Impact of Size and Age on Firm Performance: Evidences from Microfinance Institutions in Tanzania

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Abstract

The aim of the study was to examine the impact of firm size and age on performance of Microfinance institutions in Tanzania. The study uses panel data of five years and 30 Microfinance institutions operating in the country.

The findings of the study show the presence of the positive impact of firm size measured by total asset and number of borrowers on the performance of Microfinance institutions in the country. On the other hand, the study found out that firm size measured by the number of staff was negatively related to the efficiency sustainability and profitability of Microfinance institutions reviewed. The findings of the study also show that the age of the firms which indicates firm experience have a positive impact on efficiency, sustainability and financial revenue levels but have a negative impact on the profitability of Microfinance institutions reviewed. From these findings, the study concludes that both firm size and age have an impact on Microfinance performance in Tanzania in terms of efficiency, sustainability, profitability and revenue generation capacity.

The study recommends that, due to the fast growth of the Microfinance sector in Tanzania, with increases in small and medium Microfinance institutions, the government and policy makers should create a good environment for the growth of these institutions. Better policies should be create which to facilitate growth and hence the performance of Microfinance institutions in the country. To the managers of Microfinance institutions, the study recommend that, they should monitor the institution's growth to ensure that both size and age increase with firm performance.

Keywords: Size, Age, Firm Performance, Microfinance Institutions

1. Introduction

Microfinance institutions in Tanzania are important sources of finance for the poor and low income households especially in rural areas. These institutions were the result of the financial sector reform which led to the liberalization of the financial sector to allow the establishment of private banks and other forms of financial institutions (Kavura, 1992). Since the reforms, they have been a tremendous growth in the microfinance sector in terms of the number of institutions, clients reached and service area covered. The growth of Microfinance sector has been also supported by the increased need and importance of Microfinance institutions in the country. The sector has become the main source of finance not only to the poor and low income households but also to entrepreneurs and small and medium enterprises, in both rural and urban areas. This has led to the recognition of the sector by the government and policy makers as an important segment of the financial system for saving unbaked people in the country.

The growth of the Microfinance sector in Tanzania has enabled the establishment of different types of Microfinance institutions such NGOs, NBFIs, Microfinance companies, SACCOs and ROSCA. It has also resulted into involvement of more commercial banks, cooperative banks and community banks in the microfinance services (BOT, 2010, Triodos Facet, 2011). The institutions involved in Microfinance services vary in terms of their size, which reflects the amount of resources they possess and the level of their growth. The largest share of Microfinance institutions in the country involves SACCOs which are small in size in terms of the number of people saved, the geographical area covered as well as the size of assets owned. The large and medium Microfinance institutions in the country include the NGOs, NBFIs, Microfinance companies and microfinance banks. The large and medium Microfinance institutions also vary in terms of their size, experience, coverage and product varieties offered, with commercial banks involved in Microfinance institutions being the largest than others.

Studies conducted on the performance of Microfinance institutions in the country have reported poor performance of most of the institutions as a result of higher operating costs, low revenue generation ability and highly dependence in

