

## **Determinants of Financial Performance of Microfinance Institution in Ethiopia**

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### **Abstract**

*The purpose of this study was to investigate the determinants of financial performance of MFIs in Ethiopia over a period of nine years (2010-2018) using data from eighteen micro finance institutions selected using judgmental sampling technique. The study employed both internal and external microfinance indicators. A quantitative research approach and a panel data analysis were applied. The study used explanatory research design which was analyzed using multiple regression. The finding of the study showed that capital asset ratio and size of micro finance institutions have significant and positive effect on financial performance of MFIs. In addition, earning ability had also significant effect but with a negative coefficient. Whereas gearing ratio and liquidity have insignificant effect with negative coefficient. Market concentration is significant with negative impact whereas GDP has statistically positive significant effect. The external factor inflation was found to have insignificant effect on ROA. The researchers recommend that focusing and reengineering the institutions in line with indicators above can enhance the performance of the micro finance institutions in Ethiopia.*

**Keywords:** *MFIs, ROA, performance, internal factors, and external factors*

## **1. INTRODUCTION**

Micro finance institutions provide financial services to lower income borrowers, who look for relatively small amounts to finance their businesses, manage emergencies, acquire assets, or for smooth consumption (Mawa, 2008). These borrowers frequently lack credit histories, collateral, or both, and thus, do not have access to financing from mainstream commercial banks. For this reason, MFIs are seen as playing a role in the creation of economic opportunity, and in poverty alleviation. The objective of almost all of the MFIs in Ethiopia is poverty alleviation. To achieve this objective MFIs, have a duty to be financially viable and sustainable. To achieve their prime objective which is alleviating poverty, MFIs should be able to provide financial services on a sustainable way. To be sustainable, MFIs should generate an income sufficient to cover their financial costs, costs of administration, and loan loss provisions. A MFIs working towards sustainability on market principle is not different from a formal MFI except client that it serves. Hence, it will face a challenge that a formal MFI faces in achieving its objectives (Yenesew, 2014).

The Microfinance industry, along with all the players in it, is quickly changing. Today, the microfinance industry has become both more crowded and complex. First of all, the concept of microfinance no longer just covers microcredit only, but also includes the possibilities of saving, insurance and money transfer. Although MFIs are characterized as one type when it comes to financial services, there is a great variety of MFI s in terms of legal form, profit status, degree of sustainability and funding sources (Gudeta, 2013).

The establishment of sustainable MFI that reach a large number of rural and urban poor who are not served by the conventional financial institutions, such as the commercial banks, has been a key component of the new development Strategy of Ethiopia. Profitability is an appropriate device for achieving long term viability and sustainability of the microfinance industry. At the micro level, profitability is a precondition to a competitive microfinance industry and the cheapest source of capital, without which no firm would attract external capital (Geda, 2008).

The aforementioned facts give a clue to the Ethiopian microfinance institutions in profits is due to the limited number of microfinance institutions operating in the nation despite large number of clientele and the underdeveloped nature of the sector (Geda, 2008). Therefore, this growth may not continue when the sector becomes highly developed and the competition becomes tough, so investigation of the key determining factors that influence their performance, return on assets, of microfinance institutions is vital. Then, investigation of the major determinants of microfinance institutions performance is essential for all institutions in the sector.

While a large body of research on financial institutions financial performance has been undertaken in the conventional banking industry in Ethiopia, there are few works on micro finance institution sectors (Abebe, 2014). Rigorous empirical evidence on Ethiopian microfinance institutions remains limited due to large number of micro finances and lack of up to date information. Moreover, it is uncommon to undertake a study to identify factors that affect microfinance institutions performance. The studies conducted in the areas of microfinance institutions in Ethiopia are few in number and did not give an emphasis to the factors that determine their performance.

