CAPITAL EXPENDITURE DECISIONS AND LONG TERM VALUE OF THE FIRM: EVIDENCE FROM NIGERIAN MANUFACTURING COMPANIES

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Abstract

This study determined the extent to which capital expenditure decisions made by listed manufacturing companies in Nigeria relate with the value of the firms in the long term. The ex post facto and correlational research designs were adopted for the study. Secondary data were extracted from the Nigerian Stock Exchange Fact Books for the period, 2010 – 2016. The number of manufacturing companies listed in the Stock Exchange during this period was 83, and the sample size used was 69. With the aid of regression analyses, the findings revealed that capital expenditure decisions had a significant relationship with long term value of manufacturing firms. The study concluded that capital expenditure decisions have a significant relationship with the long term value of manufacturing firms in Nigeria. It was recommended that management of manufacturing companies should ensure the holistic use of all techniques, exploring risks, real and growth options analyses as well as portfolio management techniques involving capital assets, in appraising capital investments before taking decisions.

Keywords: Capital expenditure decisions, Long term value, Economic value added, Market value added, Real option analysis.

Introduction

Capital expenditure is an aspect of capital budgeting that has to do with the analytical process of making decisions on investment by considering the viability of one investment to the other. As posited by Hilton, Maher and Selto (2012), capital asset refers to the resources, other than human, which a firm procures and utilizes for productive or profit-earning purposes. When a capital asset is acquired by means of purchase or construction, a company is said to be making capital expenditure (investment) in non-current assets (Horngren, 2014). The Nigerian economic environment is a growing one, and for a growing economy to have a place in the comity of nations, the real sector must be developed and sustained. It is apparent that manufacturing is the pivot of the real sector of an economy, and it goes with capital assets. Capital assets have deferred expenses and determine the production capacity of a manufacturing firm. It involves strategic investments which have long-term commitments of corporate policy that enhances particular technologies, products, and markets (Desai, Wright and Chung, 2012).

There is a thin line separating capital budgeting and capital expenditure decisions, though manufacturing firms engage in both. Capital budgeting is critical to the firm's operations in order to ensure optimum profit to the company as it involves a planning process of investment in long term assets. Capital expenditure decisions, on the other hand, is that part of capital budgeting which a company makes decision to use available funds to acquire or upgrade physical assets, such as plant,

property or equipment so as to maintain or expand the scope of their operations (Uwah & Asuquo, 2016).

Since capital investments affect the business operations of a company, huge amount of money is required, and such an investment is acceptable if it results in a positive net present value. A positive net present value occurs when the after-tax discounted cash inflows, which include revenue and savings, are more than the discounted cash outflows. Capital expenditure decision therefore involves the use of economic value added model as an extension of the net present value. It has been theoretically and empirically examined by other studies, such as Farooq and Sajid (2015) and Evans (2006) who maintained that management's fundamental objective, which aligns with the business objective, is firm's value maximization for all stakeholders, which is long term value.

Social constructs bordering on environmental, social and governance issues are considered by management in the overall interest of the firm. This goal can be attained when managers evaluate all the internal (quantitative) and external (qualitative) variables available to the firm. Hertz (2016) opined that it is not enough to depend on a mathematical formulae which anticipates a unit rate of investment's return, rather a combination of factors such as cash flow, risk assessment, and return on investment are needed before a viable decision on capital expenditure can be made by managers. To be precise, capital expenditure decision makers should go beyond using the net present value on a stand-alone basis because of how the data used in calculation are collected and processed.

Going by the foregone views, the objective of this study was to examine the extent to which capital expenditure decisions made by listed manufacturing companies in Nigeria could relate with the value of the firms in the long term. This study viewed that capital expenditure projects and assets should not be evaluated in isolation of each other, but collectively as a portfolio of individual investments, thereby ensuring that the overall benefit is maximized for the long-term value of the company. It is however feared that firms experience difficulties in selecting the best long term investment opportunities due to the neglect of environmental, financial and technological variables during project appraisal.
The specific objectives were to: Determine if capital expenditure decisions have any relationship with the long term value of manufacturing companies in Nigeria, considering firm size as control variable; Examine the extent of the relationship between Property, Plant and Equipment (PPE) and return on assets (ROA) of listed manufacturing companies in Nigeria; Assess the extent of the relationship between Research and Development (R&D) and Economic Value Added (EVA) of listed manufacturing firms in Nigeria; Examine the relationship between financial assets and share dividends/interest on interest-bearing investments of manufacturing companies in Nigeria; Assess the nature and extent of relationship between tax planning and Market Value Added (MVA) of listed manufacturing companies in Nigeria.

This research is built on the works of earlier authors, such as McConnell & Muscarella (1985); Agboh (2011); Boasson, Cheng and Boasson (2012); Hertz (2016). The gap created in earlier studies where NPV and IRR models in capital budgeting were only used for appraisal necessitated the use of applicable models such as the economic value added (EVA), enterprise value model (EV), and the market value added model (MVA) for this study to evaluate capital expenditure decisions of firms.

