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Influence of Alternative Financing on the Relationship between Firm Size and Efficiency of Small and Medium Enterprises in Kenya

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Abstract

Globally, small and medium-size enterprises(SMEs) hold great economic growth potential, however their mortality rate is high, due to lack of credit. The SMEs mortality rate in Kenya is 90% by the second year. Scholarly endeavors to explore the influence of alternative finance (AF) on operational characteristics - efficiency nexus have received little attention, more so for SMEs who have unique financial needs. Although AF appears to be the preferred mode of financing and maintaining start-ups, its impact on the survival, growth and success of manufacturing SMEs is not well documented in Kenya. This study focused on establishing the influence of alternative financing on the relationship between firm-size and efficiency of SMEs in Kenya. The study used a cross-sectional research design. The target population was SMEs registered with Kenya Association of Manufacturers (KAM). The accessible population was 136 SMEs owner/managers. The study used a self-administered semi structured questionnaire to collect primary and secondary data. Data envelopment analysis was used to measure efficiency of SMEs, multiple regression modeling to analyze relationships and hierarchical moderated multiple regression analysis was used to assess the influence of the moderator. The findings revealed that firm-size positively (β = 0.214, t-value =4.983, P<0.05.) influences efficiency and that alternative finance does moderate (R-Square change 11.1 %) firm size relationships with efficiency. The study recommends that owner/managers of manufacturing SMEs in Kenya should give attention to opportunities for sustainable increase in firm size to improve their efficiency.

Keywords: *Alternative Financing, Firm-Size, Efficiency, Small and Medium-size Enterprises*

JEL classification: *G200; G190.*

Introduction

Small and medium-size enterprises (SMEs) remain the core engine to productivity and economic growth globally (Abdulsaleh & Worthington, 2013; Asian Productivity Organization [APO], 2015). Yet, adequacy of business finance determines their mortality rate (Ayyagari, Beck & Demirguc-Kunt, 2007; Jasra, Khan, Hunjira, Rehman, & Azam, 2011; Nangoli, Turinawe, Kituyi, Kusemererwa, & Jaaza, 2013). Findings by Juma, (2017) show that SME mortality rate in Kenya is at 90% by their second birth day. In their global focus study on alternative finance (AF), Allen, Carletti, Qian, & Valenzuela (2012) elucidate the vital role of AF in corporate finance, providing firm level data to underscore its importance. Building a body of knowledge on the performance of SMEs therefore, more so isolating those factors that contribute to enhancing their efficiency is essential.

While survival and sustainability of the SME is of great significance (Anderson, 1983; Bowen, Morara, & Mureithi, 2009), various characteristics such as size, age, and managerial competency, could influence their efficiency. This relationship could be moderated by variables such as alternative finance (AF). Prusa, (2012) argues that a good measure of efficiency encompasses both technical and allocative efficiency, both of which can be simultaneously calculated using a “money- metric production” frontier framework (Prusa, 2012). Abdulsaleh & Worthington, (2013) emphasize that SME access to finance is fundamental, if the SMEs are to play their role to sustain growth and spur innovation for national economic growth. The manufacturing sector in Kenya contributes approximately 8% of the GDP, hence the importance of studying manufacturing SMEs.

The operational characteristics - efficiency nexus has received extensive theoretical, conceptual and scholarly attention universally, accumulating a wealth of knowledge. While SMEs remain the core engine to development and economic growth globally, recent increased momentum of economic growth exacerbates credit services, necessitating Alternative Finance (AF). However, scholarly endeavors to explore the impact of alternative finance on operational characteristics - efficiency nexus has received little attention in Kenya, more so for (SMEs) who have unique financial needs. To counter this conundrum, a closer study of AF for SMEs is vital, to help close the credit gap and sustain efficiency growth momentum.

This study was anchored on theory of stochastic optimal economic growth and the pecking order theory. The Stochastic models argue that factors of production experience a random walk, impacting growth of the firm with the same randomness Olson, & Roy, (2004). It involves the study of optimal intertemporal allocation of capital and consumption in an economy where the production process is subject to stochastic disturbances. The theory poses three basic questions: What are the characteristics and determinants of optimal policies? What are the economic incentives that govern the optimal intertemporal allocation of resources? What is the transient and long-run behavior of variables in the model? (Olson & Roy, 2004). Its primary variable is capital finance. One of the model strands of Stochastic optimal economic growth by Gibrat (1931) postulates that firm growth is independent of firm size. However, this theory does overlook the aspect that firm-size dispersion increases over time, such that market concentration is higher if the number of firms remains the same.

