



Effect of Firm Attributes on Return on Asset of Listed Manufacturing Companies in Nigeria

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Abstract

The profitability of manufacturing companies does not only play the role of improving the market value of that specific company but also leads to the overall growth of the whole sector which translate to improvement on profit level that could be attributable to characteristics possessed by firms. It is on this the study examines the effect of firm attributes on the return on assets of listed companies in Nigeria for a period of five years. The population and sample size of this study comprises of all the 41 listed manufacturing companies in the Nigerian Stock Exchange as at 31 December, 2016. The result of random effect regression provides evidence that all firm attributes apart from operating expenses and firm size had a negative and significant effect on return on asset. Based on this result, the study recommends that listed manufacturing firms should reduce firm size and operating expenses so as to increase the return on assets of their firms and short term cash should not be channeled to fund capital asset.

1.0 Introduction

Business entities are associated with certain attributes which affect profitability positively or negatively. Firm attributes such as firm size, leverage, liquidity, capital, firm age, dividend, market share, off balance sheet activities, operating expenses, among others, can affect the operations of a firm either positively or negatively. Firm size as an internal factor of a company has been considered a very important attribute of profitability. This is because the size of a firm determines its level of economic activities and the possible economics of scale enjoyed by the firm. Therefore, bigger firms are likely to generate larger returns on assets (Driffield, Mahambare & Pal, 2005).

Firm age determines profitability as it is believed that the risk rate of a firm will fall with time and firm survival increases with age of the firm. Thus, new firms are perceived unable to achieve economies of scale and they rarely have the sufficient managerial resources and expertise. Leverage on the other hand consists of various financial instrument or borrowed capital such as margin used to increase the potential return of an investment of a firm. It is that amount of debt used to finance a firm's assets (Lin, Li & Yung, 2006).

Liquidity is a precondition to ensure that firms are able to meet their short-term obligations and continued flow can be guaranteed from a profitable venture. It should be noted that too much focus on liquidity will be at the expense of profitability (Gitman, 2007). Operating expenses is another item in a firm's financial statement that affects its profitability. It is the amounts of money spent by a firm in running its business operations on a daily basis. A company's operating expenses consist of costs of goods sold, selling, general and administrative expenses which enable the company to carry out its production operations without stoppage (Hassan, 2013).

Today, manufacturers work constantly to increase assets utilization and reduce loss in the ongoing effort to achieve high performance. This is as a result of pressure from shareholders which is greater now than ever and thus, the funds available for investment that would lead to improvements are often limited. To remain competitive, companies must get more from their assets while keeping costs down (Carlos & Rodrigo, 2010). Return on assets (ROA) is one example of the classical financial indicators or accounting ratios used by firms to measure profitability. ROA is an indicator of how profitable a company is,

relative to its total assets. It gives an idea as to how efficient management is at using its assets to generate earnings.

A considerable number of works have been done examining the effect of firm attributes on the profitability of firms. Most notably (Boigues, 2016) in the United States, United Kingdom, Russia and France (Banchuenvijit 2012 & Conyon & Peck, 1998; Hossain, Prevost & Raa, 2001). Though a few literatures exist on the firm profitability, most of them have not included ROA as a variable in their study. More so, the few studies in Nigeria like Kolawole (2013), Aliu (2010), Owolabi and Kayode (2010) have not captured the effect of operating expenses on firm profitability even though other factors like firm size, firm age and leverage have been considered in the literature. Again, even though several studies have been carried out using this domain, no research has been carried out with the same variable composition here in Nigeria based on the researcher knowledge. This study is more recent as it covers a period of five years from 2012 to 2016.

However, it is known that findings from similar foreign studies may not be applicable to Nigeria because of variation in economic condition, time frame and variables used, hence the need for a study that can be applied in Nigeria. The objective of the study is to examine the effect of firm attributes on return of assets of listed manufacturing companies in Nigeria. This study answers the question of; does firm attributes have any effect on return of assets of listed manufacturing companies in Nigeria? In line with the research objective, the study formulates and tested the null hypotheses below:

H₀₁: Firm size has no significant effect on return on assets of listed manufacturing companies in Nigeria.

