitability means ability to make profit from all the business activities of an organization, company, firm, or an enterprise. It shows how efficiently the management can make profit by using all the resources available in the market.

4.3 MFIs Capital Structure

Several studies have been conducted to explain whether the capital structure determines the sustainability of microfinance institutions. For instance, Kyereboah (2007) found that highly leveraged microfinance institutions have higher ability to deal with moral hazards and adverse selection than their counterparts with lower leverage ratios. Moreover, Ganka (2010) states that although how the capital has been structured affects the financial sustainability, having different sources of capital do not improve financial sustainability. Ganka also identified that equity is a relatively cheaper source of financing and, therefore, improves financial sustainability.

4.4 Operating Expense

According to the research finding by Nyamsogoro (2010), the lower the ratio, all things being constant, will imply efficiency and the ratio strongly affects the financial sustainability of microfinance institutions. This indicates that, the more MFIs are efficient in reducing operating costs at a given level of outstanding loan portfolio, the more profitable they become and, therefore, maintain financial and operational self-sufficiency and ensure financially sustainable.

5. DATA AND METHODOLOGY

The study examines determinants for financial sustainability of microfinance institutions in Ethiopia. The researcher used quantitative research approach with explanatory research design. Secondary source of data was used from audited financial statements of the MFIs for eight years from 2011 to 2018 GC. According to the recent data from the NBE, there are 38 microfinance institutions operating in the country by the end of year 2019. Therefore, this study applied purposive sampling technique, because the study did not include all microfinance institutions to have an equal chance to be selected as a sample. Accordingly, 15 MFIs operating for more than eight years from 2011 to 2018 were selected as a sample.

Regarding method of data analysis a panel data analysis was used. And the collected panel data was analyzed using descriptive statistics, correlations and multiple linear regression analysis. The panel fixed effect regression model (multiple regression model) was used for this study to determine factors affecting financial sustainability of Ethiopian MFIs explained as follows. To estimate the effect of variables on financial sustainability, the following general panel data regression model was developed.

$$Y_{it} = \beta_o + \beta X_{it} + \mu_{it} \text{---} (1)$$

Multiple regression models for the dependent variable FSS was presented in the equation below.

$$FSS_{it} = \beta_{oi} + \beta 1 * DER_{it} + \beta 2 * CAR_{it} + \beta 3 * OER_{it} + \beta 4 * NPM_{it} + \beta 5 * PYR_{it} + \beta 6 * INF_{it} + \beta 7 * GDP_{it} + \mu_{it.}$$

Where 1 to 7 are the coefficients of the variables and $_{it}$ is the random error term.

$_{oi}$; stands for the intercept term which varies across MFIs but constant over time, DER_{it}: stands for debt to equity ratio of MFI i at time t, CAR_{it}: stands for capital to asset ratio MFI i at time t, OER_{it}: stands for operating expense ratio of MFI i at time t, NPM_{it}: stands for net profit margin of MFI i at time t, PYR_{it}: stands for Portfolio Yield ratio of MFI i at time t, INF_{it} stands for Inflation rate assigned to MFI i at time t, GDP_{it}: stands for GDP growth rate of Ethiopia assigned to MFI i at time t.

Figure 1 Conceptual Framework
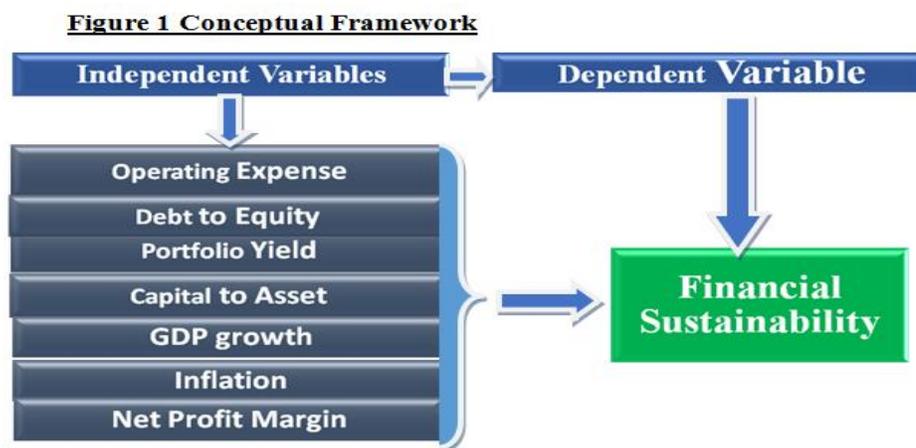
Source; the researcher's own Design, 2020

