



Effect of Corporate Attributes on Firm Value of Selected Quoted Manufacturing Firms in Nigeria

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ABSTRACT

This study empirically examined the effect of corporate attributes on firm value of selected quoted manufacturing firms in Nigeria. The focus was effect of firm size, firm leverage, and board size on Tobin's q. It covered from 2009-2018, and therefore utilized annual time series secondary data extracted from audited and published reports of the companies. Research design adopted was ex-post facto method, while analytical techniques employed were descriptive statistics and panel Fully Modified Least Squares (FMOLS) regression mechanism considering Jarque-Bera test of normality, Breitung t-stat panel unit root test, and Pedroni Residual Cointegration/ multicollinearity Test. Findings revealed that the data series were stationary at first differencing, and there is no problem of multicollinearity. The FMOLS regression result provided that firm size and leverage exert positive influence on firm value while Board size has negative effect on the value of firms. However, only firm leverage has significant effect. On these backgrounds, the study recommended among other things that for firms that want to increase their value, it is necessary to pay attention to the condition of the firm leverage as well as the firm size. However, there is need for close monitoring of number of members of board of directors so as to avoid decreasing the firm value.

Keywords: Corporate Attributes; Firm Value; Fully Modified Least Squares Regression; Manufacturing Firms

1. Introduction

In today's world, the purpose of any company is not only to earn a profit but also to maximize the firm value. Firm value has been the primary concern of business practitioners in all kinds of organizations, mainly due to the implications it has on an organization's health and ultimately its survival. It can be explained as the present value of a series of incoming cash flows that the company will produce in the future (Daeli and Endri, 2018); and can, however, be achieved by increasing stock prices to improve the prosperity of the owner.

According to firm theory, the sole purpose of every company is to maximize its wealth or value. In that case, Baye (2010) asserts that by maximizing the value of a company, one also maximizes shareholder wealth, which is the main goal of the company. Maximizing firm value is vital for a company because it means increasing the affluence of shareholders as well, which becomes the company's main goal (Shuaibu, Ali, and Amin, 2019). However, a good firm value would attract other parties' interests to join the company. Though a high firm value reflects management's effectiveness and efficiency in making use of the company's resources, firm attributes are therefore among other important factors that could affect the value of the firms. It is important to identify these factors since the maximization of social welfare in an economy is dependent upon the maximization of the total firm value of all the firms in the economy.

Corporate attributes have been considered an important factor that may influence other business activities too (Hasan, Omar, Abdul Rahman, and Hossain, 2016). Firm attributes are variables that affect the firm's decision both internally and externally. It can be seen as those distinctive features peculiar to companies by which they can be identified and can be viewed from different perspectives. Therefore, Company attributes are specific variables that contribute towards the changes in firm value. Company attributes are divided into firm performance characteristics and firm structural characteristics. The firm performance characteristic includes firm growth and profitability, while firm structural characteristics include firm size, firm age, firm leverage, and capital expenditure or management efficiency. Firm characteristics can be seen as the wide varieties of information disclosed in the financial statement of business entities that serve as the predictors of the firm's quality of accounting information and performance (Shehu, 2009). Therefore, the current study considered firm size, firm leverage, and board size as variables of company attributes.

The size of a firm is crucial to its success due to the phenomenon of economies of scale. Firm size reflects how large a firm is in assets and the number of employees. Shaheen and Malik (2012) described firm size as the quantity and array of production capability and potential a firm possesses or the quantity and diversity of services a firm can concurrently make available to its clients. Larger companies have more stakeholders in their organizational field. Thus, they are susceptible to scrutiny from more stakeholders in the business environment (Abdulsalam and Babangida, 2020). Also, larger firms are more visible to a broader range of stakeholders (Wang 2017; Souha and Anis 2016; Dioha, Mohammed, and Okpanachi, 2018). However, Babalola (2013) argues that the larger a firm is, the more influence it has on its stakeholders, and so large firms tend to outperform small firms. Firm leverage is an important strategy for reducing a company's weighted average cost of capital. Board size is the number of directors on board of the organization which includes executive and non-executive directors. This study would, however, expose the effectiveness of firm size, leverage, and board size on firm value (operationalized by Tobin's Q) of selected quoted manufacturing firms in Nigeria.