subsidies (Marr & Tobarro, 2011, Kipesha, 2013b). Empirical evidences on sustainability of Microfinance institutions have also reported that more of the institutions are not sustainable in both rural and urban areas (Nyamsogoro, 2010; Kipesha, 2012). Studies have also reported low efficiency level among the institution especially in their in their ability to intermediate funds from surplus units to the deficit units which are the poor and low income households (Kipesha, 2013a). Does the growth of the microfinance sector in the country imply reaching more poor and excluded population? This is among the key challenges to the government of Tanzania, policy makers and development partners. According to the FinScope survey on the demand for, and barriers to accessing financial services in Tanzania, the percentage of people excluded from financial services rose from 53.7% in 2006 to 56% in 2009 (FinScope, 2009). This implies that the growth of microfinance sector has not resulted in the growth of the number of people who have access to financial services. What constrains microfinance institutions in the country from reaching most of the unbaked people is still not yet documented. In order for Microfinance institutions, to reach more people they need to grow and increase their size in term of asset, staff as well as the geographical area covered. The growth of such institutions is also expected to increase with the age of the institutions as results of experience, innovations, technology as well economies of scale. This study seeks to find evidence whether the size and age of Microfinance institutions in the country have an impact on the firm performance, which constrains them from reaching the most of the poor and excluded people in the country. The findings of this study are important to government, policy makers, managers and other stakeholders of Microfinance institutions in the country. The findings of the study provide information to policy makers on the relationship of size and firm performance, to enable the creation of better policies, which would facilitate the growth of Microfinance institutions in the country. The study is also beneficial to the owner of Microfinance institutions as it provides an understanding of the effect of size and age on their firm performance. This enables them to improve control and monitoring of the performance as firms grow in terms of size and age. To study adds to the literature on the impact of size and age on firm performance from the evidences of Microfinance institutions in Tanzania.

2. Literature Review

The performance of a firm is a function of many different factors from both internal and external of the firm operations. Among the important factors are the size and age of the firm, which indicate the amount of resources available, and experience possessed by the firm. The size of the firm has shown to have an impact on performance due to the advantages and disadvantages faced by the firms with a particular level of growth. According to Chandler (1962), the size of the firms has advantages in their performance. Large firms can operate at low costs due to scale and scope of economies advantages. Due to their size of operations, large firms have the advantage of getting access to credit finance for investment, possess a larger pool of qualified human capital and have a greater chance for strategic diversification compared to small firms (Yang & Chen, 2009). Large firms also have superior capabilities in product development, marketing and commercialization which make them better performers compared to the small firms (Teece, 1986). According to Ramsay et al (2005) firm size allows for incremental advantages as the size enables the firm to raise the barriers of entry to potential entrants as well as gain leverage on the economies of scale to attain productivity. Among the key advantages of larger firms as compared to smaller firms includes, higher negotiation power with clients and suppliers, easy access to finance and broader pool of qualified human capital (Yang & Chen, 2009; Serrasqueiro & Nunes, 2008). The size of the firm is not always of advantages as it can also result in declining performance due to some operational behavior of large firms. According to Tripsas & Gavetti (2000) firm size in not always of advantages, in some cases large firms are slow to introduce and adopt new technologies due to the bureaucracy and operational rigidities. Large firms also have a tendency to focus only on existing market unlike small firms, which seek to capture new and potential markets (Christensen, 1997).

Firm age is also an important attribute on the firm's performance as it tells about the experience possessed by the firm in the operations. According to Ericson & Pakes (1995), firms are learning and over time they discover what they are good at and learn how to be more efficient. Through learning, firms specialize and find ways to standardize coordinate and speed up their production processes as well as reduce costs and improve the quality. The relationship between firm age and organizational performance can be explained from different dimensions. According to Jovanovic (1982), firms are born with fixed productivity levels which increase with time. This is so called selection effects which arise when competitive and other operational pressure eliminates the weakest firm in the market. As results of the decreased number of firms, the remaining firms are faced with high market demand which facilitate increased average productivity level (Coad et al, 2011). The age and performance can also be explained through learning by doing effects

concept. Learning by doing take place when organizations increase their level of productivity as they learn more about the production techniques and use them to innovate their production routines (Vassilakis, 2008). According to Garnsey (1998) learning by doing effect is very important and relevant to young firms, which need to, grow, expand and improve their performance with time. He argues that young firms make search of new processes to solve for each of the problems they encounter as the learning occurs with time, the benefits of learning results into reduced labor and time to current problems hence contributing to the performance of the institutions. The impact of firm age is also explained by the inertia effect concept; inertia effect explains the ability of the firm to change as fast as their environment changes. When the firms are very young, they have the ability to change according to environmental changes by creating and applying new strategies, creation of new products, new markets and product innovations. With age, the old firms lose their inertia and cannot change as fast as changes in the environment giving chance for the new entrants to capture the market. According to Barron et al (1994), matured firms have a high chance of suffering from liability of obsolescence and senescence. Obsolescence occurs due to their inability to fit well in the changing business environment while senescence occurs due to their inflexible rules, routines and organizational structures (Coad et al, 2011).