Literature Review

In accounting, theories have loose and overlapping meaning with principles, concepts, conventions,

doctrines, standards, rules, assumptions, tenets, postulates and procedures which can always guide the researcher in arriving at informed conclusion and recommendations (Matthew & Perera, 1996). The theories guiding this research work are: Information economics and statistical decision theory; Agency theory, and Tobin's q theory for company value.

According to Baye and Prince (2013:201) "the value of the firm is the present value of the firm's current and future profits." It could be described as the present value of expected future cash flows in addition to the current cash flows. One major factor in calculating the firm's value is the concept of time value of money. The calculation discounts the expected future profits to the present, using an interest rate, r, and it is added to the current year's profits (cash flows). This basis of valuation is known as present value basis. It is the basis which the long-term value of a company can be measured. Its long-term value can be determined using equations (Baye & Prince, 2013). In this equation;

$PV(firm) = P(0) + \{P(1) / (1+r)\} + \{P(2) / (1+r)^2\} + \{P(3) / (1+r)^3 \ldots\ldots \{P(x) / (1+r)^x\}$.

Where: $P_{(0}1)$ = profit in current year zero and beyond

$P(x)$ = profit for x years ahead

PV = present value

r = interest rate.

The equation estimates the value of a firm in the present, although it is necessary for the firm to make estimates of future profits (cash flows). In event that the firm cannot have future profit estimates, the constant growth equation can be used to determine its value. The value of firm is taken as:

$P(0) + \{P(0)(1+g)/(1+r)\} + \{p(0)(1+g)^2/(1+r)^2\} + \{p(0)(1+g)^3/(1+r)^3\} \ldots\ldots\ldots \{p(0)(1+g)^x/\{1+r)^x\}$

This equation is made on the assumptions that the firm continues in perpetuity, and that there is no maturity in the streams of profit.

Where $P(0)$ = profit for the current year

g = growth rate

And r = interest rate.

Brigham and Ehrhardt (2014) maintained that shareholders are the owners of a company, and they purchase shares because they want to earn a good return on their investment without undue risk exposure. Shareholders elect directors, who then hire managers to run the company on a day-to-day basis. Managers are supposed to be working on behalf of shareholders, to pursue policies that enhance shareholder value.

The net present value (NPV) analysis guides managers with important decisions of accepting or rejecting costly projects or taking alternative action for the good of the company in the long term. This model therefore stands out as a good method of valuing the firm (Drury, 2006). The formula for calculating NPV is given as $NPV = S_{t=1}^{n} \frac{C_t}{(1+r)^t} - CO$

Where: CO = capital outlay at the end of year zero, or beginning of year one.

r = discount rate

Ct = the net cash flow at the end of year t

n = the number of years the project will last

t = years.

Albrecht, Stice, Stice and Swain (2008) opined that NPV is a fundamental traditional investment analysis for capital expenditure, but the use of EVA provides extension of the NPV rule.

Olatunji and Adegbite (2014) observed that the current value of the firm is the same as the present value of all its future cash flows. Cash flows expected to come into the firm in future have to be discounted so as to consider the value of money in the future, with the risk/uncertainty of the investment (Drury, 2006).

Albrecht et al (2008) stated that economic value added "is a commercialized performance measurement system that emphasizes the incremental income which an organization can make over and above the required income meant to cover costs of capital which is invested by both debt and equity holders in the organization". Hill (2008) also surmised that firms create economic value to its shareholders by making profits that exceed their overall cost of funds.

Meigs and Meigs (1995) pointed out that EVA is quite similar to the residual income concept, except that while the residual income concept focuses on operating profit before tax, the EVA insists on net operating profit after tax. This shows that EVA considers the effect of taxation when calculating profit. This assertion is corroborated by Albrecht et al (2008) who asserted that residual income considers a minimum required rate of return (hurdle rate) as a variable for measuring the minimum level of income which is earned from using the organization's assets. Sudiyatno, Puspitsari and Kartika (2012) argued that EVA is focused on using the firm's specific cost of capital (debt and equity) to establish the rate of returns required on the capital used by the firm for the project(s). This is the concept of weighted average cost of capital, which represents the investors' opportunity cost of taking risk by investing funds in a company.

In their opinion, Albrecht et al (2008) assert that in arriving at Economic Value Added (EVA) the book value should be considered as a proxy of the firm's market value, where the market value is absent. This is because the invested capital in assets at hand and the expected future growth make up the market value. The book value reflects the accounting information of the current period and the accounting decisions made over time, regarding depreciation of the assets, valuation of inventory and dealing with acquisitions. Therefore, adjustments in the book value are made in order to get a value of the market that is reasonable. This adjustment is made by subtracting from the current value of capital, the book value of capital (Fabozzi and Peterson, 2003).