Statement of the Problem

Firm value is one of the key concerns of investors. This is because the prosperity level of shareholders and investors is reflected in the firm value. Presently, although earlier studies have established that firm value is influenced by both exogenous and endogenous variables/factors such as firm size, firm growth, firm leverage, firm's wealth, technology, customer satisfaction, management understanding, asset structure, organizational structure, human resources capital structure, investment decision, among others, there is still no consensus on the key essential attributes that can upset the value of a firm. For instance, Saleh, Priyawan, and Ratnawati (2015) pointed out that essential factors that can affect the firm value are: asset structure, capital structure, firm size, firm growth, and investment decision. Saona and San-Martín (2018) and Crisóstomo et al. (2011) explained that these factors can only include and are limited to dividend policy, capital structure, and ownership concentration. In furtherance, Al-Slehat (2020) obtained that key firm attributes that can affect firm value are only but firm size, asset structure, and capital structure. Endri and Fathony (2020) concretized the affirmation of Al-Slehat and explained that firm size can affect company value since larger companies will be relatively stable and able to generate profits. Moreover, earlier studies have not boldly highlighted and strictly defined the direction and magnitude of the effect of these factors

on firm value. On these backgrounds, and in the widest view of the researcher, it is however essential to determine both the magnitude and direction of influence of corporate attributes on firm value in Nigeria. This present study is focused on the effectiveness of firm size, leverage, and board size on the firm value of selected quoted manufacturing firms in Nigeria for a period of ten years (2009 to 2018).

Objectives of the Study

The broad objective of this study is to investigate the effect of corporate attributes on the firm value of selected quoted manufacturing firms in Nigeria. The specific objectives are:

- I. To ascertain the effect of firm size on Tobin's Q of selected quoted manufacturing firms in Nigeria.
- II. To determine the influence of firm leverage on Tobin's Q of selected quoted manufacturing firms in Nigeria.
- III. To find out the effect of board size on Tobin's Q of selected quoted manufacturing firms in Nigeria.

Research Questions

- I. How does firm size affect firm value (proxy by Tobin's Q) of selected quoted manufacturing firms in Nigeria?
- II. How does firm leverage influence Tobin's Q of selected quoted manufacturing firms in Nigeria?
- III. What is the effect of board size and Tobin's Q of selected quoted manufacturing firms in Nigeria?

Statement of Hypotheses

In line with the stated objectives, the following hypotheses are formulated in the null form;

- HO₁:** Firm size has no significant effect on Tobin's Q of selected quoted manufacturing firms in Nigeria.
- HO₂:** Firm leverage has no significant influence on Tobin's Q of selected quoted manufacturing firms in Nigeria.
- HO₃:** Board size has no significant effect on Tobin's Q of selected quoted manufacturing firms in Nigeria.

2. Review of Related Literature

2.1 Conceptual Review

Corporate Attributes

Corporate entities are associated with certain attributes which affect profitability positively or negatively. Corporate attributes are essential determinants of a firm's performance as well as its business success. Firm attributes such as firm size, firm age, leverage, liquidity, dividend, capital, market share, off-balance-sheet activities, operating expenses, among others, can affect the operations of a firm either positively or negatively. In this study, corporate attributes variables used include firm size, Leverage, and board size. The choice of these variables was based on their relevance and direct linkage with the firm value.

Firm Size

Firm size refers to the speed and extent of growth that is ideal for a specific company. It is considered as one of the basic restrictive things in both small and big firms at the local and foreign levels when taking decisions relating to financial leverage. Shaheen and Malik (2012) described firm size as the quantity and array of production capability and potential a firm possesses or the quantity and diversity of services a firm can concurrently make available to its clients. According to Benyamin and Endri (2019), company size is an assessment of how large or small a company is represented by a company's assets. The size of a firm determines its level of economic activities and the possible economics of scale enjoyed by the firm. Larger firms are prone to having a maximized value than smaller firms. This is obvious in their level of operation, which is expected to be larger than smaller firms. If the value of the firm is measured by performance, then this large volume of operation will translate into better performance than smaller firms (Mohammed, 2017).

