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The Effect of Cost Control on The Survival Of Manufacturing Sectors in Nigeria: Panel Data Analysis

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ABSTRACT

The persistent decline in the survival of manufacturing sector in Nigeria, especially during recession has spurred research interest amongst professionals, researchers and scholars. Despite the huge attention given to the development of manufacturing sectors, a good number of companies cannot withstand the poor economic wave. This necessities the study to examine the effect of cost control strategies on the survival of manufacturing sector in Nigeria, using panel data gathered from annual reports of five selected firms for the period five (5) years between 2015 and 2019. Data on finance cost, salaries, and wages, and sales cost were taken as independent variables to measure the level at which manufacturing companies have been able to manage their costs while return on asset (Income/Total Asset) was taken as dependent variable proxied the performance of manufacturing companies. The study revealed that finance cost and cost of goods sold were insignificant cost to influence the performance of manufacturing sector, however, salaries and wages pose a significant impact on financial performance of manufacturing sector in Nigeria. It is therefore recommends that salaries and borrowing costs should be strategically controlled to help companies survive during recession without resorting to downsizing. Also, the company budget should not be fixed, but should be revised to reflect any sudden changes in the economy.

INTRODUCTION

In 2016, shortly after the recent recession in Nigeria, it was observed that manufacturing companies were badly affected in terms of performance and existence. Despite the significant contribution made by manufacturing sector in the past to the growth of Nigeria economy, the high costs of production, inadequate infrastructure, and poor capacity utilization have shrunk the contribution and performance in recent years. The situation has been exacerbated as the resultant effect of economic recession in 2015 still contributes negatively to the performance of firms in Nigeria. Consequently, many manufacturing companies had been crippled and struggling to survive which oftentimes led to loss of jobs, and leaves some companies in the brick of collapse which ultimately led to a decrease in

productivity and profitability. Also, the huge cost incurred in the production process as a result of high exchange rate, cost of raw materials and cost of funds were equally attributed to the poor performance of companies, and the production capacity has reduced significantly which reflects the recent poor performance of manufacturing companies in Nigeria. Owing to this above challenges, some companies experienced an unprecedented closure of factories and production. These challenges have forced various companies to find the appropriate policy and management strategy to stay in business and survive the harsh period. Some previous literature has attributed the high cost of production to the deprecation of exchange rate that triggers cost of imported raw materials, high cost of borrowing, and exorbitant tax rate. These costs have been conceptually identified in the literature as the major factors affecting the performance of manufacturing companies in Nigeria and consequently led to dwindling in their profitability in recent times (Godwin, Amos & Sunday, 2019).

Despite the huge empirical studies, the problem of companies' closures, and high cost of production persists. It becomes very imperative for companies to identify an effective strategy to control costs and improve their profitability. The above challenges facing the manufacturing sector have triggered the research interest into the possible factors affecting the survival of some firms in the sector. This accentuated the effectiveness of the cost reduction and management strategy adopted by various companies. Thus, became an important tool for business survival in recessionary times and beyond (Lasisi & Folorunsho, 2015). The question as to whether increases in the cost of production, salaries, and wages, and cost of finances affect the survival of the manufacturing companies either negatively or positively remains unsettled in the literature. Though various companies have adopted different cost reduction strategies in the recent past either downsizing staff to reduce the cost of salaries and wages or reduction in the cost of doing business to remain proficient in the industry, yet the problem of low survival of firms in the manufacturing sector persists. The study conducted by Godwin, Amos, and Sunday (2019); Ben-Caleb, Otekunrin, Rasak, Adewara, Oladipo, and Eshua (2019) have strongly advocated that cost reduction has a significant impact on the survival of manufacturing companies in Nigeria while other previous studies have provided a contrary conclusion that cost reduction is not a significant factor in determining the survival of companies in Nigeria. It was observed that some of these previous studies have not considered some important variables such as control cost of finance, salaries and wages, and cost of sales. Also, the years of research in the previous study limits the effectiveness of their conclusion and recommendations on the subject matter. It is against this backdrop that this current study evaluated the impact of cost control techniques on the performance of manufacturing companies in Nigeria between 2015 and 2019.