H₀₂: Firm age have no significant effect on return on assets of listed manufacturing companies in Nigeria.

H₀₃: Leverage has no significant effect on return on assets of listed manufacturing companies in Nigeria.

H₀₄: Liquidity has no significant effect on return on assets of listed manufacturing companies in Nigeria.

H₀₅: Operating expenses has no significant effect on return on assets of listed manufacturing in Nigeria.

2.0 Literature Review

2.1 Firm Attributes

Firm's attributes can be determined based on the relevant information disclosed on its financial statements for a particular accounting period (Stainer, 2006). Dean, Bulent and Christopher (2000) posited that firm attributes are essential determinants of a firm's performance as well as its success in business. Firm attributes variables used in this study include, firm size, firm age, Leverage, liquidity and operating expenses.

Firm size refers to the speed and extent of growth that is ideal for a specific company. Most companies' intent to expand the size of their business operation for them to grow either in revenue, profit, number of employees, or size of facilities (Pervan & Visic, 2012). Many companies compete in rapidly changing industries, expansion of manufacturing capacity, geographical presence, market shares and so on which may be imperative for survival (Dogan, 2013). Bala, Darry and Matthew (2005) consider firm size as an important determinant of financial performance. Similarly, most manufacturing firms use natural log of total assets. Consistent with this view, Bala (2005), Zahid, Ali, Shahid and Muhammad,(2013) , Makoto and Pascal (2011) all measured firm size using natural log of total assets. To this end, firm size will be measured using natural log of total asset in our study.

The age of a firm is considered a factor that improves firm's performance. But contrary to this view, Muhammad and Shahimi (2013), Claudio and Urs (2009) believe that older firms are not flexible enough to make rapid adjustment, reduce barriers to innovation and make profit owing to the fact that their organizational rigidities limit their growth by inhibiting change as they become harder to change over time. According to Claudio & Urs, (2009) explain that older firms are better performer than newly listed firms. But the findings of Alex, Augustine and Mercedes (2006), counter this assertion with their view that firms improves with age that is, ageing firms experience rising level of productivity since they are able to understand their strength over time. While Makoto and Pascal (2011), defines firm age as the number of years after listing. In addition, it is measured by the number of years a firm has existed since incorporation or after its listing on the stock exchange market. Firm age however, will be measured in this study as the number of years a firm attains after listing.

Aliu (2010) defines leverage as the sensitivity of the value of equity ownership with respect to changes to the underlying firm value. That is, firm's mix of its financial liabilities. Leverage is further defined as the measure of how much firm uses equity debt to finance its assets. Consequently, it reflects the debt amount used in the capital structure of the firm. According to David (1952), increasing leverage in capital structure will increase firm's value as well as the market price of share, though he was not able to justify this assumption. But, Jensen (1986) was able to confirm that higher leverage improves firm performance. According to Fabrizio, Nigel, Sarmistha and Isabella (2011), leverage is equal to total long and short term debt to total asset and total liability to total asset, while Tih (1998), measured leverage as long term debt divided by total asset. Abdullahi, Ayoib and Khaled (2011) measured leverage as total debt to total asset. To this end, total debt to total asset used by Abdullah *et al*, (2011), would be employed in this study.

A company's liquidity position is measured as a ratio of its current assets to current liabilities; it represents the possibility that a firm will be able to meet its financial obligations as fall due (Omolehinwa, 2006). Suppliers, creditors and other short-term lenders of funds require a very sound liquidity position of a firm in order to have confidence in the firm's ability to satisfy their requirements (Kurfi, 2003). Liquidity also represents the amount of cash or current assets that can be easily converted in cash for the day-to-day operations of a company. It represents the amount that is invested in assets that are expected to be realized within a single accounting period. A current ratio of 2:1 is regarded to be indicative that a company is reasonably well protected against the danger of insolvency through sufficient liquidity. Liquidity is the ability of a company to meet its demand for funds (Biety, 2003).