The size of a firm cannot be overruled in determining the value of the firm. Large firms may generate superior performance as they are more able to use economics of scale and scope, and they may organize their activities more efficiently. Pervan and Visic (2012) stated that most companies are intended to expand the size of their business

operation for them to grow either in revenue, number of employees, or size of facilities. The size of a firm is crucial to its success due to the phenomenon of economies of scale. Modern corporate firms look to increase their size in order to get a competitive edge over their competitors by reducing production costs and increasing their market share. Bigger firms can manufacture items at much lower costs than smaller firms can. Babalola (2013) argues that the larger a firm is, the more influence it has on its stakeholders, and so large firms tend to outperform small firms. Almajali et al (2012) argued that the size of the firm can affect its financial performance. However, for firms that become exceptionally large, the effect of size could be negative due to bureaucratic and other reasons.

Firm size can be measured in different ways such as asset, employment, sales, and market capitalization. Some authors like Zahid, Ali, Shahid, and Muhammad (2013); Makoto and Pascal (2011), stated that firm sizes are measured using a natural log. The size of large companies shows that the company is experiencing growth, so that investors will respond positively, and the value of the company will increase. The greater the total assets and sales, the greater the size of a company. In the study of Sunarto and Budi (2014) and Rudangga and Sudiarta (2016), their result showed that there is a positive relationship between firm size and firm value. The implication is that increasing company size will make it easier for companies to obtain funding which can then be used by management for the purpose of increasing company value. The larger the size or scale of the company, the easier it will be for the company to get funding, both internal and external. Also, Hirdinis (2019) affirmed that larger companies have greater sensitivity and relatively greater wealth transfer compared to smaller companies.

Firm Leverage

Conceptually, leverage is the ratio of total liabilities to total assets. In other words, it involves the use of borrowed money (debts) to acquire additional assets through increased production volume and sales as well as earnings of a company. According to Salehi (2009), financial leverage can be referred to as the proportion of debt to equity in the capital structure of a firm. It is the advantageous condition of having a relatively small amount of cost yield and a relatively high level of values (Ojo, 2012).

Financial leverage measures the degree to which a firm's capital structure comprises more of long-term debt as against equity. It is an important tool in measuring the effectiveness of corporate debt usage, as it describes the ratio of long-term debt to total equity and it is alternatively stated as the ratio of long-term debt to total capital (Hery, 2017). In the study of Noghondari and Noghondari (2017), financial leverage is one of the most difficult issues that face the financial manager when taking a decision. This is because increase in the debt ratio may increase the financial risks and then lead to the rise of capital cost. In the course of this research, firm leverage is computed thus:

$$\text{Financial Leverage} = \frac{\text{Total Debt}}{\text{Total Equity}} \quad (2.1)$$

Board Size

The board size of an organization is the number of directors on board of the organization which includes executive and non-executive directors. According to Ogbechie and Koufopoulos (2010), board size refers to the total number of directors on the board of any corporate organization. Board size for an organization is very important because the number and quality of directors in a firm determines and influences the board functioning and hence corporate performance. Board's monitoring and supervising capacity is increased as more and more directors join the board. Besides, some authors believe that large board size adversely affects the performance and well-being of any firm. Larger boards are difficult to coordinate, and are very prone to fictionalizations and coalitions that will delay strategic decision-making processes. Rouf (2011) argues that small board size is generally believed to improve the value of the firm because the benefits of larger boards of increased monitoring are outweighed by the poor communication and decision-making of larger groups. Proponents of large board size believe it provides an increased pool of expertise because larger boards are likely to have more knowledge and skills at their disposal. They are also capable of reducing the dominance of an overbearing CEO and hence put the necessary checks and balances.

Firm Value

The firm value represents the assets owned by the company. According to Sujoko and Soebiantoro (2007), firm value is the investor's perception towards the value of the success of a firm related to its stock price. In other words, firm value is referred to as an economic measure of firm performance that has reflected the worth of the business as a whole thereby efficient and effective use of economic resources can be ascertained. A good firm value can attract other parties' interests to join the company. It signifies the ability of the business to maximize the shareholder's wealth.