The rest of the paper is organized in four sections. Following the literature review of this study, the methodology section describes the research and sampling design and the analytical models. The empirical data and analysis section explains the descriptive and summary statistics of the of the study’s data. The results and discussion section present the inferential analysis results and their interpretations while final section presents the conclusions and recommendations.

Literature Review

The Pecking Order Theory argues that capital structure is driven by firm's desire to finance new investment, first internally, then with low-risk debt, and finally if all else is exhausted, with equity. Therefore, firms prefer internal financing to external financing (Myers & Majluf, 1984). This theory is applicable for large firms as well as small firms. Since small firms are opaque and have important adverse selection problems that are explained by credit rationing; they bear high information costs, (Psillaki, 2008). This

theory delves into the relationship between SME size and efficiency. By extending Myers and Majluf, (1984) argument, this study posits that firms prefer informal financing to formal financing.

Firm characteristics are the internal aspects of an organization that influence its efficiency. These could include size, age, and managerial competency among others. The size of an SME may very well be reflected by its total value of assets, the number of full time employees and its turnover (KAM, 2014; European Commission, 2011; European Integration Studies, 2005; World Bank Group - IBRD & IDA, 2017). The number of employees in an organization determines its size and consequently determine its efficiency (Woldie, Leighton & Adesua 2008). A higher efficiency is expected for an SME with a high number of employees due to high levels of specialization and division of labor. Efficiencies of SMEs decline with their age (Banerjee, 2014; Jasra, et al., 2011; Nangoli, et al., 2013). Thus, a negative relationship is expected between efficiency and the growth of young firms. The resource-based view of organizations denotes that the performance or efficiency of firms is influenced by its resources as well as competencies to develop competitive advantage (Penrose, 1959; Porter, 1985). On the other hand, economies of scope and of scale imply enhanced efficiency. The positive relationship between the size of an SME and economies of scope has been reported variously by Goddard, Mckillop, & Wilson, (2008); Murray & White, (1983).

Various studies have found out a high correlation between alternative source of finance and financial performance of firms globally (Adenkule, Adegbite, & Fakayode, 2012; Erick, 2014; Musyoka 2011). Small and medium enterprises' financial decisions and behavior significantly differ from those of large firms, (Forkuoh, Li, Affum-Osei, & Quaye, (2015) Berger and Udell, (1998). SMEs in start-up phase depend mainly on alternative finance (Abdulsaleh & Worthington, 2013). For SMEs, trade credit is the most prominent source of finance in both developing and developed countries (Giannetti, Burkart, & Elligensen 2011; Kim & Shin, 2007; Murfin & Njoroge, 2012). Historically, SMEs in developing countries have benefited from venture capital (Karanja, Memba, & Gakure, 2012).

Globally, SMEs suffer financial inadequacy more than large enterprises do. These challenges are more pronounced in developing countries (Abdulsaleh & Worthington, 2013; Ayyagari, et al., 2007; Jasra, et al., 2011; Nangoli, et al., 2013). Although the social-cultural and demographic issues impacting AF appear more pronounced in China, there are no conclusive universal findings to this end. Most of the times formal financial issues are addressed in boosting businesses, while other alternative sources of finance which could be beneficial or even supportive of the survival of financially constrained SMEs are largely ignored (Bowen, et al., 2009). In their research, on management of business challenges among small and medium enterprises in Kenya, Ayyagari, et al., (2007); WBG - IBRD & IDA, (2014) identified lack of access to credit as one of the major challenges the 1.56 million SMEs in Kenya face (KNBS, 2017). However, AF solutions were not suggested. Waweru, (2017) and point out that information concerning various sources of alternative finance was lacking, and SME's would be better off if they could obtain the information freely or at a fee.

Unlucan, (2010), in Cyprus studied SME characteristic-efficiency relationship and identified number of employee, total assets and sales volume as examples of SME characteristics. They contend that size of an SME is its total assets, turnover or the number of full-time employees. Purwanto, Manongga, & Pakereng, (2014) studied efficiency of Tofu SMEs using DEA and found causes of inefficiencies in the SMEs to include number of employees, the width of production place and amount of raw material.