The relationship between firm size and age is also of great importance in Microfinance institutions. Due to outreach to the poor focus, most of the Microfinance institutions depend much on grants, donations and other forms of subsidies especially at start up phase. As the Microfinance institutions grow in term of their size and experience, they are expected to operate more efficiently and sustainable with less dependence on subsidies from donors (Armendariz &Morduch, 2004). The size of Microfinance institution implies possession of more resources, which are used to reach more poor people as well as enable the institution to be self dependent. The size also indicates the growth of Microfinance institutions in terms of client base, geographical area covered as well as assets owned. As in other business firms the size of Microfinance institutions is very important for acquiring commercial financing, use of modern technology and innovations. The size also influences managers of Microfinance institutions in implementing different operations and growth strategies such as internal control, revenue enhancement, geographical coverage as well as internal decision regarding the use resources of Microfinance institutions. According to Coleman (2007) the size of Microfinance institutions tells about its ability to formalize procedures and structures which are important to ensure the performance of the firms especially in the repayment perspective. The age of Microfinance institutions, on the other hand, tells about the experiences acquired by the institution with operations, resource mobilization as well as market experience. The age of Microfinance institution has influence to their financing needs; the older institutions are at an advantage of acquiring commercial financing as compared to new established Microfinance institutions. The age of Microfinance institutions is also associated with low failure rates due to the resources they possess, goodwill created in the market over time as well as legitimacy created in the market place. The older Microfinance institutions have acquired knowledge and experience about the market, better operational strategies, financing sources, customer needs and have learned ways to overcome competition constraints in the market.

Evidences from empirical findings have reported mixed findings about the impact of size and age on firm performance not only in the Microfinance industry but also in other industries. The evidences from manufacturing industry provide by Wing & Yiu (1997) reported that firm size increases with efficiency of the firm. This was contrary to the findings obtained by Storey et al (1987), which indicated size and age were negatively correlated with performance and growth in manufacturing companies, in Northern England. Similar results were reported in the study by Lun & Quaddus (2011) which examined the relationship between firm size and performance in container transport operators in Hong Kong. Ramsay et al (2005) provided evidence of impact of firm size from Malaysian Palm oil industry. The study reported that firm size was negatively related to performance. Studies of Small and medium firms (SMEs) have also reported mixed results on the impact of size and age on firm performance. While Serrasqueiro & Nunes (2008) reported that size of institutions is related positively to performance in Portuguese, the evidences from Spain indicated that SMEs were more efficient that large firm. This implies that the size of the firm is negatively related to performance (Diaz & Sanchez, 2008). The mixed results from the empirical evidences suggest that the relationship between size and age of the firm with performance is not linear. Firm growth beyond the optimal levels can experience negative effect on performance (Barett et al, 2010, Yoon, 2004).

Studies from Microfinance institutions operation around the World have also provided mixed evidences on the impact of size and age on firm performance. According to the studies by Bogan et al (2008), Cull et al (2007), Masood et al (2010) and Abayie et al (2011) the age of Microfinance institutions have a positive effect on their performance in terms of efficiency, sustainability and profitability. Contrary to the above findings, the findings by Nieto & Molinero