Operating expenses are the costs associated with a company's main operating activities which are reported on its income statement. The expenses constitute the cost of goods sold, selling, general and administrative expenses (Zaman, 2009). (Krishnan, 2006) viewed operating expenses as a company's expenses related to the production of its goods and services. TThe expenditure that a business incurred as a result of normal business operation is a challenge faced by a company's management to determine how much operating expenses can be reduced without significantly affecting the firm's ability to

compete with its competitors in the market (Zaman, 2009). The study uses the NPM to measure profitability. The net profit margin is the measure of a business success with respect to earning on sales. A higher margin means the organization is more profitable (Adebisi, Iyiola & Olayemi, 2016). Profit margins are expressed in ratios, specifically “earnings” as a percentage of sales.

2.2 Return on Assets

The concept of firm profitability in accounting literature refers to profit, return on assets and economic value (Hassan, 2010). The measurement of profitability can apply the use of return on assets (ROA), return on equity (ROE), return on sales (ROS), earnings per share (EPS), market capitalization growth, gross and net profit margin, economic profit, and Tobin’s Q as measure of performance are commonly employed, by most the studies reviewed on performance. ROA entails the classical financial indicators or accounting ratios used by firms to measure profitability. This concept has been perceived and applied differently. ROA is an indicator of how profitable a company is, relative to its total assets. It gives an idea as to how efficient management is at using its assets to generate earnings.

2.3 Theoretical Review

Different theories have been used by previous researchers to underpin studies of this nature like, stakeholder’s theory, agency theory, theory of firm growth, signaling theory. But agency theory has been found to be the most appropriate theory that underpins this study because the agency theory determines the profitability of companies through effective and efficient use of shareholders fund and proper management of the companies by those entrusted with it.

Agency theory states that management and owners have different interests (Jensen & Meckling, 1976 as cited in Yuan D, 2008). According to this theory agency costs arise from conflicts of interest between shareholders and managers of the company. Agency cost is defined as the sum of monitoring costs incurred by the principal, bonding cost incurred by the agent, and residual loss. Lower agency costs are associated with better performances and thus higher firm values, all other things being equal. To achieve this goal, it is important to see the factors that have been considered in previous studies. Previous studies in their respective studies have used agency theory, among them are (Yuan D, 2008); (Alamro& Al-soub, 2012), (Bano, Scholar, Azeem & Scholar, 2012). Therefore, the

study underpins the agency theory in determining the profitability of companies through effective and efficient use of shareholder fund and properly managed by the management of the companies.

2.4 Review of Empirical Studies on Firm Attributes and Return on Assets

Erasmus (2013) examined the impact of firm size on performance of Microfinance institutions in Tanzania. The study employed the use of panel data for five years and 30 Microfinance institutions operating in the country. Firm size from the study was measured using total assets to numbers of borrowers and number of staff. The findings from the study reveal a positive impact of firm size measured by total asset and number of borrowers on the performance of Microfinance institutions in the country. Also, Abdullah *et al* (2011) investigated the association between firm size and financial performance in the kingdom of Saudi Arabia, considering data of 392 listed companies on firm size and return on assets were collected from the Saudi stock exchange from 2007 to 2010, using multiple regression analysis. The result of the study showed that firm size was associated with firm performance. Firm size was found to be negatively correlated with ROA but was statistically significant.

Sumit (1997) examined the impact of firm age on firm level performance in Indian firms. The study used panel data of 1020 firms from 1992 to 1997. He found negative correlation between age and profitability (ROA). In addition, Claudio and Urs (2009, 2010) investigated firm age and performance of listed firms in US. The work used panel data from 235 firms, from 1996 to 2009. The results showed the existence of a significant age effect on performance, there is a negative link between firm age and performance over the range of ages observed in the sample. Secondly, only very few firms in the sample actually live long enough to experience the possible turning point in the age performance. Implying that, newly listed firms perform more than older firms.

Laurent (2000) examined the relationship between leverage and corporate performance on European countries, using 700 manufacturing firms from seven countries from 1993 to 2004. Multiple regression analysis was used, Leverage was found to have a positive and significant relationship with performance (profitability) for five countries and a positive relationship with low significance in two countries. Humera *et al* (2011), examines corporate governance on firm performance using leverage as a control variable of the

study. Data on ROA and leverage were collected from the Karachi stock market between 2005 and 2009 on 20 firms from different industries. They found a positive relationship between ROA and leverage, contrary to previous results. Additionally, Tanveer and Safdar (2013) empirically investigated the determinants of leverage of automobile firms listed on the Karachi stock exchange. The study used panel data of 132 firms and OLS regression for analysis from 2005 to 2010. The result shows that leverage is negatively correlated with profitability but not significant.

