



FIRM SIZE AND PERFORMANCE: AN ECONOMETRIC ANALYSIS OF THE FINANCIAL PERFORMANCE OF DEPOSIT TAKING MICROFINANCE INSTITUTIONS IN KENYA

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ABSTRACT: Firm size has been a dominant control variable in most cost finance studies involving organizational performance where it has been used as proxy for corporate competitiveness. However, its isolated effect on performance has been ignored. Resource Based View theory and Efficient Structure hypothesis has anticipated its contribution to performance by proposing a beneficial link between size and organizational. This notwithstanding, empirical evidence on the effect of firm size on performance is mixed. On this basis, therefore, this paper investigates the effect of firm size on the financial performance of deposit taking microfinance institutions in Kenya using both a static and a dynamic panel data model. The study has secondary data over the period 2011 to 2018 on six institutions. On the static model the study finds a positive influence of total assets on financial performance while customers' deposits did not significantly influence financial performance. On a dynamic model, the study finds a significant positive influence of one year lagged financial performance on the contemporaneous financial performance of deposit taking microfinance institutions.

Keywords: Firm Size, Financial Performance, Total Assets, Customer Deposits.

1. INTRODUCTION

Firm size has been a predominant control variable in studies involving organizational performance pointing to its possible contribution in the conduct-performance nexus in the corporate finance discourse. As argued by Grant (1987), firm size is frequently used as a proxy of competitive positioning and therefore can be expected to influence performance. Indeed, Mulwa (2020) opines that the size of a firm denotes a firm's competitive power in the market and therefore its ability to deploy its resources profitably in the market. This has been confirmed by the findings of Obigbemi *et al.* (2015) who, while investigating the drivers of voluntary corporate governance disclosures among 137 Nigeria firms, reported a significant direct relationship between size and financial performance on the one part and voluntary corporate governance disclosures. This shows the confidence that large and performing firms have in disclosing their corporate governance information. Indeed, scholars on determinants on firm performance have identified firm size as one of the determinants (Abubakar *et al.*, 2018; Al-Shahran and Zhengge, 2016; Kisengo and Kipchumba, 2016; Mirza and Javed, 2013; Odusanya *et al.*, 2018; Too and Simiyu, 2018). However most of these studies are based on industrial and manufacturing firms or selected sector(s) of the economy. None the less, this points to the importance of firm size in influencing the performance of organizations. However, the exact influence remains elusive with studies reporting mixed outcomes as regards the influence of firm size on performance.

Citing scale benefits, some researchers have reported a performance premium occasioned by firm size. Notably, using panel data on non-financial firms, Vinasithamby (2018) in Srilanka, Ozcan *et al.* (2017) in turkey, Said *et al.* (2016) in Pakistan, and Babalola (2013) in Nigeria reported a positive effect of firm size on firm's Returns on Assets. Other studies which reported a direct influence of firm size on financial performance among non-financial firms were those of Odusanya *et al.* (2018), Oyelade (2019) and Abubakar *et al.* (2018) in Nigeria, and Mirza and Javed (2013) in Pakistan. Among financial institutions, Muinamia and Atheru (2018), while using panel data of 8 tier one banks in Kenya for the period 2009 to 2016, reported a significant direct effect of firm size on bank returns on assets. Similar results were reported by Kipesha (2013) who investigated the impact of firm size and age on performance

of 30 microfinance institutions in Tanzania using panel data over five years. While measuring size by total assets, number of borrowers and number of staff, he reported positive effect of total assets and number of borrowers on sustainability, profitability, and level of financial revenue of the firms. In Kenya, [Kisengo and Kipchumba \(2016\)](#) reported a positive effect of firm size on firm performance among 52 microfinance institutions operating in Nakuru town. However, their study was based on primary data which makes the finding inconclusive because of the dynamism associated with firm size.

Other scholars have reported an inverse impact of firm size on firm performance measures. For instance, among general insurance companies in Kenya, and using panel data for the period 2011 to 2015, [Too and Simiyu \(2018\)](#) reported an inverse influence of firm size on firm's Return on Equity. Similarly, among commercial banks in Kenya and using panel data for the firm years 2005 to 2013, [Mulwa and Kosgei \(2016\)](#) reported an inverse effect of firm size on Return on Assets of commercial banks. This they attributed to the relationship banking efficiency of small banks. Using panel data from over the period 2005 to 2016, [Eyigege \(2018\)](#) also reported a significant inverse effect of firm size on the financial performance of 5 deposit money banks in listed in Nigeria Stock Exchange.