(2006) did not find any relationship between the number age of Microfinance institution with profitability. The evidences provided by Coleman (2007) also were contrary to most of the empirical findings on the impact of age on Microfinance performance. The study reported a positive impact between age and default rate in Microfinance institutions. The study supported the findings on the ground that as the age increases the institutions expands and reaches more poor clients. The increase in the poor clients raises the repayment problems which in turn results into higher default rates. Empirical evidences have also shown the presence of positive impact on the size of Microfinance institutions in firm performance measured in different aspects. The study by Ejigu (2009) reported a positive impact of size on the profitability and sustainability of Microfinance institutions in Ethiopia. These results were in line with results by Coleman (2007) which indicated that firm size has a positive impact on yield on gross loan Microfinance institutions. Contrary to these findings, Bassem (2008) reported a negative relationship between size and Microfinance institution's efficiency while Crawford et al (2011) found that smaller Microfinance institutions were more profitable than larger ones indicating negative impact of size on performance

3. Methodology and Data

This study seeks to examine the impact of firm size and age on performance of Microfinance institutions operating in Tanzania. The study uses a panel data of 30 Microfinance institutions and a period of 5 years. The sources of the data used were the mix market database www.mixmarket.org, Central bank of Tanzania and annual reports of individual Microfinance institutions.

The study uses four variables as the measurement of Performance of Microfinance institutions, the variables include relative efficiency score, operating self sufficiency (OSS), adjusted return on asset (AROA) and financial revenue generated. Operating self sufficiency indicator was used as a proxy measure of the sustainability of microfinance institutions as it indicates the ability of the firm to cover operating costs using operating revenue. Adjusted return on asset is a subsidy adjusted return which was used as a proxy measure of profitability of Microfinance institutions. The study also uses financial revenue generated as the measure of the capacity of institutions to generate revenue, as it grows in terms of size and age. The study uses three variables as the proxy measures of the size of Microfinance institutions in Tanzania. The variables include total asset, number of staffs and number of borrowers. The choice of the variables followed from other empirical studies which have used one or more these variables as a proxy measure of the size of institutions (Ali, 2004, Onyeiwu, 2003, Strorey et al, 1987, Cull et al, 2007, Abaiye, 2011, Ahlin et al, 2011). On the other hand, the study uses the number of years since the commencement as the proxy of age and experience of Microfinance institutions. This proxy measure has also been used in most of previous studies as the measure of firm age and experience.

All the data used in this study were obtained from the three sources of data mentioned above except for the relative efficiency data which was computed using the CCR model as specified by Coelli, (1998) and Shiu (2002).

$$MinTE_k = \frac{\sum_{i=1}^{m} \mu_i y_{is}}{\sum_{j=1}^{n} \upsilon_j \chi_{jk}}$$

$$SubjectTo \quad \sum \mu_i y_{ir} - y_{iF} + w \geq 0 \; - (1)$$

$$\chi_{jr} - \sum \mu_j \chi_{jk} \geq 0$$

$$r = 1........K, \mu_i, \nu_j \geq 0$$

Where: K is the number of Microfinance institutions which use N inputs material to produce M outputs. χ_{jk} is the quantity of jth inputs used by the kth firm, y_{ik} is the quantity of ith output produced by the kth firm, μ_i and ν_j are the output and input weights respectively, j=1.....n, i=1.....m. The study uses three input variables total asset, operating expenses and total staffs and two output variables gross loan portfolio and financial revenues.

To examine the impact of firm size and age on performance of Microfinance institutions in Tanzania, the study used panel data estimation in order to control for the effect of omitted variables (Gujarati, 2003). The study uses four dependent variables and four independent variables. The four dependent variables which makes four regression models were efficiency score (EFF), sustainability (OSS), profitability (AROA) and financial revenue (FinRev). The independent variables, which were tested for each of the four dependent variables, were total asset, number of borrowers and the number of staff as measures of firm size and number years from the commencement as a measure of firm age and experience. The basic panel data estimation model can be presented as

$$Y_{it} = \lambda + \beta x_{it} + u_{it} \;-------------------------(2)$$

Where: Y_{it} is the dependent variable, λ is the intercept term, β is a k x 1 vector of parameters to be estimated on the explanatory variables, χ_{it} is the 1 x k vector of observations on the explanatory variables, t denote time period $t = 1 \cdots T$, , i denote cross section $i = 1 \cdots N$. , μ_{it} is the error term.