Return on investment (ROI) is also used in measuring operating performance and efficiency in the utilization of assets by a firm. Finkler (2000) asserted that if the returns on investment in the long term become lower than its cost of capital, then no value has been added to the firm on the years of operation.

The corporate value model can also be used as a determinant of the value of the firm. This method becomes imperative for firms that are privately owned or public firms that do not pay dividends. In this wise, corporate value model serves as an alternative to the dividend growth model. To determine a firm's value using the corporate value model, the Weighted Average Cost of Capital (WACC) is used to discount the free cash flows (Brigham and Houstin, 2013).

According to Hilton and Platt (2014), total firm value model needs a lot of data for calculation and are more reliable than the discounted dividend model, especially when used for non- dividend- paying firms whose future dividends payment are difficult to predict. Brigham and Houstin (2013) have opined that the firm's ability to have future and present cash flows determines its value. So, a company's

market value is given as V, which is the same as the present value of expected future free cash flows

$$\frac{FCF_1}{(1 + WACC)^1} + \frac{FCF_2}{(1 + WACC)^2} + \ldots\ldots\ldots\ldots + \frac{FCF_{¥}}{(1 + WACC)^{¥}}$$

However, future cash flows (FCF) represent the cash needs for the finance of both operating working capital and capital expenditure that would be needed for future growth, subtracted from the cash flow of a given year. Pandey (2015) recommended the use of discounted cash flow approach, to arrive at a valuation which is most appropriate as this informs the decision of management regarding long term investment, which transcends to long term value of the firm. Therefore, WACC becomes the appropriate discount rate to value a firm, when it is considered as a going-concern. This is shown as:

$$V = \sum_{t=1}^{n=¥} \frac{FCF}{(1+ k_0)^t}$$

Where: V= Firm's value $V = \frac{FCF}{k}$

FCF= Free cash flow

K_0 = Weighted average cost of capital (WACC).

In a firm where FCF remains constant forever, the firm's value,

Market value added (MVA) measures the difference in the current market value of a firm and the investor's capital. If MVA is positive, there is value added to the firm, but a negative market value added is an indication of the firm's value decrease (Penman, 2007).

Therefore, to the shareholder, value added is expressed as follows:

Value added = Ending value – Beginning value + Dividend received. ……(1)

But considering market value added,

MVA = Price at end – Price at the beginning + Dividend received. ……(2)

The conceptual framework for this study is encapsulated on the work of Hill (2008) who posited that while investment decision selects opportunities that support optimal investment portfolio to maximize expected net cash inflows (ENPV) at level of risk that is minimal, finance decision explores potential sources of fund (debt and equity) which are long-term or short-term, needed for investment sustenance, and evaluate returns which are risk-adjusted, to select the capital structure that would maximize the weighted average cost of capital (WACC) of the company. This justifies why WACC represents the cut-off rate which is global for the firm and also justifies why investment decision is made after appropriate consideration is given to the financing decision. Stewart (1991) posits that capital expenditure should be evaluated using WACC as a cost of capital if a company's average business activities have the same risk as the project it is undertaking, even though Yee (2000) suggested that projects outside the core business of the company should not use WACC, because they have different risks.

According to Hill (2008), if management should increase the firm's value, using market value added (share price) as a vehicle, a positive EVA must be created first. Dittmar, Mahrt-Smith and Servaes (2003) opined that if firms make profits that exceed their overall cost of funds (positive NPV), they create an economic value added (EVA) for their shareholders. But taking the shareholder theory into consideration, Olatunji and Adegbite (2014) said the EVA does not cover every stakeholder. Therefore,

considering an efficient capital market, without trade barriers, the EVA will drive the demand for the company's shares to rise, and as such, market value added (MVA) will be created which will sustain the shareholders and other stakeholders. The MVA can also be sustained by the active dividend policy of the company. Hill (2008) posits that all of these combined, with the corporate objective of the company, will result to corporate wealth maximization which is the same as firm's value as indicated in its high share price. This could be seen in the schematic representation in Fig. 1.

Development of hypotheses

Fig. 1 presents the conceptual model for this study. With this figure, Null hypotheses were developed to test the relationship between capital expenditure decisions and long term value of the firm.

Hypothesis 1:

Capital expenditure decisions do not significantly relate with the long term value of manufacturing companies in Nigeria.

Hypothesis 2:

Investment in property, plant and equipment (PPE) does not have any significant effect on return on assets (ROA) of quoted Nigerian manufacturing companies.

Hypothesis 3:

Research and development (R&D) expenditure has no significant effect on Economic Value Added (EVA) of manufacturing companies in Nigeria.

Hypothesis 4:

Investment on financial assets does not have any significant effect on dividends/interest of manufacturing companies in Nigeria.

Hypothesis 5:

Tax planning does not have any significant effect on Market Value Added (MVA) of manufacturing companies in Nigeria.