LITERATURE REVIEW

The Concept of Cost Control

The idea of cost control was gotten from businesses when efforts were made to identify what their cost is and evaluate whether those costs are reasonable and affordable. Then, if necessary, they can look for ways to cut costs through methods such as cutting back, moving to a less expensive plan, or changing providers. By way of definition, cost control is a process of setting targets and receiving feedback information to ensure that actual performance is in line with the set target and, if not, take corrective action. Cost control is defined as the management of costs and expenses to minimize the cost and maximize the profit of an organization. According to Horngren, Forster, and Datar (2002), the term cost control is used to describe the activities of managers in short-run and long-run planning and management of costs. They further explained that planning and cost control is often inextricably linked with revenue and profit planning. Cost control is a process that involves all methods of controlling costs within a pre-determined target (ICAN, 2009). Lockyer (2002) regards cost control as a practice of comparing the cost of business activity with the original cost to ascertain if the cost is as planned. Adeniyi, (2007) explained that cost control is the regulation of the cost of operating a business and it's concerned with keeping costs within acceptable limits. He said these limits will usually in a formal operational plan or budget. He proceeded to state that, if actual cost differs from

planned cost by an excessive amount, cost control action will be necessary. Agara, (2005) opines that cost control is "a process whereby targets are set against which the daily incidence of cost is compared to ensure that cost targets are not unduly exceeded". He went further to buttress the point that cost control, therefore, involves all methods of limiting the frivolous and unguarded expense of resources by managers to avoid the unnecessary creation of liabilities.

The cost-control process seeks to manage expenses ranging from phone, internet, and utility bills to employee payroll and outside professional services. For example, the researcher observed in the course of this study, that for a company to be profitable, it must not only earn revenue but also control and minimize all the expenses spent on the procurement of goods or services. If costs are too high, profit margins will be too low, making it difficult for a company to succeed against its competitors. In the case of a public company, if costs are too high, the company may find that its share price is not encouraging for the investors to buy its shares (Anthony, et al (2005). Businesses use cost control methods to monitor, evaluate and ultimately enhance the efficiency of specific areas, such as departments, divisions, or product lines within their operations.

Concept of Profitability and Financial Performance

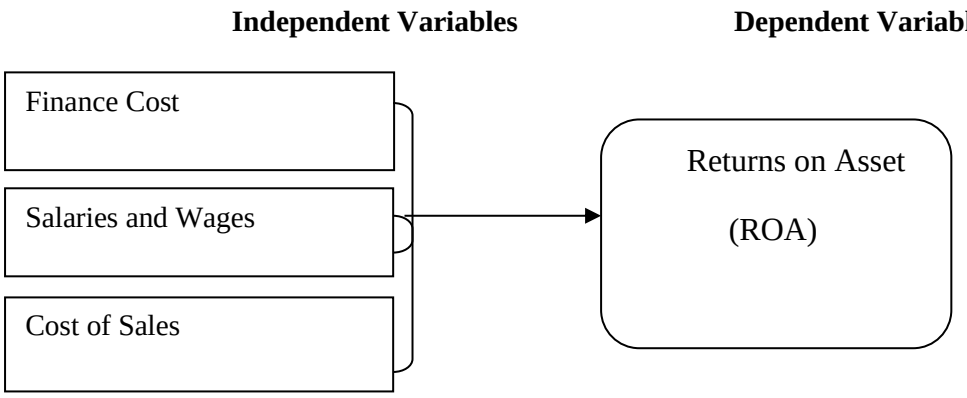
The performance of any sector can be improved by effective management. Zhang (2010) defined firm performance as the results or outcomes of the firm during a certain operating period. He concludes that financial performance is measured by financial ratios. Ratios also extend the traditional way of measuring financial performance by relying on financial statements (Saliha, 2011). The financial performance of an entity refers to the subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period. It can also be used for comparison between similar firms across the same industry or to compare industries. The most popular measures of financial performance return on equity (ROE) and return on assets (ROA). The ROE measures accounting earnings over a period per currency unit of shareholders' equity invested. It measures the amount of income generated by the investment made by an organization's owners (equity holders). ROE is best represented by the formula below. Return on Equity = Net Income Shareholder's Equity Return on Assets measures the rate at which assets employed by an organization are generating income. It provides management with information on the level of efficiency with which the entity's assets, whether financed by debt or equity are generating after-tax profits. The formula for computing ROA is presented below. Return on Assets = Net Income on Total Assets

