

EFFECT OF FIRM SIZE ON FINANCIAL PERFORMANCE OF SUGAR FIRMS IN WESTERN KENYA

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ABSTRACT

*Kenya Sugar sub-sector accounts for 7.5% of the National GDP and 15% of the Agricultural GDP. These firms have been experiencing poor financial performance with an average after tax profit of -24% for the period 2010-2018. Some of these firms have faced frequent closures with a case of one being put under receivership, yet a section of some small firms seem to be thriving. The discrepancy in these sugar firm's financial performance points out to the contribution of firm size as presumed by the theory of economies of scale. The purpose of this study was to analyse firm size and financial performance relationship in sugar firms in Western Kenya. The study was anchored on the theory of economies of scale and dividend signalling theory based on ROE & ROA. The study used correlation research design. The target population was 8 sugar firms found in Western Kenya that were in operation during the study period. The firms were pooled for 10 years resulting to 80 data points. The result show that firm size is a significant positive predictor of financial performance with ($R^2 = .153$, $p = .000$) (coeff. = .557) $r = (.388^{**}$, $p = .000$) implying that 15.3% of the variance in financial performance of sugar firms in Western Kenya was explained by firm size. Firm size also had positive relationship with all the indicators of financial performance; ROA ($r = .333^{**}$, $p = .003$) and ROE ($r = .401^{**}$, $p = .000$) implying that for every one unit increase in firm size, there was ensuing improvement in financial performance of these firms by .557. The study concludes that firm size had a statistically significant positive effect on financial performance. The study recommends that sugar firms should enhance their sizes if they are to benefit from the economies of large scale. The findings are deemed to be of use to academia as a basis for further research in finance.*

KEY WORDS: Firm size; Financial performance; Return on Asset; Return on Equity; GDP & GAAP.

INTRODUCTION

Firm size is defined by the total assets it holds and total sales it achieves annually as reflected on its annual financial statements and market value of its equity, Frank and Chongyu (2013). For this study, total sales was found to be robust hence most appropriate measure of firm size. This was arrived at by working out the natural logarithm of these firm's annual sales for the study period. Kenyan sugar firms operate at different sizes thereby achieving different levels of financial performance. Some sugar firms record impressive financial performance while others grapple with their existence, recording negative financial performance with a few closing down.

Financial performance principally reflects business sector outcomes and results that show overall financial health of the sector over a specific period of time. It indicates how well an entity is utilizing its resources to maximize the shareholders wealth and profitability, Farah, Farrukh and Faizan (2016). A firm's financial performance is reflected by the return on the shareholder's funds (ROE) and return on the assets used to generate these financial gains (ROA), Pandey (2004). A firm's ROA reflects a firm's basic earning power resulting from efficient asset utilization as well as effect of interest cost resulting from its use of debt, Brigham, (2010) The study therefore used ROA and ROE as indicators of financial performance among the sugar firms in Western Kenya. Karen and Sheiner, (2018) defines Gross Domestic Product (GDP) as the total monetary or market value of all the finished goods produced and services provided within a country during a year. GAAP refers to the generally accepted accounting principles.

Objective of the study

To determine the effect of firm Size on the financial performance of sugar firms in Western Kenya.

Hypothesis of the study

H₀: Firm size has no effect on the financial performance of sugar firms in Western Kenya.

THEORETICAL REVIEW

The Theory of Economies of Scale by Gan and Vernon (2003) and Karsten, (1997) postulates that large firms enjoy cost advantages due to their scale of operation with cost per unit of output generally decreasing with increasing scale as fixed costs are spread out over more units of output. Economies of scale arise from discounts given due to large quantity buying as well as due to specialization and division of labor. Bigger firms have a head start over smaller firms in fields requiring competition hence have the opportunity to profit more. They are able to seize the opportunity to work in the fields which require huge capital outlays since they presumably have larger resources as compared to their smaller counterparts. This theory proposes positive relationship between firm size and financial performance as reflected by ROA and ROE. The theory guided the study in establishing the effect of firm size on financial performance of sugar firms in Western Kenya by observing the behaviour of the performance measure when the size variables are increased and decreased in the regression.

According to the signaling theory of Return on asset (ROA) and Return on equity (ROE) by Brigham (2010), a firm's ROA reflects a firm's basic earning power resulting from efficient asset utilization as well as effect of interest cost resulting from its use of debt. High ROA results from

high basic earning power, while the converse holds true. The theory of Return on equity (ROE) states that ROE above industry average is an indication of a company's greater use of debt. This theories guided the study in establishing how well these sugar firms utilize their assets as portrayed by the behavior of ROA and ROE of the firms given their varied sizes against their financial performance.