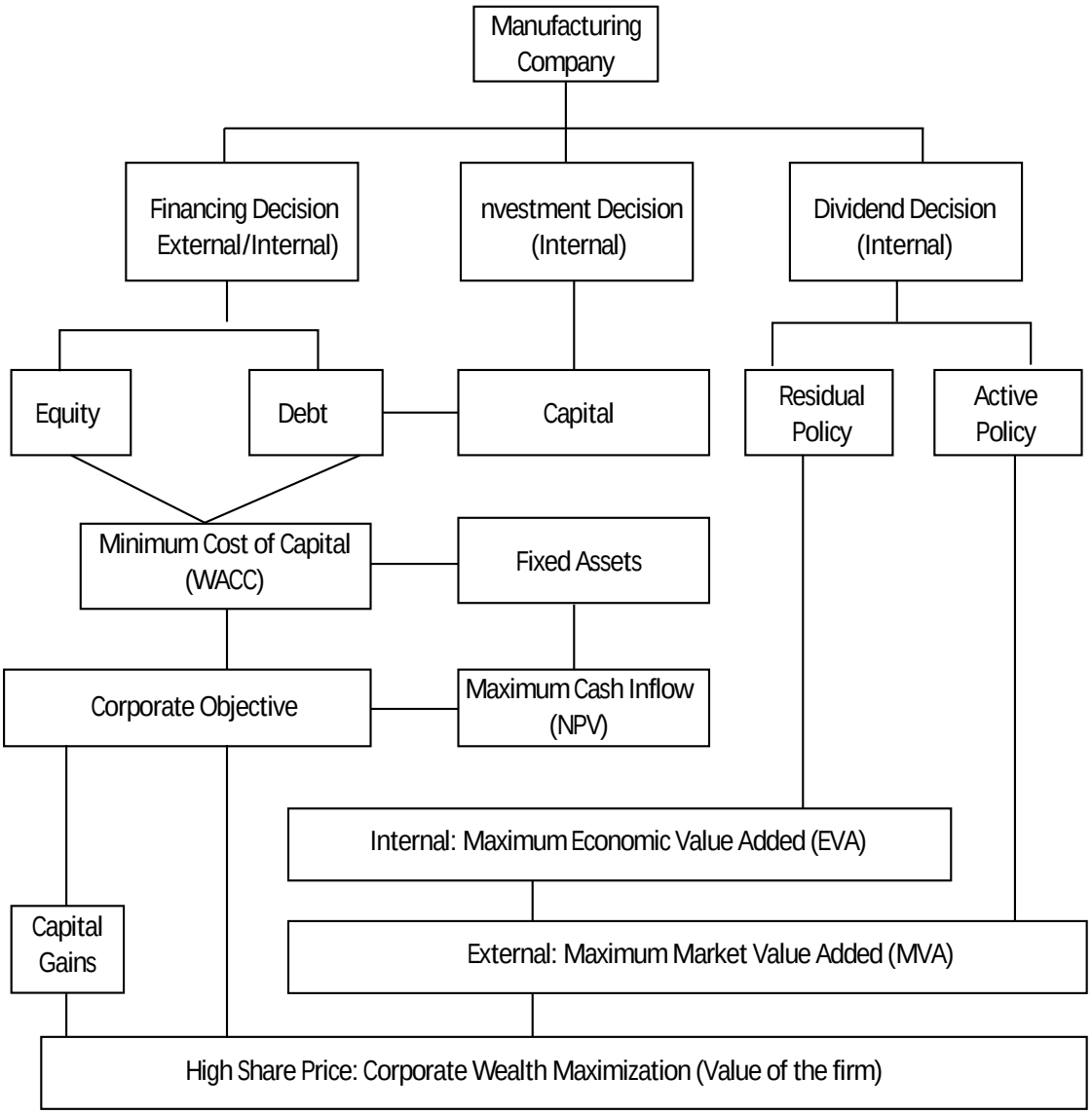

Figure 1: Schematic representation of conceptual framework, showing the relationship between capital expenditure decisions and long term value creation in the manufacturing firm.
Adapted from: Hill (2008), Strategic financial management.

According to Hilton and Platt (2014), the real options analysis concept modifies the NPV technique because of its use in the assessment of the consequences of changes in investment decision that may develop after the project has been approved for implementation. Pandey (2015) stated that those strategic elements in investments that help to create flexibility of operations or have the potential of generating profitable opportunities, in the future, for the firm are real options. Its valuation considers the extension of a project's value beyond the NPV's value. To put it concisely, the value of options supplements a project or firm's value. Options as strategic decisions, makes the new NPV to be termed "strategic NPV" which considers the available opportunity to investment, with at least, one option linked with it (Peterson & Fabozzi, 2002).