Table 2.1 Summary of Variables, Hypothesis and Measurements

Categories	Variables Name	Measurements	Hyphotesis
Dependent Variables	Financial Self suficiency	Adjusted Renenue / Adjusted expense	
Independent Variables	Debt to Equity	Adj. Total Liabilities/Adj.Total Equity	_
	Operating expense	Operating expense / Gross loan portfolio	_
	Capital to asset	Total capital /Average total asset	+
	Net profit margin	Net income / Total Revenue.	+
	Portfolio yield	Total financial revenue from loan portfolio /total average gross loan portfolio	+
	GDP growth	GDP growth rate of the country	+
	Inflation	The inflation rate of the country	_

Source; -   Compiled from empirical literatures, 2020

6. RESULTS AND DISCUSSION

This section deals with the analysis and presentation of results of the study. The data gathered from NBE were analyzed by using STATA Software 15.1.The descriptive statistics and the correlation analysis were discussed then followed by the diagnostic tests which were necessary to fulfill the assumptions of classical linear regression models. Then, data analysis and discussion of the main finding of the regression analysis were presented by supporting with theoretical framework and empirical evidence.

6.1 Descriptive Analysis

Table 6.1 Descriptive Summary of Dependent and Independent Variables

```
. summarize FSS OER DER CAR GDP PYR NPM INF
```

Variable	Obs	Mean	Std. Dev.	Min	Max
FSS	120	.8856677	.8562636	-.3288667	3.660403
OER	120	.1706034	.0865707	.0386232	.5777825
DER	120	2.181797	1.366385	.5645404	11.88495
CAR	120	.3298509	.1278139	.028	.639164
GDP	120	.0966838	.0128806	.077	.114
PYR	120	.2913539	.1907468	.0176553	.7997952
NPM	120	.3732398	.2417429	-.4900169	.7854263
INF	120	.139361	.0841048	.072	.341

Source: STATA 15 Output from NBE Data, 2020

Given the international requirement of FSS ratio of 100%, the mean score of 88.5% indicated that most of Ethiopian MFIs are not financially self-sufficient. It is difficult for MFIs with FSS ratio below 100%, to cover all costs and to operate without ongoing subsidy. In this case, equity will be reduced by losses, forced them to rely on grants or concessional loans from external sources.

6.2 Correlation Matrix

Correlation coefficient between two variables ranges from negative 1 to positive 1. A correlation coefficient of 0, on the other hand indicates that there is no linear relationship between the two variables. Only OER and DER shows negative relation with dependent variable, FSS.

Table 6.2 Correlation Matrix for Ethiopian MFIs

```
. cor FSS OER DER CAR GDP PYR NPM INF
(obs=120)

              FSS      OER      DER      CAR      GDP      PYR      NPM      INF

      FSS   1.0000
      OER  -0.2302   1.0000
      DER  -0.2361  -0.3320   1.0000
      CAR   0.2786   0.3383  -0.6638   1.0000
      GDP   0.1170  -0.0633  -0.0259   0.1329   1.0000
      PYR   0.7368   0.3514  -0.3638   0.3668  -0.0088   1.0000
      NPM   0.8860  -0.3806  -0.1866   0.2318   0.0466   0.5700   1.0000
      INF   0.0518  -0.0443  -0.1179   0.1718  -0.2387   0.0167  -0.0054   1.0000
```

Source: STATA Output from NBE Data, 2020

The result shows that OER and DER had negative correlation with FSS which indicate that the more exposing to expense and debt the MFIs are, the lower will be their financial sustainability. This result for DER supports the pecking order theory which deals the most profitable institutions will have internal source of fund hence no need of searching further loanable fund from external part. The NPM and PYR have strong relation with FSS. The GDP growth rate and CAR have positive relation with FSS. Inflation rate had a very weak relation with financial sustainability. As far as FSS is concerned, NPM, PYR, GDP growth, Inflation and CAR have positive relation with FSS, while OER and DER has negative relation with Financial sustainability**.**

6.3 Multicollinearity
According to Myers (1990) VIF less than 1 and greater than 10 is a cause of concern. If the VIF value lies between1-10, then there is no multicollinearity. If the VIF < 1 or > 10, then there is presence of multicollinearity problem.