Another study by Owolabi and Obida (2012) examined the relationship between liquidity management and corporate performance of listed manufacturing companies in Nigerian Stock Exchange. The study used panel data from 12 manufacturing firms for the period of 2005 to 2009. The result of their findings showed a significant impact of liquidity management on corporate financial performance. Gill and Mathur (2011) reported a positive significant relationship between liquidity and financial performance of 75 Canadian service firms listed on Toronto Stock Exchange for the period of 2008 to 2010.

3.0 Methodology

The population and sample size of the study comprise of all the 41 manufacturing firms listed on the Nigerian Stock Exchange (NSE) under materials, industrial, healthcare and consumer goods sectors as at 1st January 2012 and remained listed as at 31st December 2016. The data was sourced from the annual financial reports of the manufacturing firms for the period under study. The study employs regression model for data analysis as shown below.

$$ROA_{i,t} = \beta_0 + \beta_1 FSZ_{it} + \beta_2 AGE_{it} + \beta_3 LEV_{it} + \beta_4 LQT_{it} + \beta_5 OPE_{it} + e_{it}$$

ROA_{it} = (RETURN ON ASSETS) = Profit before interest and tax scale by total assets firm *i* at time *t*

FSZ_{it} (FIRM SIZE) = natural log of total assets of firm *i* at time *t*.

AGE_{it} = the difference between the current year and year of incorporation of firm *i* at time *t*.

LEV_{it} (LEVERAGE) = total debt to total assets of firm *i* at time *t*.

LQT_{it} = difference between current assets to current liabilities of firm *i* at time *t*

OPE_{it} (OPEARTING EXPENSES) = total operating expenses to total assets of firm *i* at time *t*

*e*_{it} = Error term

β_0 = Intercept (constant)

t = time script (t=5)

i =firm script (i= 41)

The independent variables which are firm size, firm age, leverage, liquidity ratio and operating expenses was regressed against dependent variables of return on assets (ROA).

4.0 Analysis and Interpretations

The analysis and interpretations for this study is based on descriptive statistics, correlation matrix and the summary of random regression result as presented below

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	205	10.80527	13.02336	-19.24	79.27
FSZ	205	1.761366	.8637748	-.12	3.78
AGE	205	44.559024	19.19272	3	94
LEV	205	55.59766	20.73144	7.34	150.45
LQT	205	1.614244	3.243238	.07	36.41
OPE	205	20.58717	12.29695	2.67	57.29

Source: STATA 13 Outputs based on study data (See appendix B)

ROA has a mean score of ₦10.81B; this implies that the average score of return on asset in this domain is ₦10.81B. ROA has a standard deviation of 13.00442, showing that the deviation from the mean is quite high hence; the data is clustered around the mean. The minimum value of ROA for the firms is ₦19.24B and a maximum value of ₦79.27B. This reveals that the level of deviation of the minimum from the maximum value is high. Thus, indicating that some of the firms have high return on assets, while others experience low returns.

Firm size was measured by natural logarithm of total asset and has a mean score of ₦1.761366, with a standard deviation of 0.8637748, indicating a minimal deviation from the expected mean. This implies that the data is clustered around the mean. The result also shows a minimum value of ₦0.12 and a maximum value of ₦3.78. This means that for firms to have minimum profitability they must have an asset size of ₦0.12 and for maximum profitability, the firms should have an asset size valued at ₦3.78.

Furthermore, firm age from the table 4.1 reveals that the mean value is 44.59024 with a standard deviation of 19.19272, and this implies that firm age is widely scattered around the mean. While the minimum and maximum values are 3 years and 94 years respectively.

Leverage has a mean score of ₦55.60B, which indicates that firms' total debt is used more to finance the business than the firm asset. It further shows a standard deviation of 20.73144 which indicates a high deviation from the mean. Similarly, leverage has minimum value of ₦7.34B and a maximum value of ₦150.45B. This explains that some firms use high level of debt (highly levered) to operate and run their activities and some others use very minimal level of debt and or consider low debt in financing their activities.