Dissanayake (2014) tried to investigate the determinants of profitability of MFIs in Sri-Lanka. The major objective was to see the relationship between different internal (MFI specific factors) and return on equity. For the study, debt to equity ratio, operating expense ratio, write-off ratio, cost per borrower ratio and personal productivity ratio as explanatory variables and ROA as explained variable have been used. The finding shows that, debt to equity ratio and operating expense ratios have negative statistical significance relation with ROE. On the other hand, write-off ratio and cost per borrower ratios have a positive and statistically significant relationship with ROE. However, personnel productivity ratio is not statistically significant determinant of ROE.

Ongore, & Kusa, (2013) has also conducted a research titled "Determinants of Operational Sustainability of Micro Finance Institutions" in Kenya. The major objective of the research was to find out the factors that affect the operations self-sufficiency and financial sustainability. In addition, it was intended to propose a more comprehensive and representative model for financial sustainability by creating an index to observe the financial performance of microfinance sector. In so doing, the study utilized a descriptive research design and targeted 30 microfinance institutions (MFIs) to collect the required data and analyzed using multiple regression models. Capital/asset ratio and Operating Expenses/Loan Portfolio indicators as independent variable and Operational Self Sufficiency ratio as dependent variable were used in the regression model. Accordingly, the research revealed that the factors that affect the operations and financial sustainability are capital/asset ratio and operating expenses/loan portfolio.

Wale, (2011), has done research on performance analysis of sample microfinance institutions of Ethiopia using productivity and efficiency ratios, financial viability indicators, profitability indicators, and leverage and capital adequacy ratios. However, the research did say nothing about determinants of performance of microfinance institutions apart from appraising the performance of Ethiopian MFIs in terms of various criteria by comparing with the Micro banking Bulletin (MBB) benchmark.

Million, Matewos & Sujata, (2015) have also tried to see factors affecting financial and operational sustainability of Ethiopian MFIs. However, the researchers used a limited number of variables such as gross loan portfolio, personnel productivity ratio, cost per borrower, liquidity ratio, number of active borrowers, operating expense ratio, portfolio quality, gearing ratio, and market concentration.

When we come to Ethiopia case, studies in relation to determinants of MFIs profitability considering both internal and external factors are rare or few, but studies regarding performance of MFIs were conducted by various scholars like, (Fesha, 2018, Geda, 2008, and Wale, (2011). The study by Yonas, (2012), tried to see the determinants of performance by using proxy of financial and operational sustainability of Ethiopian MFIs. They focused only on internal factors and have not considered external factors like macroeconomic and industry besides; they have not addressed the idea of profitability of MFIs specifically. Gudeta, (2013). & Kedir, (2015) studied determinants of profitability of Ethiopian microfinance by using microfinance internal and macroeconomic factors.

As to the researchers' knowledge, there is no research conducted in relation to the determinants of the financial performance in microfinance institutions in Ethiopia after 2015. Further, the

studies before 2015 used limited variables that only focus on MFI-internal and macroeconomic factors. Most of the empirical studies missed an important variable namely earnings ability as explanatory variable. The researcher has taken this as a gap and included it as additional variable. Under this study also included a new micro finance institution (Dirre, Agar and Harbu) that were not included in previous empirical studies. Therefore, the main objective of this study is to identify the determinants of financial performance of micro finance institutions in Ethiopia.

## 2. DATA AND METHODOLOGY

The researchers used quantitative research approach with explanatory research design. Secondary source of data was used from the audited financial statements of micro finance institutions for nine years from 2010 to 2018 G.C.

The target population for this particular study was all the microfinance institutions currently operating in the Ethiopia. According to National Bank of Ethiopia, (2018/9), there are 38 microfinance institutions which are providing a microfinance service to the poor society in Ethiopia on the current period. Therefore, this study used non probability sampling specifically purposive sampling technique to select the samples. Then from 38 microfinance institutions in Ethiopia, 18 were taken as a sample microfinance institutions operating for more than nine years (2010-2018)

With regard to methods of data analysis a panel data analysis was used and the collected panel data was analyzed using correlations and multiple linear regression analysis. The researcher used random effect regression model analysis to examine the effect of each explanatory variable on the profitability of Ethiopian MFIs. Thus, regression results were presented in a tabular form with the appropriate test statistics and then an explanation of each parameter was given in line with the evidence in the literature.