Aw, Chung & Roberts, (2000). Taiwan (China) determined firm output as total firm sales deflated by a wholesale price index. It was found that the size of market for an SME is vital since SMEs with large market shares experience greater sales revenues, growth as well as labor productivity as opposed to non-exporting firms. Study by Bayarçelik, Taşel & Apak, (2014) seeking to determined factors impacting efficiencies of SMEs in relation to their innovative capacities in Turkey identified firm size among them. This study measured size of the firm by total assets, turnover, and number of employee as did Brown & O'Connor, (1995) in Australia.

Certain AF models have shown mixed performance in different economies. The search for universal solutions is encouraged, more so, targeting developing economies since they are the most adversely

affected by financial inadequacy. SMEs major challenges manifest through difficulties in financing start-ups and expansion, through high risk, small portfolios, and high transaction cost associated with commercial lending Erick, (2014).

Studies on the manufacturing SMEs in Kenya and how size impacts efficiency are scanty. However, Lundvall, & Battese, (2007) while researching on Kenyan manufacturing firms in in the food, wood, textile and metal sectors investigated whether technical efficiency is systematically related to the size and age of firms. The study found out that firm size has a positive and significant effect in the wood and textile sectors while age was significant only in textiles sector.

While available literature point to a positive relationship between operational characteristics and efficiency, Esho (2001) in a study between efficiency, size and other determinants of Australian organizations found a negative relationship. Similarly, Crapp (1983) found a negative efficiency-characteristic (size) relationship for US firms. Fried, Lovell, & Eeckaut, (1993) found no relationship between size and efficiency for US organizations. Therefore, due to the mixed nature of empirical results, there is need for more empirical evidence to the discourse. To expand this discourse, this study chose to investigate the relationship between efficiency and size of manufacuring SMEs and whether AF moderates this relationship we hypohesised as follows:

H_{01}: There is no significant relationship between firm size and efficiency of SMEs in Kenya.

H_{02}: Alternative finance has no significant moderating influence on the relationship between firm-size and efficiency of SMEs in Kenya.

Research and Methodology

The study used a cross-sectional research design. A cross-sectional design involves the analysis of data collected from a population at a specific point in time. This study employed quantitative research approach. The target population was 171 SMEs registered with Kenya Association of manufacturers. The accessible population was 136 SMEs owner/managers who were using alternative finance in their firm's capital mix. The study used a self-administered semi structured questionnaire to collect primary and secondary data.

Validity of measurement may be enhanced by controlling more variables, improving measurement technique, increasing randomization, adding control groups and by blinding the experiment. To test validity, a pilot study was conducted using twenty-one firms randomly selected from the manufacturing sector. The questionnaire was tested for reliability with Cronbach Alpha scores results within the 0.70 threshold. Construct validity was tested via the KMO test of sampling adequacy for factor analysis and Bartlett's Test of Sphericity were done to determine the fitness of the data. The KMO varies between 0 and 1 (Argyrous, 2005). This study did a Cook-Weisberg test to guard against heteroscedasticity. Normality tests including Kolmogorov-Smirnov goodness of fit test and the Shapiro-Wilk test of normality were done to confirm that sample came from a normal distribution (Shapiro, & Wilk, (1965); DeCarlo, (1997). The study used Variance Inflation Factor (VIF) to detect multicollinearity (Brien, 2007).

This study used descriptive statistics to analyze qualitative data. Analysis tools used included data envelopment analysis program (DEAP) version 2.1 and Statistical Package for Social Scientists (SPSS), version 20. Data envelopment analysis (DEA) was used to measure efficiency of SMEs as shown in equations 1 and 2. (Adapted from Fried et al., 1993).

$$E_I = Maximize \ \sum_{k=1}^{m} U_k Y_{ki} \Big/ \sum_{j=1}^{n} V_j X_{ji} \qquad (1)$$

Subject to:

$$E_I = Maximize \ \sum_{k=1}^{m} U_k Y_{ki} \Big/ \sum_{j=1}^{n} V_j X_{ji} =< 1, for\ it = 1, \dots n \ and \ V_j \geq 0 \qquad (2)$$

m = number of outputs for each SME using n different inputs;

n = number of inputs used by each SME to produce m different outputs;

y_{ki} = is the amount of the *kth* output for the *ith* SME;

x_{ji} = is the amount of the *jth* input used by the *ith* SME;

u_k = is the output weight;

v_j = is the input weight.