The purpose of the firm is to create wealth or value for its stakeholders by converting their stakes into goods and services. Gülerüç (2009) stated that a firm value was the acquisition and the trade value of the company anticipated by volunteer buyers and sellers with thorough information about the company free from any problem. This is an indicator that the study on firm value is relevant in all aspects of a business. Modigliani and Miller (1958) stated that firm value is determined by a company's asset earnings power. It represents the assets owned by the business which readily provided by the investors (equity shareholders and debt financiers). According to Ayuba, Bambale, Ibrahim, and Sulaiman (2019), firm value describes business propensity to grow which is translated into investors' propensity to invest. Firm value can be achieved by increasing stock prices to enhance the prosperity of the owner. In terms of the relationship between profitability and firm value, Haryono & Iskandar (2015); Nuryaman (2015); Osazuwa & Che-Ahmad (2016); Purwanto & Agustin (2017); Deswanto & Siregar (2018) found that the higher profitability will increase the higher of firm value.

Firm value is commonly measured using Tobin's Q, Equity Share Prices, Price to Book Ratio, Enterprises value to name but a few. To measure the value of the firm, this study used Tobin's Q. Tobin's Q measures the relationship of the firm stock market value to the firm's resources replacement cost (Sahay and Pillai, 2009). It is considered as the best predictor of a market correction (Pett, 2013) and it can also explain the majority of the investment variability. It can also be applied in the financial condition analysis of the company which means that the investors who acquire the firm stock would first calculate Tobin's Q. Tobin's Q index measures the investors' perception of the firm. It compares the market value of the total asset (i.e. market value of equity + market value of debt) to the book value of the firm's total assets (Al-Matari, et al., 2014). Tobin's Q is the ratio of the company's market value to the replacement cost of its asset.

$$TQ = \frac{\text{Market Value of the Shares of Firm}}{\text{Replacement Cost of Firm's Assets}} \quad (2.2)$$

2.2 Theoretical Review

This study is anchored on the Stakeholders' Theory. The stakeholder's theory was propounded by Edward Freeman in 1984. It is a theory of management that is concerned with matters related to morals, ethics, and values in running a business (Bhasin, 2018). It raised awareness of the relationships and the ripple effect of a company and its many stakeholders. The theory argues that a firm should create value for all stakeholders, not just shareholders. The stakeholders' theory provides that the firm is a system of stakeholders operating within the larger system of the host society that provides the necessary legal and market infrastructure for the firm's activities. This theory emphasizes the interconnections between business and all those who have a stake in it, namely customers, employees, suppliers, investors, and the community. It suggests that a business must seek to maximize value for its stakeholders. A company is only successful when it delivers value to its stakeholders, and those values can come in many forms beyond financial benefits.

Stakeholder theory views the corporate entity as an ecosystem of sorts. According to Freeman, stakeholders are those without whom the organization would not exist. A company cannot survive in the long run if it consistently fails to satisfy its stakeholders. The firm must have a constant awareness of employees, suppliers, customers, competitors, and so on. The employees must receive fair working conditions and wages. The suppliers must receive equitable payment but they must also run their businesses in accordance with moral and ethical guidelines. Customers should receive goods and services that are up to the mark and not liable to cause them any harm. But stakeholder theory notes that several interested parties must be included under the umbrella of stakeholders, such as the company's employees, suppliers, customers, financiers, communities, governmental bodies, political groups, trade associations, trade unions, and even competitors, as they too can impact the company (Blackburn, 2019). The firm would be unable to maximize its value if stakeholders are ignored. This theory maintained that value maximization creates the greatest total social welfare. However, firm value maximization cannot be achieved simply by stating it as the company's goal. Benson and Davidson (2010) examined the relationship between stakeholder management, firm value, and CEO compensation. They found that stakeholder management is positively related to firm value.