The operational panel fixed regression model (multiple regression models) that was used in the study. The multiple regression models used for this study to determine the factors affecting the financial performance of MFIs in Ethiopia is explained as follows. To estimate the effect of variables on the financial performance, the following general panel data regression model was developed.

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \mu_{it} \text{-----} (1)$$

The multiple regressions model for the dependent variable ROA was presented in the equation below.

$$ROA_{it} = \beta_0 + \beta_1 * CAP_{it} + \beta_2 * EA_{it} + \beta_3 * LQD_{it} + \beta_4 * GR_{it} + \beta_6 * SIZE_{it} + \beta_7 * GDP_{it} + \beta_{it} * consit + \beta_8 * INF_{it} + \mu_{it}$$

Where:  $\beta_1$  to  $\beta_8$  are the coefficients of the variables and  $\mu_{it}$  is the random error term.

$\beta_0$ ; stands for the intercept term which varies across MFIs but constant over time

$CAP_{it}$ : stands for Capital asset for MFI i at time t

$EA_{it}$ : stands for earning ability for MFI i at time t

$LQD_t$ : stands for liquidity for MFI i at time t

$GR_{it}$ : stands for gearing ratio for MFI i at time t

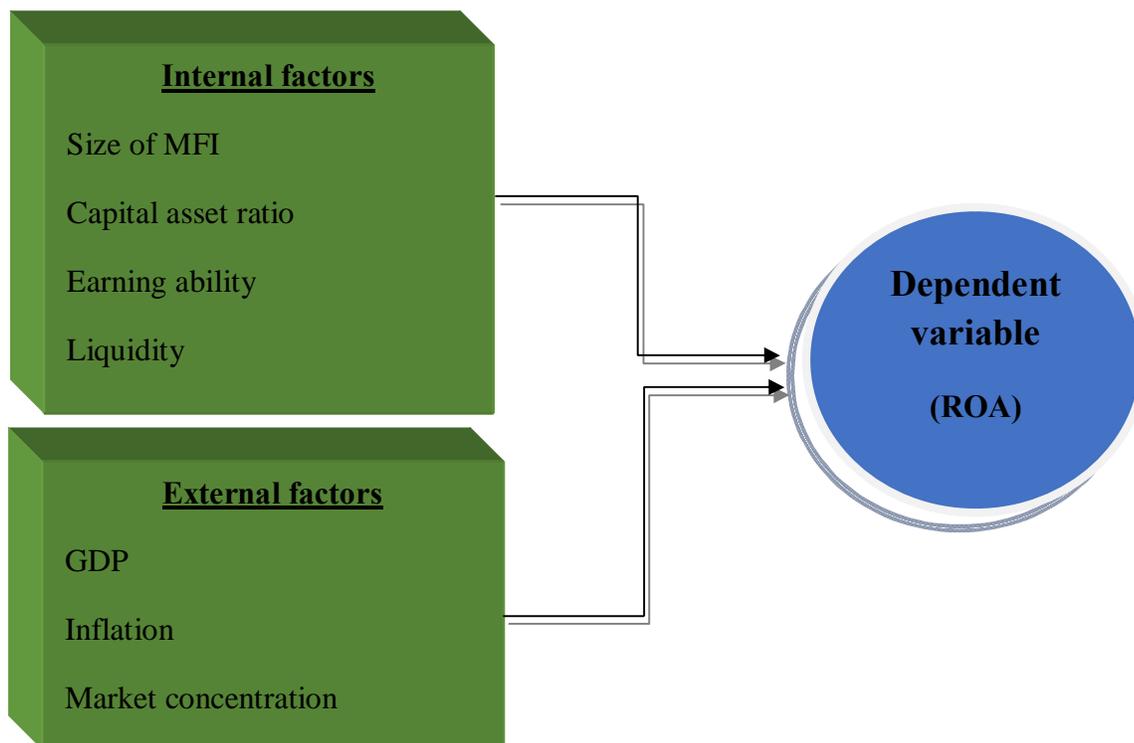
$SIZE_{it}$ : stands for size for MFI i at time t