Zeitun and Tian (2007) regarded the concept of performance as a controversial issue in the financial strategy of the most corporate organization due to its multi-dimensional meanings. According to them, performance measures are either financial or operational. Financial performance such as profit maximization, maximizing profit on assets, and maximizing shareholders' benefits are core measures of firms' effectiveness (Chakravarthy, 1986). Operational performance measures such as growth in sales and growth in market share. This provides a broad definition of performance as they focus on the factors that ultimately lead to financial performance (Zeitun & Tian, 2007). Similarly, Heng and San (2011) advanced other ways of measuring corporate performance which is productivity, profitability, growth, or even customer satisfaction. These financial measurements include Return on Investment (ROI), Residual Income (RI), Earnings per Share (EPS), dividend yield, Price Earnings Ratio (Per book value per share. Etc. However, the most commonly used performance measure proxies are Return on Asset (ROA), Return on Equity (ROE), or Return on Investment (ROI). These performance measures proxies are termed accounting measures. All these can also be referred to as the financial measures of performance.

As a performance measure, ROA has generally considered a good internal management ratio because it measures profit against all the assets an organization uses to make those earnings. Hence, it is a way

to evaluate the organization's profitability, performance, and effectiveness. ROA provides good information about a firm's financial performance in terms of using assets to create income. It shows the percentage of profit that a corporation earns to its overall resources. Thus, it is considered as a measure of efficiency too. A firm with a high ROA means that it is good at translating assets into profits. ROA is generally seen as a stable financial performance ratio, an increase in which is a sign of good performance.

Conceptual Framework



There are two variables in this study. They are cost control techniques (independent variables) and manufacturing profitability (dependent variable). Consequently, the independent variable is however divided into sub-variables. Where we have: finance cost, salaries and wages cost and cost of sales.

Dependent variable and its measurement

The profitability of manufacturing companies is the dependent variable measured by returns on assets. This is quintessential because a return earned from the asset of the company is a good measurement of the profitability of a company.

Independent variable and its measurement

The cost control technique is the independent variable that is divided into sub-variables which are meant to measure the cost control. The following are the sub-variables:

• Finance Cost: According to Wikipedia, the finance cost is the cost, interest, and other charges involved in the borrowing of money to build or purchase the asset. This will also go a long way in explaining the variation and impact of finance cost independent variables.

• Salaries and Wages Cost: This is the second independent variable adopted to determine its contribution to the dependent variable. It will also go a long way in explaining its impact and contribution to the dependent variable

• Cost of Sales: This is referred to the direct costs attributable to the production of the goods or supply of services by an entity. However, the third independent variable is adopted to determine its contribution to the dependent variable.

Theoretical Review

This study relied on Neo-classical growth theory, Going Concern theory, and Growth rate fitter theory. Going Concern Theory: The going concern principle states that an entity will continue actively in business for the foreseeable future and will not be forced to bring its operations to a standstill or have its assets liquidated (The going concern principle, 2017). The theory of going concerned refers to the ability of a company to make enough money to stay afloat without having to go bankrupt. The theory is premised on the assumption that an enterprise will continuously carry out

its operating activities for a period that is sufficient enough to meet its obligations and commitments as they fall due. In other words, it is presumed that the company would have no reason to liquidate or be forced out of business in the foreseeable future. Since it is assumed that a company will not be forced to halt operations, then management will have to make provisions to curb anything that will negate such an assumption. Rising costs are the major factor that affects the going concern status of a business organization as the uncontrolled cost can force a company to halt operations.

Neo-Classical Growth Theory: Neoclassical growth theory summarizes how a stable growth rate can be achieved with the proper amount of three powerful forces: labor capital and technology. The theory states that varying the amounts of labor and capital in a production function leads to a state of equilibrium. It emphasizes that three factors influence the growth of an economy (Otekunrin, Nwanji & Olowookere, et al., 2018). The theory also argues that technological change has a major influence on an economy and that economic growth cannot continue without advances in technology. In manufacturing companies, three factors affect their capacity to grow; material cost, labor cost, and overhead expenses. These factors have a major influence on the profit maximization ability of the firm, thus, hindering its ability to grow. Manufacturing firms will experience growth if these costs can be rightly allocated, controlled, and ultimately reduced. In an economy where these costs are greatly affected by inflation, recession, and other factors, a strategy must be put in place to ensure that these costs do not exceed the bearable point.