Other scholars have either reported indifferent results or have used methods that could not establish causality between firm size and performance. For instance, [Adnan et al. \(2011\)](#) while investigating the impact of firm size, information system and technology architecture associated with prospector strategy on performance of 25 firms in Isparta, Turkey reported an insignificant effect of firm size on firm performance. In Kenya, [Mulwa and Kosgei \(2016\)](#) reported an insignificant effect of size on commercial banks' return on equity using data for the period 2005 to 2013 while [Maina et al. \(2019\)](#) returned insignificant coefficients while investigating the relationship between firm size and profitability of commercial banks using data for a five year period from 2012 to 2016 for 43 banks. Despite this, [Maina et al. \(2019\)](#) reported a moderate positive correlation between size and financial performance. In Turkey, [Ozcan et al. \(2017\)](#) could not prove a quadratic or cubic relationship between size and performance among listed manufacturing firms despite reporting a linear relationship. However, [Ahmad et al. \(2017\)](#) among listed public in Malaysia, [Muhindi and Ngaba \(2018\)](#) among commercial banks in Kenya and [Abeyrathna and Priyadarshana \(2019\)](#) among manufacturing companies in Srilanka used correlation analysis and therefore they could not methodologically establish causality between firm size and performance, despite all of them reporting some association between the two variables.

This divergence in literature along with the fact that, most of these studies are based on either manufacturing firms or commercial banks and, majorly use non-dynamic panel data methods lead to two questions that this study seeks to answer. First, does the firm size affect the financial performance of deposit taking microfinance institutions in Kenya and second, does the persistence of historical firm performance influence the firms' contemporaneous performance. To achieve this, the study will analyze the influence of firm size on the financial performance of all deposit taking microfinance institutions in Kenya.

2. THEORY OF FIRM SIZE AND PERFORMANCE

The most common scale-performance link is provided by the Resource Based View (RBV) approach to a firm ([Barney, 1991](#); [Teece et al., 1997](#); [Wernerfelt, 1984](#)) which is based on the assumption that firms undertake deliberate managerial efforts aimed at attaining a sustainable competitive advantage. The approach analyses firms as a collection of resources and explains the resource-benefits accruing to a firm by envisaging the existence of resource position barriers where by the holders of a resource are able to maintain a sustainable competitive advantage in relation to other holders and third persons. This is because possession of a resource by one party affects the costs and / or revenues of later acquirers adversely. In such a case the holder can be said to enjoy the protection of a resource position barrier or a first mover advantage ([Lieberman and Montgomery, 1988](#)). The resource position barriers indicate a potential for high returns since one competitor has an advantage over others occasioned by efficiency in the use of resources ([Montgomery, 1994](#)). As such, a firm is expected to command stronger financial performance based on the resources accruing to its size.

Other theories have emerged to explain the performance implications of a firm's scale. Notable among these is the Efficiency-Structure (ES) Hypothesis of [Demsetz \(1973\)](#). This hypothesis argued that as a result of competitive pressure, more efficient firms will develop and grow in scale leading to increase in the degree of market concentration along with high profitability associated with their large market share ([Homma et al., 2012](#)). This implies that as a result of being efficient, firms grow both in size and their market share and consequently the large firms become more profitable than their smaller counterparts since they are now able to control the pricing structures in the market. Based on both the RBV approach

and the ES hypothesis, this study hypothesizes a direct relationship between firm size and financial performance.

3. DATA AND METHODOLOGY

Theory of corporate finance points to a numerous approaches through firm size can be measured. Key among these are liquidity (Al-Shahran and Zhengge, 2016; Oyelade, 2019), total assets (Abeyrathna and Priyadarshana, 2019; Al-Shahran and Zhengge, 2016; Eyigege, 2018; Kipessa, 2013; Too and Simiyu, 2018), market share position (Al-Shahran and Zhengge, 2016) and customer deposits and advances (Maina *et al.*, 2019; Muhindi and Ngaba, 2018). In this paper, firm size will be measured using total assets and the amount of customer deposits. As suggested by Oyelade (2019), financial performance can be measured using both accounting and economic measures. However, in this study and following Ozcan *et al.* (2017), financial performance will be measured using a percentage of operating returns on assets (ROA). Table 1 below summarized the variables of study along with their measures and indicators.

Table 1. Variables, Notations and Measures

Variable	Measure (Notation)	Indicator
Panel A: Dependent variable Financial Performance	Operating return on assets	% (Operating Profit/Total assets)
Panel B: Independent Variables Firm Size	a. Total Assets (TA) b. Customer Deposits (CD)	a. Natural logarithm of TA b. Absolute value of deposits

Source: Author (2020)

As at December 2018, there were thirteen operating microfinance institutions in Kenya (CBK) on whose secondary data was collected from the Central Bank of Kenya Supervision Reports over an eight year period from 2011 to 2018. However, some of the microfinance institutions started operations while other ceased operations within the study period and consequently were dropped for lack of complete data. As such data was collected on six microfinance institutions that had complete data for all the firm years. Table 2 below presents descriptive statistics on the study variables while table 3 presents a summary of correlations, variance inflation factors and normality test statistics for the variables.