2.3 Review of Empirical Studies

Firm Size and Firm Value

Mohammed (2017) employed a panel regression analysis technique to examine the impact of firm characteristics on the firm value of listed healthcare firms in Nigeria. Data used was collected from Nigerian Stock Exchange for the period 2008 to 2015. Variables used are share prices, Tobin's Q, firm size, liquidity operating efficiency, firm growth, and leverage. Findings revealed that firm size has a positive significant impact on the firm value of listed healthcare firms in Nigeria. Also, liquidity has a negative significant influence on the firm value of listed healthcare firms in Nigeria suggesting that excess liquidity position will be counter-productive to the firms because it decreases their value. Furthermore, leverage has a negative and significant effect on firm value implying that high leverage does not lead to an increase in the value of the firm.

Olawale, Ilo, and Lawal (2017) investigated the effect of firm size on the performance of firms of 12 non-financial companies listed on the Nigeria Stock Exchange (NSE) for the period 2005-2013. Data was analyzed using a pooled regression model, fixed-effects model, and random-effects model. The result showed that firm size in terms of total assets has a negative effect on performance, while in terms of total sales, firm size has a positive effect on the performance of Nigerian non-financial companies. For the control variables, there is a positive relationship between leverage and working capital.

Using 27 quoted Insurance Companies on the Nigerian Stock Exchange (NSE) for the period 2012-2017, Ayuba, Bambale, Ibrahim, and Sulaiman (2019) employed descriptive statistics and regression to investigate the effects of financial performance, capital structure, and firm size on firms' value of insurance companies in Nigeria. The variables use include Return on Capital, Employed, Return on Assets, Return on Equity, Short Term Debt, Long Term Debt, Total Debt, firm size, firm age, and Tobin's Q. Finding revealed that all explanatory variables, except Return on Capital Employed, have a positive significant effect on Tobin's Q. Specifically, Return on Capital Employed and firm age have an insignificant effect on Tobin's Q. In conclusion, explanatory variables affect Insurance firms' value in Nigeria.

Endri and Fathony (2020) examined the determinants of a firm's value in the financial industry. Data was gathered from Indonesia Stock Exchange for the period 2013-2017 and was analyzed using a panel data regression. The variables used are dividend policy, profitability, company size, leverage, company growth, and Tobin's Q. Finding showed that firm size, leverage, and growth did not have any significant effect on firm value in financial sector companies; dividend policy and profitability have significant positive effects on firm value in financial sector companies for the period stated. Furthermore, dividend policy, profitability, firm size, leverage, and growth had some effects on firm value.

Hirdinis (2019) employed multiple linear regression to investigate the effect of capital structure and firm size on firm value, moderated by profitability. The result revealed that capital structure has a significant positive effect on firm value while firm size has a significant negative effect on firm value. Also, profitability has no significant effect on firm value, whilst company size has a significant positive effect on profitability.

Leverage and Firm Value

Rastogi and Saxena (2016) investigated whether high financial leverage has a significant and positive impact on a firm's value. Sample of eleven companies listed on Indian stock exchanges from the year 2001-2015 was used. The variables used include Leverage, Firm's Value, Return on Equity, Debt Ratio, and Debt Equity Ratio. Data collected was analyzed using descriptive statistics, correlation tests, and multiple regression analysis. The finding showed that most of the independent variables (83.6%) are other than independent variables under study (DR and DER) affecting (ROE) and confirms that (DR and DER) are not major factors determining (ROE) of the companies under study for the selected period.

Abubakar (2016) examined the impact of leverage on firms' performance using a sample of 66 non-financial firms quoted on the Nigerian Stock Exchange for 10 years (2005-2014). Data collected was analyzed using Panel data analysis techniques in the form of Pooled Ordinary Least Square (POLS), Fixed Effects Panel Data Model (FEM), and Random Effects Panel Data Model (REM). Results revealed that an increase in the equity portion of the total debt-equity ratio (TDER) has a significant positive effect on return on equity (ROE).

Adenugba, Ige, and Kasinro (2016) examined the relationship between financial leverage and firms' value using a sample of 5 firms listed on the Nigerian Stock Exchange (NSE) for a period of 6 years from 2007-2012. Ordinary Least

Square (OLS) statistical technique was used to analyze the data collected. Findings revealed that there is a significant relationship between financial leverage and firms' value and financial leverage has a significant effect on firms' value. The study concludes that financial leverage is a better source of finance than equity to firms when there is a need to finance long-term projects.