Dixit and Pindyck (1995) suggested that options are essential in capital investment decisions. When operations that cause companies to lose funds are shut down, this becomes an investment because further payments made on contractual agreements, such as severance pay for employees, is huge initial capital expenditure. The payoff, according to them is the value of the reduction in future losses, which indicates that opportunities are options (rights but not obligations) to take some action in the future. Amram and Howe (2003); Graham and Harvey (2001) expressed the views that real options analysis theory has its roots and application from the options analysis used in corporate finance, and extends to making decisions under situations of uncertainty in the "real" sector of manufacturing investments.

Application of modern portfolio theory requires the concept of traditional cost-benefit analysis to the stakeholders of the firm, to measure the costs and the benefits so as to evaluate returns that are expected which involve standard deviation. MPT is integrated into capital budgeting decisions so that we could have a more comprehensive and more value conscious approach other than what the traditional approach can give. It is an approach which is a mix of two or more projects, put together to obtain the optimal mix for these two or more investments. When using MPT, the closer the returns on investment move together, the higher would be the correlation coefficient and vice versa (Boasson et al, 2012).

Fabozzi and Peterson (2003) posited that the MVA and EVA, of recent have been developed for the evaluation of the performances of the firm, and also report value increase for a project or firm in the future. While EVA is concerned with the economic profit of the firm, MVA compares the cost of capital to the market value of capital.

Research Method

This study adopted quantitative panel methodology using the ex post facto and correlational research design. This methodology was used in analyzing secondary (panel) data collected and collated from the Nigerian Stock Exchange factbooks and the published financial statements of these companies for a seven-year period, (2010-2016).

Model specification

Simple linear as well as multiple linear regression analyses were used to find the relationship between capital expenditure decisions and long term value of the firm. Capital expenditure decisions (CAPEX) was measured by the cost of Property, plant and equipment (PPE); Research & development (R&D); Financial assets (FA); and Tax planning (TP). Long term value of firm (LVOF) was measured by: Return on assets (ROA); Economic value added (EVA); Dividend/Interest on other investments (DIV); and Market value added (MVA).

Following the model put up by Sudiyatno, Puspitsari and Kartika (2012), the model for this study was adapted as follows:

Model: Long term value of the firm = f (Capital expenditure decisions)
i.e. LVOF = f (CAPEX). Therefore,

$$LVOF = a_0 + b_1 \log PPE_{it} + b_2 \log R\&D_{it} + b_3 \log FA_{it} + b_4 TP_{it} + Fs_{it} + m_{it}$$

Where: i = 1,2,3……..69, and t = 1,2,3,4,5,6,7.

In this model, i represents the ith cross-sectional unit and t represents the tth time period. The control variable in this model is the firm's size (FS) which is shown as the natural logarithm of sales for the sample manufacturing companies. For hypothesis one, vector variables for measuring capital expenditure decisions as represented by PPE, R&D, FA, and TP were regressed against the vector variables for measuring long term value of firms, represented by ROA, EVA, DIV, and MVA. Hypothesis two was tested using the model,

$ROA = a_0 + b_1 logPPE_{it} + b_2 logR\&D_{it} + b_3 logFA_{it} + b_4 TP_{it} + FS_{it} + m_{it}$

For hypothesis three, we tested the following model,

$EVA = a_0 + b_1 logPPE_{it} + b_2 logR\&D_{it} + b_3 logFA_{it} + b_4 TP_{it} + FS_{it} + m_{it}$

Hypothesis four was tested with

$EVA = a_0 + b_1 logPPE_{it} + b_2 logR\&D_{it} + b_3 logFA_{it} + b_4 TP_{it} + FS_{it} + m_{it}$

And hypothesis five was also tested using,

$EVA = a_0 + b_1 logPPE_{it} + b_2 logR\&D_{it} + b_3 logFA_{it} + b_4 TP_{it} + FS_{it} + m_{it}$

Ratio of returns to property, plant and equipment employed was used as a measure of PPE, to indicate that investment in PPE enhances returns on assets. The prognosis is that the two variables will have a significant relationship. Economic value added, as a proxy of firm value, in relation to cash outflow on research and development was tested in this model and the relationship was also expected to be significant. EVA is calculated as net operational profit after tax (NOPAT) less (cost of capital multiplied by the capital invested by the firm). Cost of capital is taken as the weighted average cost of capital (WACC). $WACC = ke \frac{E}{V} + kd\ (1- t)\ \frac{D}{V}$, where the cost of debt, kd is assumed to be irredeemable.

Cash dividends and interest on fixed investments depend on financial assets while market value added depends on tax planning, a measure of effective tax rate. An a priori judgment was however considered that these variables are expected to have significant relationship. The adapted model specifies that the value of the firm,

$V = EVA + MVA$----------(1) $Pv1 = PV0 + PV1……..n$----------(2).

PV0 is simply the net worth of assets as shown in the financial statements, PV1 is the present value of all future cash flows, while PV1……n, shows the worth of assets looking at future investment opportunities available to the firm. Therefore, the model indicates the book value of the company + Extra value derivable. The extra value here is a composite of the intrinsic value and multiple of book value that the company is worth.