Growth Rate Fitter Theory: The theory was propounded by Alchian in 1950, and opined that fitness is depicted by the firm profit. The profitable firms grow and survive in the market while the other firm's exit due to poor performance. Alchian's (1950) theoretical study argued that fitter firms grow and survive, but less vigorous firms lose their market share and exit through the evolutionary selection mechanism. Thus, if profit rates reflect the degree of fitness, it is possible to predict that profitable firms will grow (Jang and Park, 2011). Delmar (2003) suggests that more profitable firms may have a higher potential to grow since they have already shown a greater fit with the environment and may be able to fund future competitive actions with their cash flow. Profitability limits the risk related to acquiring and relying on external resources of financing but also displays a satisfactory level of market demand.

Empirical Review and Research Gap

Different authors have researched cost control or cost reduction and manufacturing companies' performance. Siyanbola and Raji (2013) had research on the impact of cost control on manufacturing industries' profitability. The methods adopted by these researchers in collecting the data are direct interviews, observations, and the use of a questionnaire. The use of a primary source in collecting data is not that reliable considering the factors engendered in the process such as the cost, biasness, giving of false information by the respondents, and even giving information of which the respondents do not know about. However, this current study used a secondary source of data to establish the influence of cost on the survival of manufacturing companies. Consequently, the data were subject to various tests to validate the results of the analysis.

Recently, Godwin, Owolabi, and Amos (2019) researched the cost control and profitability of selected manufacturing companies in Nigeria. The variables adopted in their study were Cost of Raw Materials, Salaries, and Wages, Selling and Distribution Expenses, Research and Development Cost, and Training Cost while the study conducted by Ben-Caleb et. al. (2019) adopted the following variables: changes in turnover, changes in material costs, changes in administrative overheads and changes in factory overheads. This current study considered finance cost and cost of sales as the new variables used to proxy the cost of the manufacturing companies in this study. Also, Harley and Emery, (2016) and Oyebanji, (2018) concluded that the approach of organizing the system of financial control influences not only the safety of material and financial resources but all of its

financial and economic activities. A properly organized system of financial control allows not only for early detection of flaws but to take timely action to address them. Lawal (2017) examined the effect of cost control and cost reduction techniques on organizational performance with major emphasis on budgetary control as an effective tool of cost reduction and cost control. He discovered in his study that cost control has a positive impact on organizational performance. He viewed the importance of a cost reduction scheme as something that cannot be overstated and suggests that companies undertake a frequent examination of costs to curb excessiveness, thereby, eliminating costs. It was concluded in his study that for an organization to experience more profit growth by producing quality goods and services, there is a need to control and reduce the cost to the acceptable limit. Moreover, many of the previous studies used profitability as a proxy to the financial performance of the manufacturing companies. This study made use of return on assets as a dependent variable and proxy to the financial performance of manufacturing companies in Nigeria.

Barbole, Yuraj, and Santosh (2013) examined the impact of cost control and cost reduction strategies on the manufacturing sector. Research findings show that cost control and cost reduction activities are required for businesses to survive, grow and prosper. They further explained several cost control and cost reduction tools and techniques and also carried out an analysis of the changes that occur in component cost after implementing the various techniques. The study is limited to material cost; it does not include labor costs and other overheads in its analysis. Omboga et al., (2016) revealed that financial control is essential for the industry's positive performance; this could be achieved through effective cash control, cash processing, and budgeting but recommended the examination of the effect of human behavior on the application of financial control mechanisms. Etale and Bingila, (2016) examined the effect of inventory cost management proxied by raw materials cost, work in process cost, and finished goods cost on the profitability which was represented by a gross margin. The study revealed that efficient inventory cost management has a positive influence on profitability.