Using pairwise correlation, pooled ordinary least squares, random effect panel data model, and fixed effect panel model estimation techniques, Ibrahim and Isiaka (2020) examined the effect of financial leverage on firm value with evidence from a sample of selected companies quoted on the Nigerian Stock Exchange. The study covers the period 2014-2018. The variables used are firm value, Tobin's q, financial leverage, REM. The regression result showed that financial leverage has a significantly negative effect on firm value while the result of the pairwise correlation showed that there is no significant linear relationship between leverage and firm value.

Al-Slehat (2020) examined the impact of financial leverage, size, and assets structure on the firm value industrial sector, Jordan. Sample of 13 firms from the mining and extraction industry sector listed on the Amman stock exchange of the period 2010-2018 was used. The data gathered was analyzed using simple line regression. Finding revealed that the non-existence of the impact of financial leverage on the firm value and the relationship between the financial leverage and Tobin's q scale was negative.

Using a Panel based regression methodology, Rao, Khursheed, and Mustafa (2020) examined the impact of concentrated leverage and ownership on firm performance in Pakistan. A sample of 141 companies in Pakistan listed on the Karachi Stock Exchange for a period of 10 years from 2008 to 2018 was used. The result showed that the availability and non-availability of growth options to firms are very important factors in analyzing ownership concentration and debt influence on firm performance. Also, in the presence of growth options, non-linear relations are found between firm performance and ownership concentration and positive significant relations of debt with firm performance. While, in the absence of growth opportunities, inverse parabola relations are depicted of ownership concentration and firm performance, and negative relations between debt and firm performance.

Board Size and Firm Value

Bebeji, Mohammed, and Tanko (2015) investigated the effect of board size and composition on the financial performance of banks in Nigeria. Multivariate regression analysis was used to analyze the data collected from the financial statements of five banks for nine years. Results revealed that board size has a significant negative impact on the performance of banks in Nigeria. This implies that an increase in Board size would lead to a decrease in ROE and ROA. Conversely, board composition has a significant positive effect on the performance of banks in Nigeria. This implies that an increase in Board composition would lead to a decrease in ROE and ROA.

Kajola, Onaolapo, and Adelowotan (2017) employed panel data regression analysis and a fixed-effect model to investigate the effect of corporate board size on the financial performance of Nigerian listed firms. A sample of 35 non-financial firms listed on the Nigerian Stock Exchange from 2003-2014 was used. The variables used are financial performance, board size, leverage, firm size, and firm age. The finding revealed a positive and significant relationship between board size (surrogated by the natural log of some directors on the board) and the two financial performance proxies (Return on assets and return on equity).

Gurusamy (2017) examined the relationship and impact of board characteristics, audit committee, and ownership structure influence on firm performance of manufacturing firms in India using a sample of 357 manufacturing firms listed in BSE during the period 2006-2015. Panel data regression analysis was used to analyze the data collected and the result indicated that board size is positively and significantly linked to both the financial performance measures, i.e. Return on assets (ROA) and Return on Equity (ROE) but the negative and insignificant impact in case of Tobin's Q. Audit committee independence is significant and negatively affected by ROE. The same promoters' shareholding is negatively and significantly related to all the financial measures and there is an insignificant negative relationship between institutional shareholding and both financial performance measures (Tobin's Q and ROA). The study implies that to improve the performance and accordingly the value of firms, the percentage of promoters' ownership should be decreased as it has positive linkages with the financial performance. The board members have potential knowledge and expertise in the field should be increased as it has aligned with accounting-based financial performance.

Using Pooled OLS and Heteroskedasticity-Corrected, Onuorah, Egbunike, and Gunardi (2018) examined the influence of corporate board attributes on voluntary social disclosure of selected quoted manufacturing firms in Nigeria. The variables used include board size, board ownership, board structure, CEO duality, the proportion of

non-executive directors, the proportion of women on the board, and directors' remuneration on voluntary corporate social disclosure. The result showed a significant positive influence of board size, board structure, proportion of non-executive directors, and proportion of women in the board; a significant negative influence of board ownership; no significant negative influence of CEO duality; a significant positive influence of, and, a significant positive influence of directors' remuneration on voluntary corporate social disclosure.