Also, Liquidity from the table above has an average score of 1.61; which explains that the manufacturing companies are able to meet their short term obligations (current liabilities) up to 1.61 times. The statistics further shows a standard deviation of 3.243238 which was observe to be high. The result also shows that liquidity ratio has minimum value and maximum value of ₦0.07B and ₦36.41B respectively.

Finally, operating expenses has a mean score of ₦20.58B, which implies that for the companies to have an average profitability, their operating expenses should not exceed ₦20.58B, with a standard deviation of 12.29695, indicating a high deviation from the expected mean. The minimum and maximum values are ₦2.67B and ₦57.29B respectively. This implies that for sample firms to achieve minimum and maximum profitability, their operating expenses should not exceed ₦2.67B and ₦57.29B respectively.

Table 2: Correlation Matrix

	NPM	ROA	FSZ	OPE	LEV	AGE	LQT
NPM	1.0000						
ROA	0.6765*	1.0000					
FSZ	0.3763*	0.2288*	1.0000				
AGE	-0.0809	0.0457	0.0271	1.0000			
LEV	-0.2430*	-0.1014	0.1157	0.1120	1.0000		
LQT	-0.2892*	-0.1150	-0.1820*	-0.0699	-0.3635*	1.0000	
OPE	-0.0593	0.1245	-0.3052*	0.1443*	0.1277	-0.1292	1.0000

Source: STATA 13 Outputs based on study data (See appendix B)

ROA show a positive and significant relationship with firm size of ($\beta = 0.2288$, sig-value 0.0010). Also, the relationship between ROA and firm age is positive and insignificant ($\beta = 0.0457$, sig-value 0.5156) at 5% level. Similarly, the relationship between ROA and leverage is negative and insignificant ($\beta = -0.1040$, sig-value 0.1376) at 5% level of sig. Furthermore, the relationship between ROA and liquidity is negative not significant ($\beta = -0.1150$, sig-value 0.1005) at 5% level of sig. Finally, the relationship between ROA and operating expenses is negative and insignificant ($\beta = 0.0593$, sig-value 0.3986).

From the table 4 above, firm age reported a positive and no significant relationship with firm size ($\beta= 0.0271$, sig value =0.6998). Leverage further revealed a positive and insignificant relationship with firm size ($\beta= 0.1157$, sig value =0.0987) and firm age ($\beta= 0.1120$, sig value =0.1099) respectively. More so, liquidity indicates a significant negative relationship with firm size ($\beta= -0.1820$, sig value =0.0090) and liquidity further revealed a negative and insignificant relationship with firm age ($\beta= -0.0699$, sig value =0.3193), liquidity also indicate a negative and significant relationship with leverage ($\beta= -0.3635$, sig value =0.0000). Finally, operating expenses reported a significant negative relationship with firm size and a positive and significant relationship with firm age. It further revealed a significant positive relationship with leverage but negative relationship with liquidity.

Table 3: Summary of Random Effect Regression Results for ROA

Variables	Coefficient	t-value	P-value
Firms Size	6.483993	3.37	0.000
Firms Age	-0.0474266	-0.53	0.397
Leverage	-0.1479104	-4.19	0.000
Liquidity	-0.114713	-0.54	0.590
Operating Expenses	0.2023411	2.23	0.026
_cons	5.742365	0.93	0354
R ²			0.1561
F-Statistics	5.159		0.0000

Source: STATA 13 Outputs based on study data (See appendix B)

4.1 Test of Hypotheses

Ho₁: Firm Size has no significant effect on Return on Assets of listed manufacturing companies in Nigeria

As shown in table 3, firm size has a positive and significant effect on profitability ($\beta = 6.483993$ and p-value = 0.000, as measured by ROA. This implies that 1% increase in firm

size results to 6% change in ROA that is, as firm size increase, there is an increase in ROA holding all other variables constant. This finding agrees with the studies by Yana (2010) and Pavlos (2008), as their studies found a positive and significant relationship between firm size and return on asset. However, the study contradicts that of Abdullahi *et al* (2011) who documented a negative correlation between firm size and return on asset and considers firm size as the strongest contributor that explains ROA in their model. Therefore, this study rejects the null hypothesis which states that firm size has no significant effect on profitability of listed manufacturing companies in Nigeria.