To decide which panel data estimation model should be used in this study, we first conducted the Hausman test for all four dependent variables. The Hausman test results all favored the use of the fixed effect model as against random effect model, the probability values were all less that 5% significance level (Appendix 1). The use of fixed effect model was also compared with a pooled regression model using the F test in order to ascertain the best estimation method given the study data set. The F test results supported the use of fixed effects regression model as the probability values were all less than 5% significance level, hence rejecting the null hypothesis that fixed effects were zero (Table 3). The study uses fixed effect (within effect), which assumes, the presence of common slopes, but each of cross section unit has its own intercept which may not be correlated with independent variables (Greene, 2003, Brooks, 2008, Baltagi, 2005). The four regression models used for estimation of relationships were as follows;

$$EFF_{it} = \lambda_i + \beta_1 \ln Asset_{it} + \beta_2 \ln Staff_{it} + \beta_3 \ln Borw_{it} + \beta_4 Age_{it} + u_{it} \;---(3)$$

$$OSS_{it} = \lambda_i + \beta_1 \ln Asset_{it} + \beta_2 \ln Staff_{it} + \beta_3 \ln Borw_{it} + \beta_4 Age_{it} + u_{it} \;---(4)$$

$$AROA_{it} = \lambda_i + \beta_1 \ln Asset_{it} + \beta_2 \ln Staff_{it} + \beta_3 \ln Borw_{it} + \beta_4 Age_{it} + u_{it} \;--(5)$$

$$Fin\operatorname{Re}v_{it} = \lambda_i + \beta_1 \ln Asset_{it} + \beta_2 \ln Staff_{it} + \beta_3 \ln Borw_{it} + \beta_4 Age_{it} + u_{it} \;--(6)$$

Where: EFF_{it} is the efficiency of ith Microfinance institution at time t, OSS_{it} is financial sustainability of Microfinance i^{th} at time t, $AROA_{it}$ is adjusted return on asset of Microfinance i^{th} at time t and $Fin\operatorname{Re}v_{it}$ is financial revenue generated by Microfinance i^{th} at time t. $Borw_{it}$ is the number of borrowers of institutions i^{th} at time t, i=1….N, t=1…..,T, μ_{it} is the error term.

Before conducting the regression tests, several tests on regression assumptions were conducted to ensure that it was appropriate to use regression analysis for examining the relationship. The tests for multicollinearity, autocorrelation and heteroskedasticity were all conducted in all four regression models. The test for multicollinearity using variance inflation factor (VIF) did not show the presence of multicollinearity problems in the independent variables of the regression model. The tolerance values obtained were all higher than the cutoff point of 0.1 below which the multicollinearity is considered to be a problem (Gujarati, 2003). The autocorrelation test also did not show the presence of serial or autocorrelation between the error terms while the test for heteroskedasticity supported the presence of constant variance in the error terms (Appendix 1).

4. Results and Discussion

Descriptive statistics show low average performance in Microfinance institutions reviewed in operating self sufficiency (OSS) and adjusted return on asset (AROA), and high performance in efficiency scores (EFF). The mean performance results were 0.955, (0.11), and 0.81 for OSS, AROA and efficiency respectively. The performance results show that on average institutions reviewed were not covering their operating costs using the revenue generated from their operations. The mean profitability result was negative, indicating that most of the institutions were operating at loss hence were not generating any return on assets owned. The mean average efficiency results indicated that, on average, only 81% of the average input used was only required to produce the output levels. This indicates that on average, the institutions reviewed were wasting 19% of inputs in the production of outputs. The standard deviations were a little high in all performance variables indicating higher deviation in performance among the institutions reviewed. The maximum and minimum performance values also show high difference in performance levels between the highest and the lowest performers in Microfinance institutions reviewed. The mean value of financial revenues

generated was 17,058 (Mil Tshs) which indicate that on average Microfinance institutions reviewed generates high revenues from operations. The standard deviation was also high as well as the difference between minimum and maximum value indicating high difference in revenue levels between the highest and lowest institutions (Table 1).