$CONS_{it}$ : stands for market concentrations for MFIs i at time t

$GDP_{it}$ : stands for growth domestic product of the country

$INF_{it}$ : stands for Inflation of the country

**Figure 1: Conceptual Framework**



**Table 2.1. Summary of variables, hypothesis and Measurements**

Variables	Definition/ Measurements	Hypothesis		Actual Result	
<b>Dependent variable</b>	ROA = Net Profit after tax / Total Assets				
<b>Explanatory variables</b>					
<b>Capital asset ratio</b>	Equity/Asset	+	Significant	+	Significant
<b>Earning ability</b>	Interest Income/ Total Income	+	Significant	-	Significant
<b>Liquidity</b>	Liquid Assets/Total Assets	-	Significant	-	Insignificant
<b>Gearing ratio</b>	Debt/equity	-	Significant	-	Insignificant
<b>Size</b>	Natural logarithm of the total asset	+	Significant	+	Significant
<b>Market concentration</b>	Herfindahl-Hirschman (HH) index	+	Significant	-	Significant
<b>GDP</b>	Real GDP growth (in %)	+	Significant	+	Significant
<b>Inflation</b>	The Annual Inflation Rate	-	Significant	-	Insignificant

Sources: organized from different literatures 2018/19

### **3. RESULT AND DISCUSSION**

#### **3.1. Correlation Analysis**

Multiple correlations are a measure of the degree of association between dependent and the independent (explanatory variables) jointly (Gujarati, 2004). Correlation is a way to index the degree to which two or more variables are related to each other. Values of the correlation coefficient always lie between -1 and 1. A correlation coefficient of +1 indicates that two variables are perfectly related in a positive linear sense; while a correlation coefficient of -1 indicates that two variables are perfectly related in a negative linear sense. A correlation coefficient of 0, on the other hand, indicates that there is no linear relationship between the two variables.

By taking a correlation result which is presented below from 2010 up to 2018 study period the independent variables to dependent variable which is the Return to asset ratio (ROA), except CAP(0.2828)and LIQ (0.2553), which have positively correlated to return to asset ratio of an MFI, other variables are negatively correlated with ROA. This correlation clearly indicates that, when explanatory variables decreases (negative), the performance of the sample MFI which is measured by the ROA moves to the opposite direction.

**Table 3.1. Correlation Matrix**

. corr roa cap ea liq gr s inf gdp mc  
(obs=162)

	roa	cap	ea	liq	gr	s	inf	gdp	mc
roa	1.0000								
cap	0.2828	1.0000							
ea	-0.3612	-0.2229	1.0000						
liq	0.2553	-0.1498	0.0513	1.0000					
gr	-0.2583	-0.7298	0.1582	0.0655	1.0000				
s	-0.0143	-0.4611	0.1425	0.0805	0.3809	1.0000			
inf	-0.0538	0.1582	0.0837	-0.0082	-0.0608	-0.1323	1.0000		
gdp	-0.0078	0.1280	0.1301	0.0557	-0.0397	-0.1547	0.5409	1.0000	
mc	-0.2272	-0.4663	0.2657	0.0861	0.3166	0.7481	-0.0000	-0.0000	1.0000

Source: computed from Stata 12 result (2019)