Method of data analysis

The study adopted the simple and multiple regression analyses to find the relationship between capital expenditure decisions and the long term value of the firm. The relationship between the proxies of the independent and dependent variables were also tested. All the hypotheses were tested at 5% level of significance, and the decision rule was to accept the null hypotheses (H0) if the Significance value (p) is greater than the chosen 0.05 alpha level at 68 degrees of freedom. We were to reject if the Sig.value is less than 0.05 alpha value at 68 df.

Analysis and Discussion of Findings

The data in table 1 showed the extent to which capital expenditure decisions (CAPEX) relate with the long term value (LVOF) of 69 sampled companies for the period 2010 to 2016, used in the study. The

multiple regression analysis shows a Beta value of 0.568 for capital expenditure decisions by Nigerian firms and its corresponding dependent variable, the long term value of firms. A Beta value of 0.405 is also revealed for firm size as control variable showing its relationship with long term value of firms in Nigeria. These data inform us that about 57% of capital expenditure decisions contribute to the long term value of firms in Nigeria, while about 40% of firm size, as extraneous variable contributes to the long term value of firms. These show significant values at 0.000 Sig. level.

A multiple regression correlation coefficient (R) of 0.806 which indicates a high correlation was also seen. R square (R2) value of 0.650 was realized. This implies that while about 80% of multiple correlations (R) were established between the independent and dependent variables, about 65% was realized as the contribution of capital expenditure decisions to the long term value of firms in Nigeria with the firm size as a control variable factored in. The table revealed that a value of 0.000 is the p-value. As this value is lower than the alpha value of 0.05, our Hypothesis one was rejected, following our decision rule. This decision therefore means that there is a significant relationship between capital expenditure decisions made by manufacturing firms in Nigeria and the long term value of these firms, even with heterogeneity in the size of firms in the manufacturing industry. This result is in line with similar works by McConnel and Muscarella (1985); Brailsford and Yeoh (2004) who, relying on the Tobin's q theory for company value, found out that there was direct significant relationship between capital expenditure decisions and market price value. Also, free cash flows significantly affect growth opportunities in the capital market. The Tobin's q theory relates with the company value which the capital market and other members of the public see as the worth of a growing company.

Table 1

Multiple regression results of the relationship between Capital expenditure decisions and long term value of quoted manufacturing companies in Nigeria when firm size is factored in as control variable

Model	R	R^2	Unstandardized Coefficient		Standardized Coefficient	t	Sig.	Result
			B	Standard Error	Beta			
Constant	0.086	0.65	-15.499	6.493		-2.387	0.02	Significant
CAPEX			0.540	0.074	0.568	7.291	0.000	Significant
Firm size			0.742	0.143	0.405	5.205	0.000	Significant
			ANOVA					
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**			
Regression	14686.606	2	7343.303	61.344	0.000			
Residual	7900.717	66	119.708					
Total	**22587.323**	68						

Source: Field data analysis (2017) from SPSS V.20.

Table 2 was built from null hypothesis two. These variables are proxies of the independent and dependent variables. From Table 2, both R2 and the adjusted R2 values which measure the proportion of the variation in the dependent variable (ROA) are shown. The adjusted R2 shows the modification for the limitation of R2 and it is considered as a measure of the model's fitness. The value of adjusted R2 is -0.007, which indicates that the independent variable (PPE) explains less than 1% variation on the dependent variable. The multiple correlation coefficient (R) shows a value of 0.087, an insignificant 8% relationship between PPE and ROA. The R2 value of 0.008 was realized, which shows a very insignificant relationship between the two variables. Table 2 also reveals a p-value of 0.476 which is greater than the alpha value of 0.05. Therefore, Hypothesis two was accepted which means that there is no significant relationship between PPE and ROA.

Considering the information economics and statistical decision theories, which say individuals are assumed to make choice according to the rank ordering of expected values, the theories allow management to get complete information about costs, inventory, usage, specifications, development history, material, manufacturing methods and processes. This accounts for the measure of property, plant and equipment with return on assets. However, this finding is at variance with the submission of Olatunji and Adegbite (2014) and Beatty, Riffe and Welch (1997) who saw a significant relationship between the independent and dependent variables in their study. From the findings made by Sudiyatno et al (2012) in a similar study, they confirmed that return on assets (ROA), among other variables provide a measurement of firm's performance.

Table 2

Simple regression analysis and its associated ANOVA of the relationship between property, plant & equipment (PPE) and return on assets (ROA) based on hypothesis two

Model	R	R^2	Model R^2	Unstandardized Coefficient		Standardized Coefficient	t	Sig.	Result
				B	Standard Error	Beta			
PPE	0.087	0.008	-0.007	0.023	0.032	0.087	0.717	0.476	Insignificant (Accept H0)
				ANOVA					
Model		Sum of Squares	df	Mean Square	F	Sig.			
PPE	Regression	1.721	1	1.721	0.514	0.476			
	Residual	224.198	67	3.346					
	Total		68						

Dependent variable: Return on Assets (ROA)

Source: Field work results (2017).