Prempeh, (2015) concluded that raw materials and inventory management has a significant effect on the profitability of manufacturing firms and further suggested that other control variables should be incorporated in further studies of these variables. Olalekan and Tajudeen (2015), in their work titled "Cost Control and Its Impact on the Survival of Nigeria Firms: A Case Study of Nigeria Bottling Company Plc." examined the importance of cost control; its various techniques, and their impact on the survival of Nigeria firms. The paper recommended that Just-in-Time (JIT) techniques should be employed to meet production and sales requirement, a good budgeting process and mechanisms for conducting value analysis (incorporating value engineering) permanently should also be put in place to control cost. The study concluded that a company interested in carrying out cost control procedures must necessarily be concerned about cost reduction. The study of Oyerogba, Olaleye & Solomon (2014), examined the relationship between cost management practices implemented by manufacturing firms and their performance. The study utilized data from 40 manufacturing companies quoted on the stock exchange during the period of 2003-2012 for their analysis. Findings show that there exists a positive significant relationship between cost management practices and firms' performance in the manufacturing sector. Empirical findings also showed that cost-effective manufacturing firms maintain low administrative overhead costs. The study recommends the implementation of a cost reduction strategy with an emphasis on production and administrative overhead costs if manufacturing firms intend to achieve their profit maximization and wealth creation objective.

Ogwo and Ugwunta (2011) evaluate the effect of input costs on the profitability of brewing firms in Nigeria. A cross-sectional data was gathered for the analysis from the annual reports of the sampled brewery firms from 1999 to 2010. Measures of profitability are examined and related to proxies for the cost of the inputs assumed by brewers. The Ordinary Least Squares (OLS) stated in the form of a multiple regression model was applied in the analysis. The study revealed that the focal variable RSGAE (Ratio of Selling and General Administrative Expenses) designed to capture the effect of a

company's operating expenses on profitability is statistically positive and impacts the profitability of the brewery firms in Nigeria. Ogbadu (2009) examines and outlines the roles and benefits of materials management. Secondary data and primary data were utilized in this study. The finding shows that there is a need to recognize the materials management function and it has been suggested that for a firm to achieve profitability, the goal of materials management outlined in this paper should be properly carried out.

METHODOLOGY

The study evaluates the impact of cost control techniques on the survival of manufacturing companies in Nigeria. The study used secondary data on return on asset, finance cost, salaries, and wages cost, and cost of sales gathered from five manufacturing companies in Nigeria (Cadbury Nigeria PLC, Lafarge Cement Wapco PLC, Flour Mills of Nigeria PLC, International Breweries, and Nestle PLC). The nature of data used for this study is panel data from 2015 to 2019.

Data Analysis

Panel Multiple regression was adopted to investigate the model of the study. Descriptive statistics were used in describing the nature of the data, while correlation analysis was conducted to ascertain the level and magnitude of relationships amongst the variables. Regression was run to make inferences from the outcome of the result as to their impact, direction, and the significance level of their impact on the dependent variable financial performance. Eview 09 was used as a tool of data analysis. Robustness tests such as multicollinearity test, normality test, heteroscedasticity test, Hausman specification test, Lagrange multiplier test were conducted. This enables the researcher to ascertain the validity of the results for the study. A normality test was conducted using skewness and kurtosis. A multicollinearity test was conducted to check for correlation among the independent variables of the study using tolerance value and the variance inflation factor (VIF). Breusch-Pagan was used to test for the presence or absence of heterogeneity. To decide the more effective model between the fixed effect and Random effect, the Hausman specification test was used.

Model Specification

The researcher used a multiple regression in carrying out analysis. The analytical model used in analyzing the interrelation of the predictor variables on the response variable was formulated as follows:

$Y=f(Xn)$

$Y=f(X_1, X_2, X_3 \ldots\ldots Xn)$

$ROA= f(FNC, SWC, CGS)$

$Y= \alpha + \beta_1 FNC_{it} + \beta_2 SWC_{it} + \beta_3 CGS_{it} + e$

Where:

ROA= Return on Assets

FNC= Finance Cost

SWC = Salaries and Wages

CGS= Cost of Sales

I=Industries, T= Time

β_0= Constant Term

$\beta_1 - \beta_3$=Coefficients of explanatory variables

e =Error Term

A Priori Expectation

The likely finding of this research work is that finance cost, salaries and wages cost, and cost of sales are expected to have a negative marginal contribution to manufacturing profitability. Hence, they are cost which is deducted from the revenue earned by the company. Mathematically stated: b1< 0, b2 < 0, b3 < 0.