Equation 3 was used to test the direct relationship between firm size and efficiency. It also served the first step of the moderated multiple regression (MMR) to test the moderating effect of alternative finance on the relationship between firm size and efficiency.

$$Ei = \alpha i + \beta t_i T_i + \beta o_i O_i + \beta y_i Y_i + \varepsilon_i \quad (3)$$

E_i = Efficiency of SME i (Where, 0<= Ei <=1);

α_i = Intercept, a sample-wide constant;

T_i = Log S_i= natural logarithm of total assets in SME_i (size);

O_i = Turnover of SME_i;

Y_i = Number of employees in SME_i;

ε_i = error term;

$\beta t_i,\ \beta o_{i,}, \beta m_i$ = coefficients for the respective determinants;

i = 1-*to- n where there are n observations.

For hypothesis testing we used Step-wise moderated multiple regression (MMR). Moderating effects of AF was tested using moderated multiple regression (MMR) analysis. Aiken and West (1991) reported that the MMR approach involves the addition of interaction effects to a multiple regression model by comparing two different least square regression equations. Equation 4 introduces alternative finance as a predictor variable. Alternative finance moderated multiple regression model for efficiency on firm size:

$$Ei = \alpha_{21} + \beta t_{21} T_i + \beta o_{21} O_i + \beta y_{21} Y_i + \beta af_{21} AF_i + \varepsilon_{21} \quad (4)$$

Where:

$Ei, T_i, O_i, Y_i,$ = as defined in equation 1;

α_{21} = Intercept, a sample-wide constant;

AF_i = Moderating variable – AF index of SME_i;

ε_{21} = error term;

$\beta t_{21}, \beta o_{21}, \beta y_{21}, \beta af_{21}$= coefficients for the respective determinants.

Equation 5 introduces alternative finance as an interaction variable as the last step of MMR.

$$Ei = \alpha_{22} + \beta t_{22} T_i + \beta o_{22} O_i + \beta y_{22} Y_i + \beta af_{22} AF_i + \beta taf(T_i AF_i) + \beta oaf(O_i AF_i) + \beta yaf(Y_i AF_i) + \varepsilon_{22} \quad (5)$$

Where:

$Ei, T_i, O_i, Y_i,$ = as defined in equation 4

α_{22} = Intercept, a sample-wide constant;

AF_i = Moderating variable – AF index of SME_i;

ε_{22} = error term;

$\beta t_{22}, \beta o_{22}, \beta y_{22}, \beta af_{22}$= coefficients for the respective determinants;

$\beta taf, \beta oaf, \beta yaf,$= coefficients that indicate moderation.

Empirical Data and Analysis

This study targeted owner/manager of manufacturing SMEs. The questionnaire required respondents to indicate their age bracket among three distinct classifications thus: 18-30 years, 31-50 years and above 50. Majority (60%) of the respondents were in the 31-50 years' group. Those above 50 years were few at 33% while the young generation of 18 to 30 years formed only 7% of the respondents. The results show that majority of the respondents were aged between 31 and 50 years.

This research using input-output dimensions calculated efficiency by applying the DEA model. Results of the data envelopment analysis showed that data points of the sampled SMEs had values ranging from 0.12 to 1. Series 1 shows sampled firms and their efficiency scores. Observe that the curve rises steeply in the beginning, such that within the first 20 or so MSE observations, the curve reaches efficiency levels of above 0.85. Hence only a few 2.2% of the SMEs have efficiency of below 0.315. Most of the SMEs (86%) showed efficiency of above 0.89. The efficiency statistics were: Mean of 0.92; standard deviation 0.18 points; Skewness of -1.15; Kurtosis of 1.72, Figure 1.