Data presented on Table 3 reveal the relationship between Research and Development (R&D), proxy of capital expenditure decisions (CAPEX) and economic value added (EVA), proxy of Long term value of the firm (LVOF). It also tests Hypothesis three. From Table 4.3, R&D has a Beta value of 0.281, indicating an approximate contribution of 28% to EVA in the manufacturing firms under study. This result shows a positive correlation coefficient, though a relatively average relationship. A p-value of 0.019 and R2 value of 0.079 were realized, which also show that the value is less than the 0.05 alpha level, which makes us to reject the null hypothesis three. This indicates that there is a significant relationship between R&D and EVA in the companies under study. The unstandardized B value of 0.894 also explains that for any additional increase in the unit of R&D, there is an increase of about 89% in the value of EVA. The associated analysis of variance (ANOVA) reveals that the sum of squares for regression which is same as mean of square was 1401.685. The residual value was 16377.376 for R&D. The mean squares value for R&D, in relation with EVA shows 244.438. All these show a strong relationship, which supports the rejection of the hypothesis.

The agency theory examines the relationships between agents who manage a company's holdings, and the principals who own the company. If the agents act in their own best interests, for instance embarking on self-seeking short term profit which is at variance with enhancing the long term value of the firm, there would not be appropriate return on investment to enhance the firm's long term value. Specifically, agency theory focuses on different attitudes towards risk between the principal and the agent and the conflicts that occur when the goals and motivations of the two are at odds. It focuses on the problems that arise when the two encounter conflicts of interests and how to solve these problems.

Therefore looking at the agency theory, this finding shows that management's investment on R&D yielded appropriate return to the principal. In this wise, the investment on Research and Development (R&D) pays off by appropriate increase in the Economic Value Added (EVA) of the companies under study. Short-termism which does not support R&D was not engaged.

Bloom, Griffith and VanReenen (2002) in Ilaboya et al (2016) found that a positive relationship exists between R&D and firm value because firms that invest in R&D create innovations that will help increase their profitability. Moreover, Doraszelski and Jaumandreu (2013) in their work found that free cash flows (profits) derived from Research and Development's inputs are used to develop physical capital in order to bring about improved output, through high return on investment (ROI). These are in line with the findings of this study. It should encourage Nigerian manufacturing companies to use EVA in enhancing firm's value. The management of these companies should have a paradigm shift from the use of traditional NPV method of analysis alone for capital expenditure decision. There should be an extension of this method by making a holistic use of other capital expenditure appraisal techniques, incorporating Economic Value Added (EVA) and Market Value Added (MVA). More so, management should avoid indulging in short cuts to avert investment on research and development.

Model			Adjusted R^2	Unstandardized Coefficient		Standardized Coefficient	t	Sig.	Result
	R	R^2		B	Standard Error	Beta			
R&D	0.281	0.079	0.065	0.894	0.373	0.281	2.395	0.019	Significant
									(Reject H0)
				ANOVA					
Model		Sum of Squares	df	Mean Square	F	Sig.			
R&D	Regression	1401.685	1	1401.685	5.734	0.019			
	Residual	16377.376	67	244.438					
	Total	**17779.061**	**68**						
Dependent variable: Economic Value Added (EVA)									

Source: Field work results (2017).

Table 4 shows the relationship between financial assets and dividend/interest received from investment in financial assets as variables of capital expenditure decisions and long term value of the firms respectively. This is based on Null hypothesis four. The Table's analysis shows a Beta value of 0.925 which is about 93% of the total contribution of financial asset to the firm's long term value. A multiple correlation coefficient (R) of 0.925 was also observed, which indicates a high correlation to correspond with this beta value. The R2 value of 0.856 which shows a relationship of about 86% between the independent and dependent variables was also observed. However, the value of the adjusted R2 which is the modification for the limitation of R2 was 0.854. This indicates that the independent variable in the model explains about 85% variation on the dependent variable. The unstandardized B value of 0.502 shows that as financial assets increases or decreases by one unit in value, there is a corresponding 0.502 increase or decrease in the value of dividends/interest received in the sampled manufacturing firms. More so, the associated analysis of variance (ANOVA) reveals the sum of squares for regression and residual to be 3910.149 and 658.600 respectively, which indicate a significant relationship between the variables. The Sig.value reveals 0.000, which is less than the alpha value of 0.05 level and as such, the null hypothesis four was rejected.

The findings in hypothesis four is in consonance with the study conducted by Adesanwo and Agbatogun (2015) who found out that there is significant relationship between cross holdings in other firms/other non-operating assets and firm's value. The agency theory is identified here, as management may have not considered the long term implications of driving value to the companies, as a result of the investment in financial assets made in other firms. In this wise, the finding agrees with the agency theory which says that management may or may not act in the best interest of the principal, depending on what their interest would be.