RESULT AND DISCUSSION

Table 1: Descriptive Statistic

	ROA	FNC	SWC	CGS
Mean	12.36890	13216333	6500507.	1.56E+08
Maximum	42.19070	43216500	12536952	4.74E+08
Minimum	-5.746500	0.000000	1783535.	11587817
Std. Dev.	12.69912	14646254	3316776.	1.44E+08
Skewness	1.123383	0.826826	0.459084	1.078493
Kurtosis	3.264812	2.320931	1.997328	3.210948
Jarque-Bera	5.331337	3.328851	1.925400	4.892798
Probability	0.069553	0.189299	0.381860	0.086605
Observations	25	25	25	25

Source: Author's Analysis (E-view9)

The above table 1 is the descriptive statistic that shows the characteristics of the variables.

Mean: This measures the average value of the series. Thus, the average value of return on asset shows 12.36890. The average value of finance cost is 13216333 while the salaries and wages are 6500507. Consequently, the average value of the cost of sales is 1.56. Maximum and Minimum: These are the maximum and minimum values of all the variables under review. However, the maximum and minimum value of return on asset is 42.19070and -5.746500 respectively. Finance cost has a maximum value of 43216500 and the minimum value of 0.000000. Ultimately, the maximum and minimum value of Salaries and wages is 12536952 and 1783535 while the cost of sales has 4.74 and 11587817 as its maximum and minimum value respectively. Jarque-Bera: This is a test statistic for normal distribution. The null hypothesis for the test is that the series is normally distributed. Therefore, if the computed probability value for the test is greater than 0.05, we fail to reject the null hypothesis. If otherwise, we reject it. From the descriptive statistic table, all the series are normally distributed. Hence, the results of the probability value of the series are greater than 5 % (0.05), the level of significance.

Table 2: Correlation

	ROA	FNC	SWC	CGS
ROA	1.000000	-0.215552	0.494838	-0.055768
FNC	-0.215552	1.000000	0.224010	0.544094
SWC	0.494838	0.224010	1.000000	0.180011
CGS	-0.055768	0.544094	0.180011	1.000000

The above table 2 shows the dimension of the relationship between independent variables and dependent variables (ROA). The analysis shows that the correlation coefficient between finance cost and return on asset is -0.215552; this shows a negative correlation between the two variables. Also, there is a positive correlation between return on assets and salaries and wages. Moreover, the cost of sales has no relationship with the return on assets.

Table 3: Heteroscedasticity Test

Breusch-pagan LM is used to test for the presence of heteroscedasticity.

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	19.25907	10	0.0371
Pesaran scaled LM	0.952356		0.3409
Bias-corrected scaled LM	0.327356		0.7434
Pesaran CD	-1.645878		0.0998

The result of the test revealed that there no presence of heteroscedasticity. Since the p-value of the Breusch-pagan LM test, 0.0371 is less than the level of significance.

Hausman specification test was conducted to decide on the effective model between the fixed effect and the random-effects model and which model to report as the result of regression analysis. However, the fixed effects test is found more effective to report. This is evidenced from the test result below:

Table 4: Fixed Effects Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	23.934512	(4,13)	0.0000
Cross-section Chi-square	53.099810	4	0.0000
Period F	1.633255	(4,13)	0.2250
Period Chi-square	10.178923	4	0.0375
Cross-Section/Period F	13.724822	(8,13)	0.0000
Cross-Section/Period Chi-square	56.139902	8	0.0000

The above test was conducted to examine if the fixed effects model is good to report as the output of Ordinary Least Square (OLS). The rejection of the null hypothesis (when the statistic is statistically significant) implies the adoption of the fixed effects model while non-rejection is considered as the adoption of the random-effects model. The rejection of the null hypothesis also implies that the correlated specific effects are better captured with the fixed-effects model. From the test result, the p-value is less than 0.05, the level of significance. This thus implies that the effects are statistically significant at a 5 percent level. Therefore, the fixed effects model is more effective to report than the random effects test. However, the correlated random effects-Hausman test was equally performed. The effects are statistically insignificant in the case of the random-effects model.

Table 5: Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Remarks
C	26.08497	4.546417	5.737480	0.0001	Sig.
FNC	-1.85E-07	1.42E-07	-1.296602	0.2173	Insig.
SWC	-1.99E-06	5.55E-07	-3.579900	0.0034	Sig.