EMPIRICAL LITERATURE REVIEW

Studies on firm size and financial performance relationship have been performed by various researchers such as; Yoon and Jang (2005), Papadognas (2007), Ching and Gerab (2012), Malik (2011), Vijayakumar and Tamizhselvan (2010), Babalola and Abiodun (2013), Kipkoech (2014), Kaguri (2012), Mehrjardi (2012) and Mule *et al*(2015) who applied ordinary least square regressions, multi ratio model and multivariate statistical method, multiple regression model and obtained positive effect of firm size on financial performance of firms.

On the contrary, Amato and Burson (2007), Lee (2009), Dermigunes and Ucler (2015) and Amar (2003) investigated linear and cubic forms of relationships using fixed effect dynamic panel data model, using unit root test and co-integration test to check on the stationarity of the series and obtained negative relationship between firm size and financial performance. However, Niresh and Velnampy (2014) applied regression model and correlation analysis but found no relationship between firm size and financial performance.

Literature on the relationship between firm size and financial performance show contrasting results whereby some found positive relationships, while others found negative relationship as a few found no relationship at all. The diversity of the results makes it difficult to draw a conclusion as to whether sugar firms benefit from economies of scale as proposed by the previous theories. Previous researchers focused on effect of liberalization of sugar import, corporate governance and non-diversification as possible causes of the poor financial performance among Kenyan sugar firms with no literature on the relationship between firm size and financial performance among the sugar firms. Existing literature acknowledge the benefits of economies of scale on financial performance within different industrial contexts, however, there was lack of information on how firm size and financial performance relate within the context of sugar firms in Western Kenya.

METHODOLOGY

The research used quantitative model in a correlational research design. This was done by examining how firm size and financial performance relate with each other guided by the objective of the study. The study was carried out in Western region of Kenya covering three major sugar belts; western sugar belt, Nyando sugar belt and South Nyanza sugar belt where the sugar companies of the study are situated. The study targeted 8 sugar firms of various sizes assessed for the period 2008-2017 yielding a panel of 80 data points. Saturation method was applied to sample the sugar firms for the study. Saturation sampling was also relevant in this study given the heterogeneity of the Kenyan sugar firms' study variables and the panel data purported to be used. The study used secondary panel data obtained from annual financial reports of the sugar firms from January 2008 to December 2018. The secondary panel data from the financial reports was used given that it is an audited statutory document which meets the GAAP requirements and produced annually by all the firms making it credible data to use. The experts opined that data items

adequately and sufficiently represented the content for each construct. All the variables in the study were stationary with their respective $p < .05$ level of significance. The size of the correlation (r) and the statistical significance were examined. A statistical significance at the alpha ($p = 0.05$) level was sufficient for this analysis. The data was analyzed using panel regression model as indicated.

$$\text{Financial performance} = \beta_0 + \beta_1 \text{FS}_{it} + \epsilon_{it} \text{ where}$$

- Financial performance is the dependent variable proxied by ROA and ROE
- FS Firm size, the explanatory variable proxied by In Log Sales.
- ϵ is the unexplained variation (error term)

Hence, the model can be written as:

$$\text{Financial performance}_{it} = \beta_0 + \beta_1 \text{In Log Sales}_{it} + \epsilon_{it}$$

$$(i) \quad \text{ROA}_{it} = \beta_0 + \beta_1 \text{In Log Sales}_{it} + \epsilon_{it}$$

$$(ii) \quad \text{ROE}_{it} = \beta_0 + \beta_1 \text{In Log Sales}_{it} + \epsilon_{it}$$

FINDINGS AND DISCUSSIONS

To establish the relationship among the study variables the Pearson Product Moment Correlation coefficient was computed. The size of the correlation (r) and the statistical significance were examined. A statistical significance at the alpha = 0.05 level was sufficient for this analysis. The results of the study show a mixed correlation between return on asset, return on equity and firm size of the sugar firms in Western Kenya in the period of 2008-2017 as shown below.

Table 1: Correlations analysis results on effect of firm size and financial performance

		Return on Asset	Return on Equity	Firm Size
Return on Asset	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	80		
Return on Equity	Pearson Correlation	.943**	1	
	Sig. (2-tailed)	.000		
	N	80	80	
Firm Size	Pearson Correlation	.333**	.401**	1
	Sig. (2-tailed)	.003	.000	
	N	79	79	79
Firm performance	Pearson Correlation	.968**	.996**	.388**
	Sig. (2-tailed)	.000	.000	.000
	N	80	80	79

Source: Field data, 2018

From the above table, the relationship between firm size and financial performance of the sugar firms in Western Kenya was investigated using the Pearson’s moment correlation analysis as shown in the table above. It revealed that firm size had a positive relationship with all the indicators of financial performance; Return on Assets ($r=.333^{\square\square}$, $p=.003$) and Return on Equity ($r=.401^{\square\square}$, $p=.000$). This reflected the benefits associated with economies of scale as reflected on sales. A parametric test, panel regression analysis, was conducted to estimate the level of influence, with scores on firm size as the independent variable and financial performance as the dependent variable.