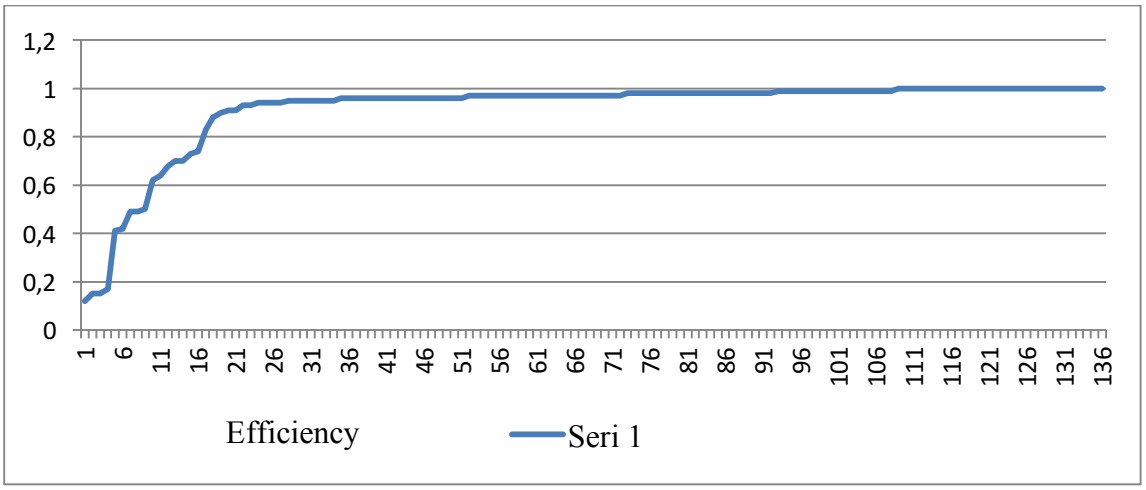

Figure 1: SMEs Efficiency Distribution Curve

The firm size construct composed of Total assets, turnover, and number of employees. Assets as measured by log of total assets (SI Log) denoted by (T) was fairly distributed about the mean (8.03) with a standard deviation of 0.33 log and a slight positive moment coefficient of Skewness of 0.014. With a moment coefficient of Kurtosis of -1.11. The firm with the highest assets has 8.72 while the one having the lowest holds 7.34 SMEs turnover (O) had a mean (64.39) with a standard deviation of 29.53 and a moment coefficient of Skewness of 0.78, with a moment coefficient of Kurtosis of 0.36, indicative of a platykurtic distribution. The firm with the highest assets held 165.21 while the one having the lowest had 19.14 From the frequency distribution of number of employees, the study found out that cumulatively, a majority (99%) SMEs had up to 125 employees while only a few, 1%, had more than 125 employees. The number of employees is distributed about a mean of 54 with a standard deviation of 32 and a skewness of 2. Moment coefficient of Kurtosis was 10, indicative of a Leptokurtic distribution. The SME number of employees ranged between 245 and seven (7).

The firm's level of alternative finance was distributed about the mean (141.56 million shillings) with a standard deviation of 101.75 million shillings and a positive moment coefficient of Skewness of 0.95. Had a moment coefficient of Kurtosis of 0.25, indicative of a platykurtic distribution. The SME alternative finance ranged between 526.52 million shillings and 17.86 million shillings. The table 1 shows the descriptive Statistics for firm size (assets, turnover & number of employees) and level of alternative finance.

Table 1: Alternative Finance, Turnover & Employees Descriptive Statistics

	Total assets (T)	LogAF	Turnover	Employees
N	136	136	136	136
Mean	8.03	141.56	64.39	54
Std. Deviation	.33	101.75	29.53	32
Skewness	.014	.95	0.78	2
Kurtosis	-1.11	.25	0.36	10
Minimum	7.34	17.86	19.14	7
Maximum	8.72	526.52	165.21	245

We analyzed the empirical data on efficiency, firm size and alternative finance using the analytical models described on the methodology section. The results of the analysis are presented in the next section of results and discussions.

For the pilot test sample; Cronbach's alpha value was above.0.70, below maximum of 0.905; test retest correlations above 0.6 with maximums of 0.845; KMO acceptable at 752; Bartlett's Test significant at 0.002 Shapiro – Wilk normality tests Sig ≥.05; tolerance; 0.979 and 0.839 VIF acceptable between 1.194 and low of1.021; and an acceptable Breusch -Pagan test for M^C of 0.957. For the sample, tolerance was 0.873, indicating no apparent risk of multicollinearity, since the value was closer to 1 (one). Variance Inflation Factor (VIF) of 1.145, is well below suggested cut-off score, of 5, thus there is no risk of multicollinearity. Correlation between firm size and efficiency was 0.395 and was significant at the 0.05 level (2-tailed).