By using ex-post facto design with a two-stage multiple random and fixed effect regression analyses, Asogwa, Ofoegbu, Nnam, and Chukwunwike (2019) investigated the effect of corporate governance board leadership models and attributes on earnings quality of quoted Nigerian companies. Data used was gathered from Nigerian Stock Exchange between 2014 and 2018. Results revealed that earnings persistence and value relevance increased in boards where CEOs and board chairpersons have equal financial expertise. Also, the quality of earnings improved significantly with a good mix of financial expertise and legal skills on the board.

Gap in Literature

The gap filled by this study spread across concepts through to scope. In terms of concept, this study covered the gap created in earlier studies as it focused on the relationship between corporate attributes and firm value of selected quoted manufacturing firms in Nigeria. It also filled the gap that earlier studies (on the subject area) were more from developed countries of the world. More so, earlier studies as reviewed were more focused on determining the corporate attributes/factors affecting firm value, but this present study has ab-initio singled out some corporate attributes and therefore was concerned in finding out the direction as well as the magnitude of their influence on the value of manufacturing firms in Nigeria.

3. Methodology

The *ex-post facto* research design was adopted. The reason was that the researcher used already existing data from the fact book of the Nigeria stock exchange and the annual report of the selected firms. The data used was secondary sourced data. Particularly, the data were extracted from annual accounts and financial statements, and accounts of the selected firms in Nigeria. The study population is Oil and Gas and consumer goods firms quoted in the Nigerian Stock Exchange as of August 2018. Particularly, the target population is twenty-three (23) consumer goods manufacturing firms and thirteen (13) oil and gas firms in Nigeria.

Sample Size Determination

The selection criterion was a simple random sampling technique. The choice of this selection technique was to allow the researcher to generalize the entire population. With this technique, a sample of five (5) firms was selected and studied. The selected firms include MRS oil and gas, Conoil, Oando oil and gas, Guinness Nig. Plc, and Nigerian Breweries Plc.

Model Specification

The model for this study took its base from the study of Mohammed (2017). Based on our research aim, the model is specified thus:

$$\text{Log}(TQ)_t = \beta_0 + \beta_1 \text{Log}(FSize)_t + \beta_2 \text{Log}(Lev)_t + \beta_3 \text{Log}(BSize)_t + \varepsilon_t \quad (3.1)$$

Where,

- $\text{Log}(TQ)_t$ = Log of Tobin's Q at time t (Dependent variable),
- $\text{Log}(FSize)_t$ = Log of firm size at time t (Independent variable),
- $\text{Log}(Lev)_t$ = Log of firm leverage at time t (Independent variable),
- $\text{Log}(BSize)_t$ = Log of Board size at time t (Independent variable),
- β_0 = Constant/intercept of the regression model,
- β_1 = Coefficient of $\text{Log}(FSize)$ in the model,
- β_2 = Coefficient of $\text{Log}(Lev)$ in the model,

β_3 = Coefficient of *Log(BSize)* in the model,
 ε_t = Random/stochastic error associated with the model

Description of Model Variables

The variables used for this study are briefly explained below:

Tobin's Q (TQ): This is the ratio of total liabilities to total assets.

Firm Size (FSize): This is the total assets of a firm

Firm Leverage (Lev): This is the ratio of long-term debt to the total equity of a firm.

Board Size (B-Size): This is the number of directors on board of the organization which includes executive and non-executive directors.

Methods of Data Analysis

Analytical tools employed in this study were categorized into statistical and econometric techniques. The statistical tools are descriptive statistics and Pearson product-moment correlation analyses while the econometric tool was panel least squares multiple regression analysis. The descriptive statistics was used to describe the variables under investigation; correlation analysis was used to measure the preliminary interactions/relationships among the variables while the panel least squares multiple regression analysis was used to estimate the effect of corporate attributes on the firm value of the selected firms. Electronically, the analysis was aided by Eviews 10.0 econometric package.