Table 2 Panel Analysis: Random Effect Regression Model of Firm Size on Financial Performance

.xtreg Performance Firm Size, re						
Random – effects GLS regression			Number of obs	=	79	
Group variable : Year			Number of groups	=	10	
R – sq: within = 0.2031			Obs per group: min	=	7	
Between = 0.0809			avg	=	7.9	
Overall = 0.1530			max	=	8	
			Wald chi2	=	16.12	
Corr (u_i, X) = 0 (assumed)			Prob > chi2	=	0.0001	
Performance	Coef.	Std. Err.	t	P> z	[95% Conf.	Interval
Firm Size	.5790533	.1388534	4.01	0.000	.285268	.8295623
_cons	-.6388836	.1375791	-4.49	0.000	-.8874449	-.3481448
sigma_u	.04908966					
Sigma_e	.15482175					
Rho	.09135079 (fraction of variance due to u_i)					

Source: Field Data 2018

From the table above, it can be observed that 15.3% (overall $R^2 = .153$) of the variance in financial performance of sugar firms in Western Kenya was explained by firm size. The model was significant at $p = 0.0001$, which indicates the validity of the model. It was noted that firm size had positive coefficients (coeff. $=.557$) and its p values was lower than 0.05, indicating a significant positive relationship between firm size and firm performance. This implies that for every one unit increase in firm size there was ensuing improvement in firm financial performance by .557 units. Further, the t-value, which test the hypothesis that the coefficient is different from 0 was higher than 1.96 at 95% confidence. In this case, it was further implied that firm size has a significant influence on firm performance. Further, the results show that about 9% ($\rho=.0913$) of the variance in firm performance was due to differences across panels, that is across the year, which validates the use of random effect model in the regression.

A linear regression model used for this analysis was of the form $Y = \beta_0 + \beta_1FS_{it} + \epsilon_{it}$ where

- Y is the dependent variable, in this case firm performance
- FS is the independent/ explanatory variable, in this case firm size (ln Log Sales).
- ϵ is the unexplained variation (error term)

Hence, the model can be written as:

$$\begin{aligned}\text{Firm performance}_{it} &= \beta_0 + \beta_1 \ln \text{Log Sales}_{it} + \epsilon_{it} \\ &= -.6178 + \beta_1 \cdot 5574 + \epsilon_{it}\end{aligned}$$

Based on the random effect regression model for firm size and financial performance, it was concluded that there is a significant positive relationship between firm size and firm financial performance (coeff. =.557; p=.000). Hence, there was sufficient evidence to reject the null hypothesis and simultaneously accept the alternative hypothesis. It was therefore concluded that there is a statistically significant relationship between firm performance and firm size, with firm size explaining 15.3% ($R^2=.153$) of the variance in firm financial performance.

The regression findings and the correlation results on the effect of firm size on the financial performance of sugar firms in Western Kenya converge in the finding that firm size has a significant positive relationship with financial performance and hence are in conformity with the theory of economies of scale which postulates that large firms perform better than smaller firms due to discounts they access on large quantity buying, better interest rates and division of high fixed costs across a large number of units. These firms also enjoy specialization of labor and can take advantage of fields requiring huge capital outlay.

This finding was in tandem with most of the previous researchers' findings such as that of Mule *et al* (2015) who investigated the effect of corporate size on profitability and market value of listed firms in Kenya using panel data of firms active in the NSE during the period 2010-2014. He carried out panel multiple regression and established a positive relationship between firm size and profitability. It also supports the findings of Ching and Gerab, (2012) on Brazilian companies using a multi-ratio model, while applying a multivariate statistical method on a sample of 16 companies and found a positive relationship between firm size and financial performance. However, it differed with that of Amato and Burson, (2007) who tested the size-profitability relationship for firms in the US financial services sector and found a statistically negative relationship between the study variables.

SUMMARY OF RESEARCH FINDINGS

The study sought to determine the effect of Firm Size on the Financial Performance of sugar firms in Western Kenya. Based on the random effect regression model, the study established a significant positive relationship between firm size and firm financial performance (coeff. =.557; p =.000), with every one unit increase in firm size resulting into improvement in the firm financial performance by .557 units. Additionally, 15.3% (overall $R^2 = .153$) of the variance in financial performance of sugar firms in Western Kenya was explained by firm size. However, the results of the study showed that about 9% ($\rho=.0913$) of the variance in financial performance was due to differences across panels.

CONCLUSION AND RECOMMENDATIONS

The study concluded that firm size significantly positively predicts ROA and ROE which were used as proxies of financial performance of these sugar firms of western Kenya. This finding was in tandem with the theory of economies of scale. This conclusion was reached after considering the overwhelming unique significant contribution of firm size to the overall study model. The management of the Sugar firms in Western Kenya should positively make use of the benefits of

economies of scale by working hard to enhance the sizes of the sugar firms so as to actualize a good financial performance as reflected by ROA and ROE.

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