Results and Discussions

Inferential results are presented in terms of the study's hypotheses. We first present results on the direct relationship between firm size and efficiency followed by the results on the moderating influence of alternative finance on the relationship between firm size and efficiency.

Influence of Firm Size on Efficiency

We regressed efficiency on firm size as measured by firm size construct composite. Our findings indicate that there was a positive correlation coefficient R of 0.395, R-square at 0.156 and adjusted R-square at 0.156. Therefore, an adjusted model can explain about 15.0% of the variations in level of efficiency in SMEs (Table 2).

Table 2: Model Summary for Regression of Efficiency on Firm Size

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1(S)	.395[a]	.156	.150	.16379

a. Predictors: (Constant), Firm Size

Table 3 is presents an output of the ANOVA and the t-test on the coefficients results of a multiple regression run of efficiency on size. The imperative in an ANOVA is the significance of the F Statistic. The linear regression F-test has the null hypothesis that the model explains zero variance in the dependent variable, (Thus, R^2 =0). The study found out that the F-test statistic (24.83) is highly significant since P-value <0.05. The study therefore, rejected H_0 and accept the alternative that the model explains the variance in the dependent variable to a significant level. Before considering the coefficients in such a summary, of vital importance is the significance of the t-values. The t-values for the predictor variable are significant since P-value observed < 0.05 the tabulated critical P-value. Specifically: Firm size regression coefficient was positive and significant as well (β = 0.214, t-value =4.983, P<0.05. Therefore, then the null hypothesis of no relationship is rejected. Hence there is a positive relationship between the predictor variables size and the dependent variable, efficiency.

Table 3: ANOVA and Coefficients Output for Regression of Efficiency on Firm Size

Model		ANOVA					Coefficients				
							Unstandardized Coefficients		Standardized Coefficients		
		Sum Square	of Df	Mean Square	F	Sig	B	Std. Error	Beta	T	Sig.
1(S)	Regression	.666	1	.666	24.830	.000					
	Residual	3.595	134	.027							
	Total	4.261	135								
	Constant						-.806	.346		-2.331	.021
	Size						.214	.043	.395	4.983	.000

a. Dependent Variable: Efficiency
b. Predictors: (Constant), Firm Size

Moderating Effect of Alternative Finance on the Relationship between Firm Size and Efficiency of manufacturing SMEs in Kenya

To analyze the moderating effect of Alternative finance on the relationship, between efficiency and size, we first regressed efficiency on the indicators on firm size i.e. total assets, turnover, and number of employees. Table 4 presents the model summary. Observe a positive correlation coefficient R of 0.454. As the predictor (firm size) increases, an increase in the dependent variable (efficiency) should be observed. An adjusted model can explain about 18.8% of the variations in level efficiency in SMEs as demonstrated by the adjusted R^2 value of .188.

Table 4: Model Summary - Multiple Regression of Efficiency on Size.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1(S)	.454[a]	.206	.188	.16006

a. Predictors: (Constant), No of Employees, Assets, Turnover

Table 5 presents the ANOVA and regression coefficients of the first step. Two-way analysis of variance isolates systematic data variability separate from random variability in data sets, establishing the type of relationships between and among multiple data sets by use of systematic variability. The linear regression F-test has the null hypothesis that the model explains zero variance in the dependent variable, (Thus, R^2 =0). Since observed F-test statistic (11.444) is highly significant, where P-value <0.05 (Table 5). The study rejected the null hypothesis and therefore, concluded that the model has predictive power, since it explains to a significant level, the variations in efficiency level of an SME.

The regression coefficient for total assets was positive and significant with (β = 0.419, t-value =5.401, P<0.05) while those of turnover and number of employee were positive but statistically not significant with (β = 0.036, t-value =.243, P>0.05; and β = 0.145, t-value =.989, P>0.05 respectively). Therefore, then the null hypothesis of no relationship is rejected for total assets. We therefore established that a positive relationship between the total assets and the dependent variable (efficiency) does exist. For turnover and number of employees, accept the null hypotheses and conclude that there is no significant relationship between the turnover and the dependent variable and, that there is no significant relationship between number of employees and the dependent variable (efficiency).