CGS	1.04E-08	3.13E-08	0.332824	0.7446	Insig.
R-squared	0.932053				
Adjusted R-squared	0.87456				
Akaike info criterion	6.15109				
Schwarz criterion	6.73615				
Durbin-Watson stat	1.539567				
F-statistic	16.21147				
Prob(F-statistic)	0.000008				

Source: Author's Analysis (E-view9)

Coefficient of Variables: The column labeled "coefficient" shows the estimated coefficients. The least-square regression coefficients are computed by the standard Ordinary Least Square formula. For the simple linear model considered in this study, the coefficient measures the marginal contribution of each independent variable to the dependent variable. An Independent variable that is an addition to the value of the dependent variable but with a positive (negative) coefficient is an indication that an increase (decrease) in that independent variable would lead to an increase (decrease) in the dependent variable. From the above table 5, the coefficient of each independent variable is substituted in the model used as follows:

ROA = 26.08497-1.85E-07FNC-1.99E-06SWC+1.04E-08CGS

The value of the constant term is 26.08497; this implies that the return on an asset will be increasing at 26.08 units if other variables remain constant. The coefficient of finance cost is -0.000000185; this implies that for every ₦1 million decreases in finance cost, there will be a ₦185,000 increase in return on assets. The coefficient of salaries and wages is -0.00000199; this implies that for every ₦1 million decreases in salaries and wages, there will be a ₦199,000 increase in return on assets. The coefficient of sales cost is 0.0000000104; this implies that for every ₦1 million increases in the cost of sales, there will be a ₦104,000t decrease in return on asset. R-Squared: R-squared statistic shows that explanatory variables in the model (FNC, SWC, and CGS) account for about 93.2 percent of the variation in the dependent variable (ROA). Thus, the explanatory power of the model is high and appears to suggest that the included variables are good predictors of return on assets. Adjusted R-squared: The high percentage of R-squared can be further explained through adjusted R2. The adjusted R2, 87.5 percent being very close to R-squared implies that there are fewer penalties for irrelevant variables in the model. In other words, the percentage of adjusted R2 shows that relevant variables were adopted to measure the significance of independent variables independent variable.

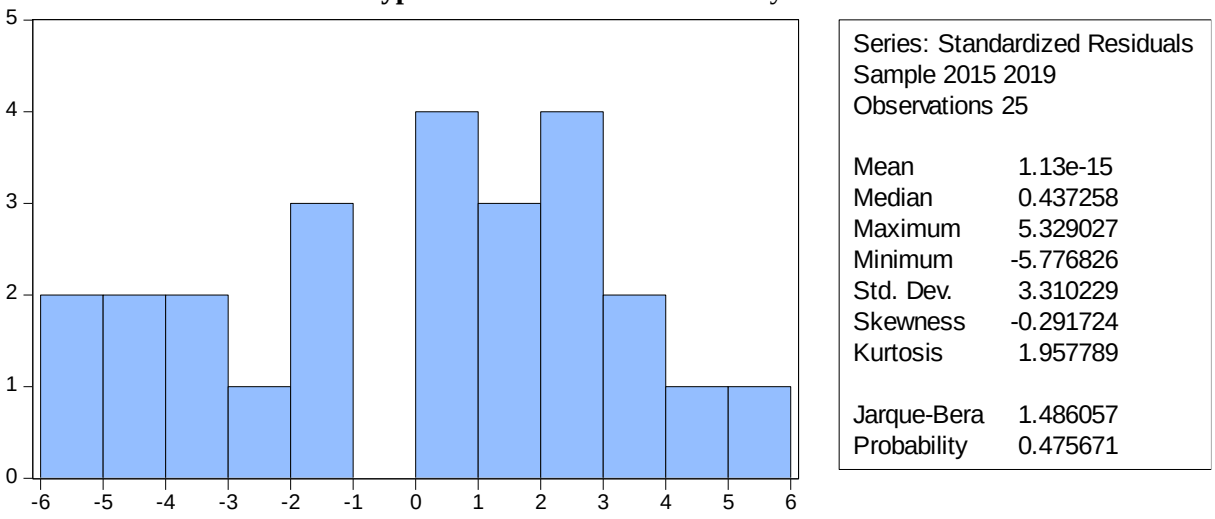
F-Statistic: F-statistic shows the overall goodness of fit of the model and also the joint significance of independent variables on the dependent variable. From the above results, F-statistics is 0.000008 which is less than 0.05, level of significance. Thereby, the null hypothesis (H0) will be rejected and we accept the alternative hypothesis (H1). F-statistic being significant implies that the overall goodness of fit of the model is satisfactory.