### 3.2. Model Selection Technique

#### 3.2.1 Random Effect Versus Fixed Effect Models

The key factor to consider when determining between a random effect model and a fixed effect model is whether it is reasonable to assume that the unobserved effect  $\mu_i$ , is uncorrelated with all of the explanatory variables (Hensher, D. A., Johnson, L. W., Hensher, D. A., Johnson, L. W., Louviere, J. J., & Horowitz, J. 2018). The fixed effect model allows correlation between  $\mu_i$  and the explanatory variable for any  $t$  which eliminates the possibility to include any time constant variable. Consequently the legal status dummy indicating institution type will be omitted in the fixed effect model as it does not vary over the observed period. Whereas this opportunity is still possible under a random effect model, we do not find it reasonable to assume there is no correlation between the time-constant unobserved effect and the entire explanatory variable. Therefore, we assume the fixed effects model to be better suited for this study.

To test the model, a Hausman specification test was applied. The test compares the result from a random effects model and a fixed effect model and tests the null hypothesis that difference in coefficients is not systematic. A rejection of the null hypothesis would point in favor of a fixed model. Failure to reject would either imply difference between the two is insignificant and therefore either one could be used, or that variation in the sample of the fixed effects model is large enough making it impossible to prove practical significance (Gujarati, 2004).

Fixed effect model is most appropriate when null hypothesis is rejected whereas random effect is appropriate when null hypothesis is not rejected.

**Table 3.2 Test of Hausman**

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. hausman fixed random
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	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
cap	.1284867	.1406564	-.0121697	.0044047
ea	-.0513084	-.0548824	.0035741	.
liq	-.0422625	-.0112061	-.0310565	.0081048
gr	-.0008375	-.0012665	.000429	.
s	.0527773	.0529196	-.0001424	.0032368
inf	-.001164	-.0011531	-.000011	.
gdp	.7024819	.679994	.0224879	.
mc	-.3620764	-.4422906	.0802142	.1908401

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(8) = (b-B)' [(V\_b-V\_B)^(-1)] (b-B)  
 = 12.79  
 Prob>chi2 = 0.1194  
 (V\_b-V\_B is not positive definite)

**Source: from stata12 output (2019)**

According to above table Hausman specification test the model has the value of p=0.1194 for the regression model of dependent and independent variables. This shows random effect model is more appropriate, because the null hypothesis was accepted (not rejected). Depending on the hausman test P-value, Prob > chi2 greater than 0.05, therefore for this study random effect model is appropriate.

**3.2.1.1 Random Effect Regression Analysis**

**Table 3.3 Test of random effect model**

Source	SS	df	MS	
Model	.798680174	8	.099835022	Number of obs = 162
Residual	1.52147039	153	.009944251	F( 8, 153) = 10.04
Total	2.32015056	161	.014410873	Prob > F = 0.0000

R-squared = 0.3442  
 Adj R-squared = 0.3099  
 Root MSE = .09972

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Random-effects GLS regression                Number of obs   =       162
Group variable: code                        Number of groups =        18

R-sq:  within = 0.2392                      Obs per group:  min =         9
        between = 0.2304                    avg =          9.0
        overall = 0.2245                    max =         9

                                           Wald chi2(8)    =       46.94
corr(u_i, X) = 0 (assumed)                  Prob > chi2     =       0.0000
    