Table1: Variables Descriptive Statistics

	Mean	SDV	Min	Max
OSS	0.955	0.362	0.009	2.328
AROA	(0.11)	0.187	(0.778)	0.074
EFF	0.81	0.219	0.059	1
ASSET*	144,181	477,733	240	2,713,641
STAFF	259	525	8	2650
FINREV*	17,058.00	49,505.00	10	275,282.00
BORRW	23,565	35,058	1,000	200,000
AGE	11	9	1	50
* Figures in Millions of Tshs				

The mean values of variables measuring the size of Microfinance institutions were represented by total asset, staffs and number of borrowers. Descriptive statistics show high deviation in the size of Microfinance institutions in all three variables. This was mainly due to the inclusion of commercial banks, which are also, involved in offering microfinance services. The difference in size also reflects the differences between traditional microfinance institutions in Tanzania such as NGO, NBFIs and commercial oriented microfinance institutions which include microfinance companies, cooperatives, community banks and commercial banks. The average age of Microfinance institutions reviewed was 11 years; this indicates that on average, the institutions reviewed had enough experience in the microfinance operations. The standard deviation was very high showing high dispersion on age among the institutions which also indicate differences in their experiences.

The partial correlation results of the four regression equations show that not all independent variables had a significant association with the dependent variables. The partial correlation test on efficiency regression model shows that only one variable representing the size of the institution had a significant association with the dependent variable. The test results show that the number of the borrower as a proxy of firm size has significant positively association with efficiency level at 1% level of significance. The test results also show positive coefficients for asset and negative coefficient for the number of staff which were both insignificant. The age of Microfinance institution was found to have a significant positive association with firm efficiency. This indicates that firm efficiency increases in with age as the experience of the firm increases the efficiency levels increases. The partial correlation result of the sustainability model shows that the size of the firm has a significant association with the level of operating self sufficiency. The test results show that the size of the firm measured by asset level and the number of the borrowers has a significant association with operating self sufficiency at 5% and 1% level of significance respectively. The result of the firm size measure by the number of staff indicates a significant negative association with operating self sufficiency at 1% significance level. The results are consistent with the theory that, increases in asset levels and the number of borrowers results in increases in revenues while increases in the number of staff attracts more expenses hence worsen the level of sustainability. On the other hand, the age of Microfinance institution was found to have insignificant positive association indicating that age has no association with operating self sufficiency.

The partial correlation results of the profitability regression model show that total assets have a significant positive association with adjusted return on asset (AROA) and negative significant association with a number of staff at 5% and 10% levels of significance respectively. Firm size measured by the number of borrowers and the age of institutions were also found to have insignificant coefficients. The association test results on financial revenue model (Finrev) show that both asset and staff measures of firm size have a significant positive association with financial revenue levels at 1% level of significance. The age of Microfinance institutions also indicates significant positive association with revenue levels indicating that experience has a positive impact on the firm's revenue generation ability (Table 2).

Table 2: Partial Correlation Results

Partial Correlation Results				
Variable	EFF	OSS	AROA	FINREV
Asset	0.108	0.194**	0.355*	0.622*
Staff	(0.049)	(0.1498)***	(0.303)*	0.420*
Borrowers	0.242*	0.331*	0.086	0.104
Age	0.312*	0.136	(0.134)	0.170**
*Significant at 1%, ** Significant at 5%, *** Significant at 10%				