Table 5: ANOVA and Coefficients Output for Multiple regression of Efficiency on Firm Size

Model		**ANOVA**					**Coefficients**				
							Unstandardized Coefficients		Standardized Coefficients		
		Sum of Square	Df	Mean Square	F	Sig	B	Std. Error	Beta	T	Sig.
1(S)	Regression	.880	3	.293	11.444	.000					
	Residual	3.382	132	.026							
	Total	4.261	135								
	(Constant)						-.971	.339		-2.863	.005
	Assets						.227	.042	.419	5.401	.000
	Turnover						.000	.001	.036	.243	.809
	No of Employees						.001	.001	.145	.989	.324

a. Dependent Variable: Efficiency

b. Predictors: (Constant), No of Employees, SI Log, Turnover

Since there are significant variables in step 1 above, we introduce the moderator into the equation. We observe a positive correlation coefficient R of 0.549 as depicted in table 6. As the predictor increases, an increase in the dependent variable (efficiency) should be observed. An adjusted model can explain about 28.0% of the variations in level of efficiency in SMEs as demonstrated by the adjusted R2 value of .280.

Table 6: Model Summary - Alternative Finance Moderated Multiple Regression of Efficiency on Size.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2(S)	.549[a]	.302	.280	.15072

a. Predictors: (Constant), AF, Turnover, No. of Employees, Assets

The results of the ANOVA and t-test of coefficients in the second step of the hierarchical multiple regression of AF on firm size - efficiency relationship of SMEs are presented in table 7. The linear regression F-test has the null hypothesis that the model explains zero variance in the dependent variable, (Thus, R^2 =0). Since observed F-test statistic (14.145) is highly significant, where P-value <0.05. the study rejected the null hypothesis and therefore, conclude that the model has predictive power, since it explains to a significant level, the variations in efficiency level of an SME. Our findings indicate that the regression coefficient of total assets was positive and significant with (β = 1.326, t-value =5.848, P<0.05); Alternative finance regression coefficient was negative and significant with (β = -.959, t-value =-4.226, P<0.05). The regression of turnover coefficient was positive but statistically not significant with (β = 0.043, t-value =.312, P>0.05); while that of number of employee's coefficient was positive but statistically not significant with (β = 0.122, t-value =.882, P>0.05). Therefore, then the null hypothesis of no relationship is rejected for total assets. Consequently, we conclude that a positive moderating influence impacts relationship between the total assets and the dependent variable efficiency. For turnover and number of employees, the study accepted the null hypothesis and conclude that there is no significant relationship between number of employees and the dependent variable and, that there is no significant relationship between turnover and the dependent variable (efficiency).

Table 7: ANOVA and Coefficients Output for Moderated Multiple Regression of Efficiency on Size with AF as a Predictor Variable.

Model		ANOVA					Coefficients				
		Sum of Square	Df	Mean Square	F	Sig	Unstandardized Coefficients		Standardized Coefficients		
							B	Std. Error	Beta	T	Sig.
2(S)	Regression	1.285	4	.321	14.145	.000					
	Residual	2.976	131	.023							
	Total	4.261	135								
	(Constant)						-4.680	.934		-5.011	.000
	Assets						.719	.123	1.326	5.848	.000
	Turnover						.000	.001	.043	.312	.756
	No of Employees						.001	.001	.122	.882	.379
	AF						-.002	.000	-.959	-4.226	.000

a. Dependent Variable: Efficiency
b. Predictors: (Constant), No of Employees, SI Log, Turnover, AF.

Since some variables from step two are statistically significant, we now analyze the moderator as interaction variable as depicted in model 5**.** Table 8 and 9 the results of this step. Specifically, table 8 presents the model summary which shows a positive correlation coefficient R of 0.563. As the predictor increases, an increase in the dependent variable, efficiency, should be observed. An adjusted model explains about 28.6% of the variations in level of efficiency in SMEs as demonstrated by the adjusted R^2 value of 0.286.

Table 8: Model Summary - Alternative Finance Moderated Multiple Regression of Efficiency on Size.