```

roa	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
cap	.1406564	.0783299	1.80	0.073	-.0128674	.2941802
ea	-.0548824	.0144579	-3.80	0.000	-.0832194	-.0265455
liq	-.0112061	.0437572	-0.26	0.798	-.0969686	.0745565
gr	-.0012665	.0041716	-0.30	0.761	-.0094426	.0069096
s	.0529196	.0132463	4.00	0.000	.0269573	.078882
inf	-.0011531	.0008533	-1.35	0.177	-.0028256	.0005194
gdp	.679994	.3547579	1.92	0.055	-.0153188	1.375307
mc	-.4422906	.1869389	-2.37	0.018	-.8086841	-.0758972
_cons	-.2095365	.1005446	-2.08	0.037	-.4066003	-.0124726
sigma_u	.08124228					
sigma_e	.05454935					
rho	.6892596	(fraction of variance due to u_i)				

**Source: from stata12 output (2019)**

### 3.3. Findings of Regression Analysis

The estimation result of the panel regression model used in this study is presented in table 3.3. From table 3.3 the R-squared statistics and the adjusted-R squared statistics of the model were 0.3442 and 0.3099 respectively. The result indicates that the changes in the independent variables explain 34.42% /  $R^2$ /of the changes in the dependent variable. That is Size, capital to total asset ratio, earning ability, liquidity, gearing ratio, market concentration, gross domestic product and inflation rate collectively explain 34.42% of the changes in ROA. The remaining 65.58% of changes was explained by other factors which are not included in the model. Thus these variables collectively, are good explanatory variables of the profitability. The null hypothesis of F-statistic (the overall test of significance) that the  $R^2$  is equal to zero was rejected at 1% as the p-value was sufficiently low. F value of 0.000 indicates strong statistical significance, which enhanced the reliability and validity of the model.

#### a) *Capital to Asset ratio*

The coefficient of the capital to asset ratio (CAP) is positive (0.073) and statistically significant at 10%. This confirms that for the study period 2010 up to 2018 capital strength of Ethiopian MFIs have a positive relationship with their financial performance or holding constant all other variables, increasing capital asset ratio by one unit causes to increase the ROA nearly 0.073 birr. Therefore hypothesis which is financial performance is positive relationship with capital asset ratio of MFIs in Ethiopia is acceptable because the result support the hypothesis. In addition to that, the theory says the argument that 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 by Osuagwu, E. S. (2014), Vissing-Jorgensen, & Krishnamurthy, (2011) and Zergaw, (2015) is consistent with outcomes.

**b) *Earning Ability (EA)***

The coefficient of earning ability (EA) measured by Interest Income to Total Income is negative  $-.0548824$  and significant at a 1% (its P-value is 0.000). Therefore, the result rejects the hypothesis that formulated. Since, the outcome of this regression analysis was negative. The negative relationship between Earning Ability and ROA could be attributed to the fact that a MFIS more focused on interest income source than non-interest income source has low financial performance (ROA). This finding is similar with Sufian, & Habibullah, (2009) and Nuriyeva, (2014). The reasonable negative significant relationship reflects that highly concentrated on interest income than other income source leads to reduce the financial performance (ROA). This may suggest that Ethiopian MFI not only focused interest income source but also work for income diversification.

**c) *Liquidity***

It is a capability of the management to make cash or quickly convert short term assets into the cash. The variable, liquid assets to total assets ratio was used as a proxy for liquidity in the model. The regression results of this study implies that the relation between liquidity risk and ROA is negative ( $-.0112061$ ) and insignificant ( $p\text{-value}=0.798$ ). The result is though the same with the findings of Molyneux, and Thornton (1992) and Petria, *et al.* (2015) who concluded in their study that liquidity had negatively correlated with profitability.

**d) *Gearing ratio/Debt to Equity ratio***

The debt to equity ratio is a common measure used to assess a firm's leverage, or in other words the extent to which it relies on debt as a source of financing. The result shows negative coefficient ( $-0.0012665$ ) and it is statistically insignificant variable (P-value 0.761). This implies that the insignificant correlation between financial performance and gearing ratio for the study period (2010-2018). This indicates that, this variable has little contribution to improve the performance of MFIs. The result is similar with Wassie, *et al.*, (2019), and Innocent, *et al.*, (2014). Therefore, based on the regression result from the study, the study accept the hypothesis no.4 namely gearing ratio has negative relationship with financial performance of Ethiopian MFIs which was formulated to show the relationship between debt to equity ratio and financial performance of Ethiopian microfinance institutions.