Table 2. Descriptive Statistics

	Obs.	Min	Max	Mean	Std. Dev.
Financial Performance (% oROA)	48	-16.949	7.424	-0.474	5.159
Total Assets (Sh. Millions)	48	59.000	31861.00	8797.542	10936.472
Customer Deposits (Sh. Millions)	48	8.000	17941.00	4613.688	6454.550

Source: Research data (2020)

As shown in table 2 above, deposit taking microfinance institutions had an average negative operating ROA of -0.474 % which was highly dispersed with a standard deviation of 5.159%, a maximum score of 7.424% and a minimum oROA of 16.949 showing the dispersion in performance current in the sector. The institutions were equally dispersed in both assets and total deposits with mean assets value of Sh. 8797.542 million which had a standard deviation of Sh. 10936.472 million. The mean customer deposits on the other hand were Sh. 4613.688 million with a standard deviation of Sh. 6454.55 million ranging from a minimum of Sh. 8 million to a maximum of Sh. 17941 million.

Financial performance has a significant positive correlation with both indicators of firm size; total assets and customer deposits (table 3). Total assets and customer deposits were also positively correlated. However, their correlation coefficient was less than the 0.8 threshold for multi-collinearity to set in (Field, 2009). This can be confirmed by the VIF scores which were less than 10 for the two predictor variables. As indicated by the significant values of Shapiro-Wilk W statistic, all the variables had non-normal distributions.

Table 3. Correlation coefficients, Variance inflation factor and Shapiro-Wilk test scores

	[1]	[2]	[3]	VIF	Test of Normality		
					W	df	Sig.
[1] Financial Performance	1				.921	48	.003
[2] Total Assets	.654**	1		2.535	.912	48	.002
[3] Customer Deposits	.427**	.778**	1	2.535	.688	48	.000

** . Correlation is significant at the 0.01 level (2-tailed); Obs.= 48
Source: Research data (2020)

To achieve the objective of the study in determining the influence of firm size on financial performance of deposit taking microfinance institutions in Kenya, and considering the non-normal distributions of the study variables, the paper will approximate a Generalized Linear model (GLM) as recommended by [Czado \(2004\)](#). This is because of the ability of GLM models to allow for response variables that have non-normal distributions. Consequently the following static model will be approximated:

$$\eta_{i,t} = \beta_0 + \beta_1 \ln TA_{i,t} + \beta_2 CD_{i,t} + \varepsilon_{i,t} \dots \dots \dots [Eq. 1]$$

Where $\eta_{i,t}$ is a linear predictor determining the expected value of response variable Financial Performance, $\ln TA_{i,t}$ and $CD_{i,t}$ are the natural logarithm of total assets and value of customer deposits respectively for firm i at time t and $\varepsilon_{i,t}$ is the random error term.

The study had also set out to establish whether the persistence of historical performance influenced the contemporaneous performance of deposit taking microfinance institutions and to achieve this, the study will estimate the following Dynamic Panel Data (DPD) which includes among the predictors a lagged value of the dependent variable.

$$\pi_{i,t} = \alpha + \psi \pi_{i,t-n} + X_{i,t} \beta + \mu_i + v_{i,t} \dots \dots \dots [Eq. 2]$$

Where $\pi_{i,t}$ is contemporaneous profit for firm i at period t , $\pi_{i,t-n}$ is the financial performance of firm i at time $t-n$ and measures the effect of firm’s past financial performance on the current financial performance; the dynamic component of the relationship. The vector X contains total assets and customer deposits while α , ψ and β are parameters to be estimated. μ_i is the unobservable firm specific effects and are assumed to be uncorrelated with the explanatory variables while $v_{i,t}$ is the remainder disturbance term. The results are presented in the next section.