The regression test results were in line with the partial correlation results on the impact of the size and age on performance of Microfinance institutions. The fixed effect regression results show that firm size measured by total asset level has a positive significant cause and effect to efficiency, sustainability and financial revenue at 1%, 5 and 1% levels of significance respectively. This implies that increases in the level of asset results into direct increase in the efficiency, sustainability and revenues of Microfinance institutions. On the other hand, asset size did not show to have a causal effect on profitability although it has positive associations from partial correlation results. The size of the firm measured by the number of staffs was found to have significant causality with profitability (AROA) and financial revenue at 5% and 1% levels of significance. The number of borrowers on the other hand, was found to increase with the profitability of the firms at 5% level of significance. The test results on the impact of age on firm performance show that Microfinance institutions age has a positive causality relationship with efficiency, sustainability and profitability at 1% and 5% levels of significance. The results indicate that age of institutions which measures the firm experience has a positive impact on the performance of the firm in efficiency, sustainability and profitability. The test results on the firm age and the revenue generating capacity show insignificant positive causality. This implies that, the experience of the firm does not have a cause and effect relationship with revenue generation capacity, but they move in the same direction as indicated in partial correlation results.

The results on the extent to which the variation observed in the dependent variables are explained by the variation in the independent variables were not favourable. The results on R squared; show that most of the variations in dependent variables were not explained by variation in the independent variables in the three performance measures of efficiency, sustainability and profitability. The R squared results for efficiency regression model shows that only 20.8%, 2% and 0.3% of the within, between, and overall variation in the dependent variable was explained by variation in the independent variables. Likewise, less than 2% of overall variations in the sustainability and profitability models were explained by variation in the independent variables. This indicates that most of the variation observed in the efficiency, sustainability and profitability are explained by other factors which were omitted from the study models. Very little variation could be associated with size and age factors. The results on variation of financial revenue model were high contrary to the other three models. The R squared results show that 64.2%, 84.2% and 81.7% of the within, between and overall variations in the dependent variable were explained by variations in the independent variables (Table 3).

Table 3: Regression Analysis Results

Fixed Effects (Within) Regression Results								
	Efficiency (EFF)		Sustainability (OSS)		Profitability (AROA)		Revenue (FinRev)	
	Coeff	P>|t|	Coeff	P>|t|	Coeff	P>|t|	Coeff	P>|t|
Asset	4.421	0.000	3.164	0.029	0.637	0.53	1.375	0.000
Staff	(0.03)	0.738	(0.043)	0.748	(0.211)	0.029	0.051	0.004
Borrowers	0.011	0.902	0.152	0.253	0.227	0.017	0.007	0.684
Age	0.022	0.101	6.333	0.004	(0.025)	0.079	0.003	0.308
R- sq								
Within	0.208		0.081		0.117		0.642	
Between	0.020		0.006		0.019		0.842	
Overall	0.003		0.015		0.003		0.817	
F test that all u_i=0								
F(29, 107)	7.8		9.14		5.26		5.41	
Prob>F	0.000		0.000		0.000		0.000	

Combining the results of partial correlation and regression analysis, we find that both firm size and age have an impact on the performance of Microfinance institution depending on the variables used for estimations. We find statistical evidences that the size of the firm measured by total asset and number of borrowers has a positive impact on the performance of Microfinance institutions in Tanzania. The findings of the study were consistent with some previous studies such as Punnose (2008), Majumdar (1997), Wing & Yiu (1997) and Serrasqueiro & Nunes (2008) which also reported similar findings on the impact of firm size in different industries. The study findings were also consisted with some previous findings in microfinance sector such as study by Ejigu (2009), Cull et al (2007) and Coleman (2007). The study also found positive impact of the firm size on firm revenue generation capacity indicating that as firm size increases its revenue generation capacity also increases. The finding of the study was consistent with some previous studies such as Lun & Quaddus (2011) and Coleman (2007) which also report that firm size has a positive impact on sales growth and yield on growth loans. Contrary to the above findings, the results on firm size measured by the number of staff were found to be negatively related to efficiency, sustainability and profitability of Microfinance institutions. This implies that the relationship between firm size and performance depends on the variables used as a proxy measure for performance as well as firm size. The negative effect of firm size on performance is also reported in some previous studies such as Weerdt et al (2006), Diaz & Sanchez (2008), Ramsey et al (2005) and Crawford et al (2011).