**e) *Size of micro finance***

The result of the regression indicates that size is positive and statistically significant at 1% to profitability. Holding other things constant, this implies that a 1% increase/decrease in log of total asset would result in a 5% increase/decrease in ROA of the MFIs under this study. This also implies that size of micro finance induces economies of scale there by making larger micro finance more profitable. Economies of scale will reduce the cost of gathering and processing information. The larger the size, the more profitable the micro finance. It could also mean that size of micro finance is associated with diversification which may impact favorably on risk and product portfolio. The data of this study shows the size of all Ethiopian micro finance which is

measured by log of total asset is increased for the last 9 years. The result implies that larger MFIs enjoy the higher profit than smaller MFIs in Ethiopia MFIs sector because they are exploiting the benefit of economies of scale. The result of this study is similar to the findings of Gudeta, (2013) and Dietrich, & Wanzenried, (2010). Then the expectation of a positive outcome was acceptable for his research.

**f) Gross domestic product (GDP)**

Real GDP had highly statistical significant and positive impact on ROA at 5% significance level (P-value=0.055). These results about GDP support the argument of the positive association between economic growth and the financial sector performance. This show as the stimulated Ethiopian economy over the study period creates a new and potential demand for financial services. The results for positive coefficients are similar to the parameters that are observed and revealed by Demirgüç-Kunt, & Detragiache, (1998), Delreux, (2010) and Aamir, & Mubashirhussain, (2012). This is because the default risk is lower in improvement than in decline economy and another important point is higher economic growth may lead to a greater demand for both interest bearing and non-interest bearing financial services.

**g) Inflation**

The inflation result with ROA shows that statistically insignificant (p-value 0.177) and coefficient result is negative with ROA. Previous studies also similar result with Demirgüç-Kunt & Huizinga (1998) showed a positive result and this implies that during the period of the study, inflations was estimated which gave the opportunity to adjust the interest rates accordingly, resulting in revenues that increased faster than costs, with a positive impact on profitability.

**h) Market concentration**

According to Herfindahl-Hirschman (H-H) index, market concentration is measured with the sum of the square of market share of the sample MFIs included in the particular study and the researcher adopted from different literatures in the banking industry. The descriptive result shows that there is market concentration in Ethiopia. The regression result also indicates a negative and statistically significant impact on Ethiopian MFIs financial performance. The banking theories on market concentration argue that if the size and firm distribution of a specific sector is concentrated, the profitability of firms becomes high because they could get monopoly power to set the price of their products/service and determine their desired level of profit. And this result is similar with Petria, *et al* (2015).

This empirical results show that market concentration affects MFIs financial performance negatively and the effect was statistically significant (p-value 0.018). Similarly the branches managers believe that market concentration have positive impact on the financial performance of their MFI. The reason is most likely they could get monopoly power to set the price of their products/service and determine their desired level of profit.

**4. CONCLUSION AND RECOMMENDATION**

Based up on the above finding of the study, return on asset of Ethiopian micro finance institutions are mainly affected by internal factors than the external factors. More specifically, capital asset, size, and earning ability are a key internal drivers of profitability in Ethiopia.

Indeed focusing and reengineering the institutions at the side of this indicator could enhance the profitability as well as the performance of the micro finance institutions in Ethiopia. The results also indicate that MFIs ROA is positively and significantly influenced by MFI size; so they have to increase their sizes by selling more shares so as to benefit from the scope and scale of economies.

In addition to that gearing ratio have insignificant effect on the profit performance of Ethiopian micro finance. However, from external factors all macroeconomic factors except market concentration have insignificant effect on the profit performance of Ethiopian micro finance institutions. As a result, the study suggests that the managers of Ethiopian micro finance institutions should structure policies aimed at enhancing the profitability of the MFI through improving the capital structure (strengthening the MFIs capital base), increasing size of MFIs by selling more shares, diversifying sources of income and utilizing assets more productively.

In order to ensure their long run funding requirement and sustain their key role in the provision of credit facilities to the poor society, MFIs have to emulate profit-making investment practices by implementing a sound financial management and good management on the internal factors that affect their performance.

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