Table 4
Simple linear regression and its associated ANOVA of the relationship between financial assets (FA) and dividends/interests (DIV) in hypothesis four

Model			Adjusted R^2	Unstandardized Coefficient		Standardized Coefficient	t	Sig.	Result
	R	R^2		B	Standard Error	Beta			
Financial Assets	0.925	0.856	0.854	0.502	0.025	0.925	19.945	0.000	Significant
									(Reject H0)
				ANOVA					
Model		Sum of Squares	df	Mean Square	F	Sig.			
Financial Assets	Regression	3910.149	1	3910.149	397.783	0.000			
	Residual	658.600	67	9.830					
	Total	**4568.749**	**68**						
Dependent variable: Dividend/Interest (DIV)									

Source: Field work results (2017).

Table 5 shows the relationship between tax planning (TP) and market value added (MVA) as proxies of CAPEX and LVOF respectively. The data showed R2 and the adjusted R2 values to be 0.001 and -.014 respectively. The value of 0.034 was also seen as the multiple correlation coefficient (R), showing a meager 3% of the relationship with the variables. The total sum of squares of 604.542 as a result of regression and residual values of 0.701 and 603.841 respectively was also revealed. It is indicative that when the sum of squares values is higher, the relationship becomes significant, but if the values are lower, there is an insignificant relationship. The table also shows a lower mean square of 0.701 which, in regression depicts an insignificant relationship. A Sig.value of 0.781 which is higher than the alpha level of 0.05 was observed. Therefore, using our decision rule, null hypothesis five is accepted. This goes to show that tax planning has no significant relationship with market value added of firms.

It is noted that tax planning and firm value rest on tax avoidance. How well the management of manufacturing companies increase their profit through use of capital allowances for qualifying assets brings about tax savings and additional cash flow for additional capital investments. In the like manner, capital gains tax can be reduced through tax planning as a variable, and through the use of effective tax rate. But this result shows that the companies might not have utilized this variable for their benefit, which now shows a non-relationship.

Hypothesis five gave a result which is at variance with what Beatty, et al (1997) and Derashid and Zhang (2003) had when they examined the effect of financial signals and income taxes on the investment behavior of firms. Their findings show that when tax liabilities are planned for, companies will have the advantage of exploring loopholes in tax laws to plan how to avoid some tax liabilities. This

will give the company an effective tax rate, which will help to reduce its tax liability, expressed as debt book value. We can say here that manufacturing companies in this study might not have used tax planning effectively for their long term value addition. This finding therefore agrees with Tobin's q theory for company value which has to do with the consideration of book value and market value of debt and equity, divided by book values of equity and debt, respectively.

Table 5
Simple linear regression and its associated ANOVA of the relationship between tax planning and firms' market value added as found in hypothesis five

Model			Adjusted R^2	Unstandardized Coefficient		Standardized Coefficient	t	Sig.	Result
	R	R^2		B	Standard Error	Beta			
Tax Planning	0.034	0.001	-0.014	0.057	0.205	0.034	0.279	0.781	Insignificant
									(Accept H0)
				ANOVA					
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**			
Tax Planning	Regression	0.701	1	0.701	0.078	0.781			
	Residual	603.841	67	9.013					
	Total	**604.542**	**68**						
Dependent variable: Market value Added (MVA)									

Source: Field work results (2017).

Conclusion and Recommendations

The study showed that capital expenditure decisions have a significant relationship with the long-term value of the manufacturing firms in Nigeria. Those years under study have witnessed Nigerians calling for diversification from oil, to encourage agriculture and manufacturing. As the Nigerian economy is a growing one, good investment decisions would give rise to long term value of Nigerian firms in the real sector of the economy. This can be realized if the private sector in manufacturing who are listed in the Stock Exchange can use variables in this study to enhance their sustenance and growth in value. This will help realize the Nigerian government's Vision 20: 2020 as was conceptualized and also in line with the Millennium Development Goals (MDGs) 'Target 8F' which mandates the government to work “in cooperation with the private sector, to make available the benefits of new technologies in ICT and manufacturing”.

It was recommended that management of manufacturing companies should ensure a holistic use of all techniques, exploring the real and growth options analyses as well as portfolio management techniques involving capital assets, in appraising capital investments. Also, risk analysis should be a composite factor in estimating cash flows from investment in property, plant and equipment and not just an arbitrary discount rate from cost of capital only. The weighted average cost of capital (WACC)

remains a utility tool whereby the cost of debt and equity used by the firm can be ascertained for investment decisions. This could make for better correlation between this variable and return on assets by manufacturing companies.

Above all, the agency theory principles should be followed by management in all its ramifications. This will discourage selfish profit-seeking investments by management, to the detriment of the long term value of the firm.

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