On the impact of age on performance of Microfinance institutions in Tanzania, the study finds the positive impact of age on efficiency, sustainability and revenue generation capacity, and negative impact on firm profitability. This indicates that the experience of the firm increases with Microfinance institution's efficiency, sustainability and revenue generation capacity but results in declining profitability. The findings of this study are consistent with the Majumdar (1997) which found that older firms were more productive but less efficient. The findings of the study were also consistent with a number of studies in Microfinance institutions such as Ejigu (2009), Masood et al (2009) and Abayie

et al (2011) which found that age has a positive impact on efficiency and sustainability of Microfinance institutions. The study findings on the relationship of age to profitability were contrary to most of the findings in Microfinance institutions such as Cull et al (2007), Bogan et al (2008), Ejigu (2009) which found a positive impact of age on profitability. Such differences in the results could, in some extent be explained by the variables used as a proxy measure of profitability of Microfinance institutions as well as the model used for estimation. This study uses adjusted return on asset (AROA) which is subsidy adjusted profitability measures contrary to most studies, which use the normal return on asset. The study also used panel data estimation, as contrary to the above studies which used pooled regression model which does not capture the effect of omitted variables in the model.

5. Conclusion and Recommendations

The aim of the study was to examine the impact of firm size and age on performance of Microfinance institutions in Tanzania. The study uses panel data of five years and 30 Microfinance institutions operating in the country. The study uses four variables, efficiency, sustainability, profitability and financial revenues as the proxy measures for the performance of Microfinance institutions. On the other hand, the study used total asset, number of staffs and number of borrowers as the proxy measure of firm size in one hand and the number of years since the commencement as the proxy measure of age and experience of Microfinance firms.

The findings of the study show the presence of the positive impact of firm size measured by total asset and number of borrowers on performances of Microfinance institutions in the country. The study found that, total asset and number of borrowers have a positive significant relationship with efficiency, sustainability, profitability and revenue level of Microfinance institutions reviewed. On the other hand, the study found out that firm size measured by the number of staff was negatively related to the efficiency sustainability and profitability of Microfinance institutions. The findings of the study also show that the age of the firm which indicate firm experience have a positive impact on efficiency, sustainability and financial revenue levels but have a negative impact on the profitability of Microfinance institutions. From these findings, the study concludes that both firm size and age have an impact on Microfinance performance in Tanzania in terms of efficiency, sustainability, profitability and revenue generation capacity.

The findings of the study are important to the policy makers, managers and other stakeholders of Microfinance institutions in Tanzania. Due to the increased importance of the Microfinance sector in the country, many smaller institutions such as SACCOs have emerged as providers of microfinance services using funds from public sources. It is important to monitor the growth of these institutions to ensure better performance and attainment of intended objectives. The study recommends that policy makers should create better policies to facilitate the growth of the smaller Microfinance institutions in Tanzania. The study also recommends to the managers of Microfinance institutions to monitor the firm's growth very closely, as the growth in both size and age has an impact on the firm performance.

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Appendices

Appendix 1: Regression Assumptions Test results

Hausman Test				
	EFF	OSS	AROA	FINREV
Chi2(4)	14.11	15.47	12.11	21.04
Prob>Chi2	0.007	0.004	0.017	0.000
Wooldridge test for Autocorrelation in Panel data				
Ho: No First order Autocorrelation				
	EFF	OSS	AROA	FINREV
F(1, 29)	0.428	0.351	0.388	0.231
Prob>F	0.518	0.558	0.538	0.635
Cameron & Trivedi's IM test for Heteroskedasticity				
	EFF	OSS	AROA	FINREV
Chi 2	13.220	13.800	13.920	13.260
Df	14	14	14	14
Prob	0.509	0.464	0.455	0.506
Variance Inflation Factor (Multicollinearity test)				
Variable	VIF		1/VIF	
Asset	5.620		0.178	
Staff	4.010		0.250	
Borrowers	2.500		0.400	
Age	1.010		0.989	

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