T-test: This shows the significance of each independent variable on the dependent variable and also the relationship between the independent variables and dependent variable. From the above results, the p-value of finance cost, 0.2173 is greater than the level of significance. This shows that finance cost (FNC) is statistically insignificant and also has a negative relationship with return on assets. The p-value of salaries and wages, 0.0034 is less than the level of significance. This shows that salaries and wages (SWC) are statistically significant but have a negative relationship with return on assets.

The p-value of cost of sales, 0.7446 is greater than the level of significance. This shows that cost of sales (CGS) is statistically insignificant but has a positive relationship with return on assets

Figure 1: Normality Test

Null Hypothesis: Residuals are normally distributed



Conclusion: Since the p-value of Jarque –Bera, 0.475671 is more than 5 percent; we cannot reject the null hypothesis. This means that residuals are normally distributed. So, we fail to reject the null hypothesis that residuals are normally distributed which is desirable. Note: Lagrange multiplier test is conducted to determine the more effective model between common effects model and random effects model (Rizka, undated). However, the study considered fixed and random effects models only.

Discussion of Findings

The study aimed at evaluating the effects of cost control techniques on the survival of manufacturing companies in Nigeria. The influences of the techniques were examined through the major costs incurred by the manufacturing companies. Considering the selected five manufacturing companies and the years under review, the findings of the study revealed that finance cost and salaries, and wages have been able to control over the period through the use of different techniques of controlling cost. This can be further confirmed in the study of Lawal (2017), where he discovered that cost control has a positive impact on organizational performance and also viewed the importance of cost reduction scheme as something that cannot be overstated. Finance cost which is otherwise known as the interest on borrowing has been reduced over time which has led to a steady increase in return on assets of the companies. Hence, the industries perhaps negotiated with the loan providers to subsidize the interest rate on borrowing for the reduction has brought about an increase in the profit of the companies. The evidence is clearly stated in the data obtained from the selected manufacturing companies. The study however revealed that the cost of sales otherwise known as the cost of goods sold has not been able to control for the period under study. The fact can be seen from the data obtained from the selected five manufacturing companies where the cost of sales has been increasing over time. The uncontrolled cost of sales might be attached to the fact that every manufacturing company especially those under review in the study keeps expanding their tentacles even to the rural areas which had ultimately increased the sales revenue but could not covered the cost incurred on sales and ultimately reduced the profit over the time.

Conclusion

This study was carried out mainly to investigate whether the techniques of controlling cost in manufacturing companies have been effective or not. The effectiveness of the techniques can be traced to cost reduction and increase in profitability of manufacturing companies in Nigeria. From the findings of this study, it is evident that cost control has a significant impact on the performance of manufacturing companies and that elements of cost, such as salaries and wages and borrowing cost behavior could be strategically controlled with measures like Prompt payment of employees' salaries and wages and incentives to the employee which will foster the relationship between the management and the workers. The absence of behavioral control, either through motivation, incentives, and the rest will short change the effect of cost control on profit growth, but if with all the conditions and measures management can focus on enlightening and motivating workers on the true purpose of cost control, then greater profitability is assured. The finance cost and cost of goods sold are not significant but the cost of sales maintained a good relationship with the return on assets.

Recommendations

Considering the findings of this study, it is, therefore, recommended that the company keep up with the use of the existing techniques to control cost and find ways of improving on these techniques. However, the following are recommended in addition to the various techniques used in controlling cost. Adequate management and alternative sourcing of raw materials should be pursued by manufacturing firms in Nigeria. This alternative can be achieved by encouraging large-scale mechanized production of the primary raw materials and create a source of supply for foreign raw materials. Cost control should be in place in all the departments, most especially the production department, to make sure that units of finished goods are properly accounted for. This would also influence subsequent costs to be incurred after production. Prompt payment of employees' salaries and wages should be adhered to by the management of manufacturing companies. This payment, as empirical results have revealed, will foster better and mutual industrial harmony between management and labor unions because entities strive to succeed under hostility. The budget should not remain fixed, but should be revised, when the condition changes. This means that there should be an attainable target, not one that is beyond workers' capability given the resources at their disposal. Effective cost control, including a good responsibility accounting system, should be established by manufacturing companies and all business concerns in the country. The government should provide adequate infrastructural supports an enabling environment, particularly in the areas of the road network, power, and transport to ease the selling and distribution of manufactured products.

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