Table 6.3. Multicollinearity Test using Variance Inflation Factor

```
. vif

    Variable  |      VIF     1/VIF

         NPM  |     4.03   0.248233
         PYR  |     3.46   0.288746
         OER  |     3.40   0.293716
         CAR  |     2.19   0.457118
         DER  |     1.88   0.532017
         INF  |     1.18   0.849434
         GDP  |     1.14   0.879616

    Mean VIF  |     2.47
```

Source: STATA Output from NBE Data, 2020

6.4 Heteroscedasticity test
Table 6.4.Heteroscedasticity test for the Model

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of FSS

        chi2(1)     =     0.46
        Prob > chi2 =   0.4991
```

According to the table 6.4 above, the results of heteroscedasticitytest in the model result, the Breusch-Pegan test statistic provide the p-values were greater than 0.05. Therefore, the absence of heteroscedasticity was confirmed. And there is no evidence to reject the null hypothesis. There are no autocorrelation issues because the result of Durbin-Watson test is 2.07.

6.5 Hausman test - Fixed or Random Effect Model
The objective of carrying out the Hausman test was to determine the appropriate model to be used. A common practice in finance is to make choice between both approaches by running a Hausman test. This test performed through STATA 15 running Hausman specification test at 5% level of significance enable to choose the researcher between fixed effect and Random effect. Therefore, H_0: Random effect model is appropriate, H_1: Fixed effect model is appropriate. If the test statistic is significant or less than 0.05 then reject the null hypothesis; otherwise accept alternative hypothesis.

Table 6.5. Hausman Test- Fixed or Random Effect Model

```
. qui xtreg FSS OER DER CAR GDP PYR NPM INF,fe

. estimates store fe

. qui xtreg FSS OER DER CAR GDP PYR NPM INF,re

. estimates store re

. hausman fe re
```

	──── Coefficients ──── (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
OER	-3.750651	-3.474708	-.2759423	.1622499
DER	.0149396	.0121984	.0027412	.0053384
CAR	.4786586	.4351758	.0434828	.0344199
GDP	5.749415	5.819136	-.0697209	.
PYR	3.720255	3.34594	.3743152	.1776069
NPM	.9922587	1.114265	-.1220061	.054488
INF	.3444907	.3818516	-.0373609	.

```
                b = consistent under Ho and Ha; obtained from xtreg
        B = inconsistent under Ha, efficient under Ho; obtained from xtreg

   Test:  Ho:  difference in coefficients not systematic

            chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                    =       19.56
        Prob>chi2 =      0.0066
        (V_b-V_B is not positive definite)
```

Source: STATA Output from NBE Data, 2020

The p-values associated with the test statistics is very close to zero, which is less than 0.05. Therefore, there is enough evidence for rejection of the null hypothesis and concluded the appropriate regression model to be employed in the study is the fixed effect regression model.

$$y_{it} = \alpha + \beta x_{it} + \mu_i + v_{it}$$ -- (2)

6.6 Results of Regression Analysis

The estimation results of the panel regression model used in this study is presented in table 6.6 below. The R- square for the regression output is 86.44 percent. R square is a measure that denotes how analyzed data are near to a best line of fit. It is also referred as coefficient of determination (Kothari, 2004). The value of the R-square implies that there is a good relationship between dependent and independent variables, where all selected independent variables Debt to equity Ratio, Operating expense ratio , Capital to asset ratio , Net profit Margin , Portfolio Yield ratio , Real GDP growth rate and Inflation can explain about 86.44 percent of the MFI¢s financial sustainability as measured by FSS. The remaining 13.56 percent of the changes in the FSS model is explained by other factors that are not included and considered in the study.

Table 6.6 Fixed effect regression results

```
. xtreg  FSS OER DER CAR GDP PYR NPM INF , fe

Fixed-effects (within) regression            Number of obs    =       120
Group variable: MFIS                         Number of groups =        15

R-sq:                                        Obs per group:
    within  = 0.8644                                       min =         8
    between = 0.8877                                       avg =       8.0
    overall = 0.8775                                       max =         8