Ho₂: Firm Age has no significant effect on Return on Assets of listed manufacturing companies in Nigeria

For firm age as a determinant of firm performance, the result shows that firm age has an insignificant negative impact on return on asset with coefficient of -0.0474266 and p- value of 0.397. It implies that every 1% increase in firm age leads to a 0.0474266 % decrease in return on asset holding other variables constant. This result confirms the study of Alex *et al* 2006; Claudia and Urs (2009) that found firm age has a negative impact on return on assets and negates the studies of Erasmus (2013); Muhammad and shahimi (2013) who found positive significant effect on profitability. Therefore, the study to accept the null hypothesis which states that firm age has no significant effect on profitability of listed manufacturing companies in Nigeria.

Ho₃: Leverage has no significant effect on Return on Assets listed manufacturing companies in Nigeria

The coefficient of leverage reveals a negative but significant impact on return on assets since the coefficient is -0.1479104 and p- value is 0.000. This implies that for every 1% increase in leverage there is a resulting 0.1479% decrease in return on asset with statistically significant evidence. This implies that the return on assets reduces with increase in leverage all other variables held constant and the result is convincing. This result is in support with the findings of Heydar, Elham, Valid and Mohse (2009), who found negative significant relationship between leverage and ROA. But, contradicts the studies of Laurent (2000); Yana (2010); Humera *et al* (2011). Thus, the study rejects the null hypothesis; leverage has no significant effect on profitability of listed manufacturing companies in Nigeria.

Ho₄: Liquidity has no significant effect on Return on Assets of listed manufacturing companies in Nigeria.

Furthermore, the result shows a negative insignificant relationship between liquidity and profitability of listed manufacturing firms in Nigeria. The result shows a beta coefficient of 0.114713 with p-value of 0.590 indicating that the p-value is not statistically significant. This implies that liquidity as one of the proxies of firm attributes does not significantly affect the profitability. The findings are in line with the study of Tanveer and Safdar (2013) who found no evidence of significant relationship between liquidity and financial performance. The result however contradicted the findings of Hendander (2005), Gill and Mathur (2011), Owolabi and Obida (2012), and Dalvi and Baghi (2014) who found positive significant relationship between liquidity and firm profitability. The study accepts the hypothesis, which states that liquidity has no significant effect on the profitability.

Ho₅: Operating Expenses has no significant effect on Return on Assets listed manufacturing companies in Nigeria.

The table further reveals that operating expenses has positive relationship with profitability and the relationship which is statistically significant shows a beta coefficient of 0.2023411 with p-value of 0.026. This implies that operating expenses do not have significant effect on profitability. This supports the findings of Ali, Malo-Alain and Haque (2015) Temitope, Sunday and Olusesan (2015) who revealed significant positive relationship between operating cost and firm profitability but contradicts the findings of Gupta, Pevzner and Seethamraju (2010) who found a negative relationship between overhead cost and firm profitability proxied by return on assets. The result provides a basis for rejecting the hypothesis which states that operating expenses has no significant effect on the profitability of listed manufacturing companies in Nigeria.

5.1 Conclusion and Recommendations

The results of the study show that all firm attributes apart from operating expenses and firm size had a negative and significant effect on return on asset of listed manufacturing firms in Nigeria. Findings show ways in which manufacturing companies can increase their assets and improve the scope of their operations in order to increase their size, since firm size positively and significantly contributes to their profitability.

Based on these results, listed manufacturing firms should reduce firm size and operating expenses so as to increase the return on assets of their firms. It shows that the liquidity of a firm negatively and significantly affects the profitability of a firm. This implies that high level of liquidity in a firm will reduce profitability; therefore, the manufacturing firms should reduce the level of current asset on capital investment. Also, operating expenses has been found to significantly affect profitability both in negative and positive ways. Therefore, the manufacturing companies should maintain the right cost structure to improve on their profitability.

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