4. RESULTS

The objective of this paper was to establish the influence of firm size on financial performance of deposit taking microfinance institutions in Kenya. To achieve this, measures of firm size were regressed against financial performance using a GLM model at 5% significance level. The results are presented in model 1 in [table 4](#) and show that there was a significant regression relationship between the predictors and financial performance as indicated by the significant LR statistic (LR statistic = 35.9689, Prob. = 0.0000<0.05). Additionally, the results show that total assets as a measure of firm size had a direct significant effect on the financial performance of deposit taking microfinance institutions in Kenya ($\beta=2.1093$, p-value<0.01). These results confirm the findings by [Kipasha \(2013\)](#) who used similar measures among microfinance institutions in Tanzania. Similar results were also reported in non-financial firms by amongst others [Vinasithamby \(2018\)](#), [Babalola \(2013\)](#), [Odusanya et al. \(2018\)](#) and [Oyelade \(2019\)](#) in non-financial firms. The results confirm the prescriptions of Resource Based View Theory that firms with more resources accruing to their size are able to command better returns due to their ability to erect resource position barriers by efficiently using their resources as suggested by [Montgomery \(1994\)](#). This size-performance nexus was also suggested in the Efficiency-Structure theory which suggest that large firms command better profitability ([Homma et al., 2012](#)) since they are able to leverage on their large market shares to control the pricing structures in the market.

However, customer deposits did not significantly affect the financial performance of microfinance institutions in Kenya ($\beta=-0.0002$, p-value>0.05), similar to the findings of [Maina et al. \(2019\)](#) whose study returned insignificant coefficients in the regression between annual customer deposits and profitability of tier one commercial banks in Kenya. This shows that customer deposits were not a

significant determinant of the financial performance of deposit taking microfinance institutions. This is probably due to the nature of banker-customer contract that places the deposits with the banker whereby the customer can call on the deposits within a short notice and thereby making it difficult for the institutions to leverage on the deposits for long term profitability.

To establish the influence of past financial performance on the current financial performance of the deposit taking microfinance institutions, a lagged value of the financial performance was included among the predictors in a dynamic panel data model and the results are presented in model 2 in table 4. The results indicate that the GMM model was efficient and well specified as indicated by the Sargan J-Statistic of 22.659 (19df) which is less than its corresponding critical chi square random variable with K-L degrees of freedom ($\chi^2_{0.025, 19} = 32.852$). From the results, one year lagged financial performance has a significant positive effect on the current years financial performance ($\beta=0.0376$, p-value<0.01). This shows that a higher financial performance in the previous year would lead to a higher financial performance in the current year, which results confirm the findings by Odusanya *et al.* (2018) who reported a positive effect of lagged one year profit on the profitability on non-financial firms in Nigeria. Such benefits of historical performance can be harnessed by financial institutions through re-investment in productive resources, rebranding, training and research amongst other avenues for development. However, when the lagged financial performance was included in the model, total assets just like customer deposits, became an insignificant determinant of financial performance of deposit microfinance institutions in Kenya.

Table 4. Regression Results

	Dependent Variable: Financial Performance	
	Model 1: GLM	Model 2: Panel GMM
Constant	-16.0767** (4.1331)	
Financial Performance(-1)		0.2329** (0.0376)
Total Assets	2.1093** (0.5701)	2.2336 (1.5758)
Customer Deposits	-0.0002 (0.0001)	0.0001 (0.0001)
@LEV(@ISPERIOD("2013"))		4.4723** (1.4116)
@LEV(@ISPERIOD("2014"))		3.1464** (0.6357)
@LEV(@ISPERIOD("2015"))		2.4146* (1.0068)
@LEV(@ISPERIOD("2016"))		1.9022 (1.0307)
@LEV(@ISPERIOD("2017"))		1.4024 (1.6047)
@LEV(@ISPERIOD("2018"))		1.0484 (0.9356)
Mean dependent var.	-0.4738	1.9798
S.D. dependent var.	5.1591	2.8626
LR. Statistic (Prob.)	35.9689 (0.0000)	
S.E of Regression		3.0347
J-Statistic (Instrument Rank)		22.65896 (28)
Obs. (Number of firms)	48 (6)	36 (6)
Notes: standard errors in parenthesis; **. Sig. < 0.01; *. Sig. < 0.05		

Source: Research data (2020)

5. CONCLUSIONS

This paper examined how firm size affected the financial performance of deposit taking microfinance institutions in Kenya along with the performance inertia that existed in the financial performance using panel data for the periods 2011 to 2018. The paper approximated both a static and a dynamic panel data model. As regards, effect of firm size on financial performance, the paper finds a direct significant effect of total assets on financial performance using a static GLM model. This confirms the prescriptions of RBV theory and ES hypothesis that large firms would enjoy better profits leveraged on their resources and market share. However, the paper observed an insignificant effect of customer

deposits on financial performance. As regards the performance inertia of the financial performance of deposit taking microfinance institutions, and using a GMM model, the paper finds significant direct effect of one year lagged financial performance on the contemporaneous performance.

Based on these results, deposit taking microfinance institutions should place emphasis on growing their asset portfolios as this enhances their financial performance. Additionally, they should pursue measures that sustain good financial performance since the inertia of past performances impacted their contemporaneous financial performance.

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