                                             F(7,98)          =     89.28
corr(u_i, Xb)  = -0.3329                     Prob > F         =    0.0000
```

FSS	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
OER	-3.750651	.5327391	-7.04	0.000	-4.807854	-2.693447
DER	.0149396	.0220693	0.68	0.500	-.0288562	.0587354
CAR	.4786586	.2265402	2.11	0.037	.0290969	.9282204
GDP	5.749415	1.459295	3.94	0.000	2.853492	8.645339
PYR	3.720255	.354706	10.49	0.000	3.016353	4.424158
NPM	.9922587	.2007026	4.94	0.000	.593971	1.390546
INF	.3444907	.2307111	1.49	0.139	-.1133481	.8023294
_cons	-.723085	.2028024	-3.57	0.001	-1.12554	-.3206302
sigma_u	.26811392					
sigma_e	.18973239					
rho	.66632158	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(14, 98) = 10.97                 Prob > F = 0.0000
```
Source: STATA Output from NBE Data, 2020

a. Operating expense

The negative coefficient (-3.750) and it is statistically significant variable at 1 percent (P-value0.000) implies the response of financial self-sufficiency to operating expense ratio is very elastic, which is a 1 unit increase in operating expense leads to a 3.75 unit decrease in financial self-sufficiency. The more MFIs are efficient in reducing operating costs at a given level of outstanding loan portfolio, the more profitable they become and therefore, maintain financial self-sufficiency and ensure financially sustainable. This finding is consistent with Kirubel (2018), Abiyu (2016) and Sileshi (2015) but, against with study made by Tilahun, 2013.

b. Capital to Asset

The coefficient of the capital to asset ratio (CAR) is positive (0.478) and statistically significant at 5 percent. Result of the study supports the theory, well capitalized MFIs is more flexible in dealing with problems arising from unexpected losses and against credit risks and results in a better chance for financial performance. The study result is similar with Sima (2013) but inconsistent with Muriu (2011).

c. GDP growth

The result shows a positive impact of GDP growth on the sustainability of MFIs with coefficient level of 5.74 and statistically significant at 1% significance level (P-value 0.000). Thus, the null hypothesis that GDP growth rate in Ethiopia negatively and significantly affect sustainability of Ethiopian MFIs should be rejected. This is due to, as theoretically believed, improving macroeconomic performance raises overall income level and business performance which ultimately improves clientø repayment ability, enjoy sufficient supply of loanable fund deposits and hence leading to enhance MFIsø viability. The study result is consistent with Sileshi (2015), but inconsistent with Abebaw (2014).

d. Portfolio Yield

The result shows a positive impact of Portfolio yield ratio on the sustainability of MFIs with coefficient level of 3.720 and statistically significant at 1% significance level (P-value 0.000). This indicates the firmø ability to generate cash, which could increase the loanable fund and hence the social performance.

e. Net Profit Margin

The study result shows the coefficient net profit margin is positive (0.992) indicates that when MFIs earn1cents on their net profit margin, it causes the FSS of an MFI to increase by 99 percent and statistically significant at even 1percent.

f. Inflation

The regression coefficient of inflation variable is positive 0.344 which indicates even though, inflation has positive relationship with financial self-sufficiency. The positive result implies that increasing inflation in Ethiopia would support the financial performance of institutions because of the ability and skill of MFIs managers to exactly predict the levels of inflation. The study result is the same as Sileshi (2015), but contradicts with Kirubel (2018) and Kathomi (2017).

7. CONCLUSION AND RECOMMENDATIONS

This study aimed to examine the determinants that affect financial sustainability of Ethiopian microfinance institutions. Macroeconomic and MFIs specific factors effect on financial sustainability were identified as explanatory variables. The study found that Ethiopian MFIs scored an average FSS ratio of 88.5% which means they are not financially self-sufficient (financially sustainable) in reference to the international requirement of an FSS of 100% benchmark. Consistent with theories and most empirical evidences, the result of fixed effect regression shows that Operating expense, Capital to asset, Net profit Margin, Portfolio Yield and GDP growth rate are statistically significant predictor variables at even 1% critical value except for Capital to asset 5% in determining financial self-sufficiency. Debt to Equity Ratio and

Inflation are statistically insignificant predictor variables. R square for FSS model is 86.44% and the Adjusted R square for the model is 83.3%. This proves there is strong model fitness.

Based on the finding, the researcher suggests that MFIs management should give great consideration to a good expense management policy or reduce operating costs and credit risk management by encouraging innovations, investing in technologies and by creating economies of scale. They should utilize the opportunities of macroeconomic environment by considering the impacts macroeconomic factors during designing their strategic plan and they have to attempt more to enhance their liability and they should develop a strategy that enables them to enhance deposit amount through mobilizing funds by promoting saving behavior.

The government and policy makers should give due attention for both poverty reduction and financial sustainability of MFIs by enhancing commercialization of their operation rather than relying on subsidies through promoting differentiated and diversified saving and loan products in addition to the existing products.

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