Model	R	R Square	Adjusted RSquare	Std. Error of the Estimate
3(S)	.563[a]	.317	.286	.15015

a. Predictors: (Constant), AF × Assets, Turnover, No of Employees, AF × Turnover, Assets, AF× No of Employees, AF

Table 9 on the other hand presents the results of ANOVA and t-test of the coefficients MMR of AF on Firm Size - Efficiency Relationship. The F-test has the null hypothesis that the model explains zero variance in the dependent variable, (Thus, R^2 =0). Since observed F-test statistic (9.686) is highly significant, where P-value <0.05. The null hypothesis is rejected and the study therefore, concluded that the model has moderating power, since it explains to a significant level, the variations in efficiency level of an SME. Results of the t-test of coefficients indicate that the regression coefficient of total assets (SI) was positive and significant as well (β = 0.696, t-value =5.811, P<0.05); the regression coefficient of interaction of total assets and alternative finance (AF×SI Log) was found to be negative, and significant (β standardized = -0.690, t-value = 2.676, P<0.05). The effect of the moderator (AF) on the relationship between turnover and number of employees on efficiency was not statistically significant. Therefore, for total assets, the null hypothesis of no relationship is rejected. Consequently, we conclude that AF does moderate firm size (as measured in terms of total assets) relationship with efficiency. Further, for turnover and number of employees, the study accepted the null hypothesis that alternative finance has no moderating impact on the relationship between turnover, number of employees and efficiency.

Table 9: ANOVA and Coefficients Output for Moderated Multiple Regression of Efficiency on Size with AF as an Interaction Variable.

Model		**ANOVA**					**Coefficients**				
		Sum of Square	Df	Mean Square	F	Sig	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
2(S)	Regression	1.323	6	.221	9.686	.000					
	Residual	2.938	129	.023							
	Total	4.261	135								
	(Constant)						-4.563	.914		-4.990	.000
	AF × Employees						-3.581E-006	.000	-.130	-.620	.536
	No of Employees						.001	.001	.107	.698	.487
	SI Log						.696	.120	1.284	5.811	.000
	AF × Turnover						-4.243E-006	.000	-.202	-.857	.393
	Turnover						.001	.001	.246	1.653	.101
	AF×SI Log						.000	.000	-.690	-2.676	.008
	AF						-.001	.001	-.695	-2.289	.024

a. Dependent Variable: Efficiency.

b. Predictors: (Constant), AF×SI Log, Turnover, No of Employees, AF × Employees, SI Log, AF ×Turnover, AF.

Introducing AF to impact total assets, turnover and number of employees would significantly impact efficiency positively. Table 10 presents a summary of R^2 changes through the three steps of the MMR. Notice that the overall R^2 change is 0.111 (0.317- 0.206). The predictive power of the model therefore improves by 11.1 % introducing AF to moderate total assets, turnover and number of employees will significantly impact efficiency positively, since Sig P<0.05 for assets at all steps and incremental deviation is consistently positive.

Table 10: Summary of Adjusted R-Square Predictive Power

Moderated Regression Step	R-Square	R^2 Change	Sig P<0.05 Employees	Turnover	Assets
1	.206	.206	No	No	Yes
2	.302	.096	No	No	Yes
3	.317	.015	No	No	Yes

This study found out that firm size is positively influencing firm efficiency. Further, the study found out that alternative finance moderates the relationship between firm-size and efficiency. These findings agree with a study carried out by Harvie, Oum & Narjoko, (2010), which found out that size of SME is a crucial element of efficiency. The finding of this study supports the pecking order theory which holds that capital structure is driven by firm's desire to finance new investment, first via internal sources, then via low-risk debt, and finally, with equity. (Myers & Majluf, 1984; Psillaki, 2008).

Conclusions

The study concludes that there is significant relationship between firm size and efficiency of manufacturing SMEs in Kenya. Manufacturing SMEs in Kenya may therefore enhance their efficiency by increasing their total assets. Our findings show that larger SMEs are more efficient than small ones. Further, our findings show that alternative finance has significant moderating influence on the relationship between firm-size and efficiency of manufacturing SMEs in Kenya. Alternative finance is therefore, an important factor in enhancing efficiency for manufacturing SMEs in Kenya. Manufacturing SMEs which use more of alternative finance were found to be more efficient than those which use less of alternative finance. It is therefore beneficial for managers/owners of SMEs to use more alternative financing. We recommend that owner/managers of manufacturing SMEs in Kenya give attention to opportunities for sustainable increase in firm size. Avenues available to firms to increase size include merging, additional capital injection. Retaining earnings over time may also offer firms additional alternative financing. A limitation of this study

is that it used cross-sectional data which could not be used to determine causality. A panel data study may resolve this limitation.

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