4. Data Presentation and Analysis

Data Presentation

The annual time series extracted from the annual report and financial statement of the selected oil and gas and consumer goods manufacturing firms were presented in tables 4.1 to 4.5 below:

Table 4.1 Annualized Data of the Study variables - For MRS Oil and Gas Plc

| <i>Years</i> | <i>TQ</i> | <i>FSize (₦'B)</i> | <i>Lev (%)</i> | <i>BSize</i> | <i>Log(TQ)</i> | <i>Log(FSize)</i> | <i>Log(Lev)</i> | <i>Log(BSize)</i> |
|--------------|-----------|--------------------|----------------|--------------|----------------|-------------------|-----------------|-------------------|
| 2009 | 2.4387 | 2,965,925 | 65.76 | 3 | 0.8915 | 14.9027 | 4.1860 | 1.0986 |
| 2010 | 2.6367 | 41,080,104 | 54.90 | 6 | 0.9695 | 17.5310 | 4.0055 | 1.7918 |
| 2011 | 2.4714 | 67,485,060 | 73.37 | 5 | 0.9048 | 18.0274 | 4.2955 | 1.6094 |
| 2012 | 2.9395 | 55,595,688 | 65.73 | 6 | 1.0782 | 17.8336 | 4.1856 | 1.7918 |
| 2013 | 3.3607 | 65,694,626 | 70.12 | 7 | 1.2121 | 18.0005 | 4.2502 | 1.9459 |
| 2014 | 2.8693 | 57,846,626 | 65.05 | 7 | 1.0541 | 17.8733 | 4.1752 | 1.9459 |
| 2015 | 3.1890 | 66,893,741 | 68.64 | 9 | 1.1597 | 18.0186 | 4.2289 | 2.1972 |
| 2016 | 3.6478 | 81,364,815 | 72.76 | 8 | 1.2941 | 18.2145 | 4.2872 | 2.0794 |
| 2017 | 2.5352 | 62,190,318 | 62.84 | 8 | 0.9303 | 17.9457 | 4.1406 | 2.0794 |
| 2018 | 2.6202 | 61,204,155 | 61.03 | 8 | 0.9633 | 17.9297 | 4.1114 | 2.0794 |

Source: Annual Reports and Accounts of MRS Oil and Gas Plc (2009-2018)

Table 4.1 presents annualized data series of the study variables as extracted from MRS oil and gas firm. The Tobin's Q data were presented in units, firm size data in billions of naira, leverage data in percent, and data for Board size

in frequency (or counts). As a result of non-uniformity in units of measurement of the data series, they were all log-transformed and the values presented with the log attached as a prefix to each of the variables.

Table 4.2 Annualized Data of the Study Variables - for Oando Oil and Gas Plc

| Years | TQ | F-Size (₦B) | Lev (%) | B-Size | Log (TQ) | Log (F-Size) | Log (Lev) | Log (B-Size) |
|-------|---------|-------------|---------|--------|----------|--------------|-----------|--------------|
| 2009 | 11.5486 | 405,463,640 | 424.37 | 8 | 2.4466 | 19.8205 | 6.0506 | 2.0794 |
| 2010 | 0.2483 | 117,235,150 | 41.96 | 6 | -1.3931 | 18.5797 | 3.7367 | 1.7918 |
| 2011 | 2.9942 | 157,440,449 | 51.29 | 7 | 1.0967 | 18.8746 | 3.9375 | 1.9459 |
| 2012 | 3.9454 | 227,319,478 | 59.63 | 9 | 1.3726 | 19.2419 | 4.0882 | 2.1972 |
| 2013 | 26.7449 | 263,063,315 | 57.91 | 5 | 3.2863 | 19.3879 | 4.0589 | 1.6094 |
| 2014 | 1.5335 | 277,958,523 | 58.98 | 7 | 0.4276 | 19.4430 | 4.0772 | 1.9459 |
| 2015 | 6.3131 | 289,815,683 | 58.00 | 6 | 1.8426 | 19.4848 | 4.0604 | 1.7918 |
| 2016 | 16.2541 | 208,279,221 | 80.60 | 8 | 2.7883 | 19.1544 | 4.3895 | 2.0794 |
| 2017 | 6.376 | 213,845,118 | 74.67 | 7 | 1.8525 | 19.1808 | 4.3131 | 1.9459 |
| 2018 | 6.927 | 236,366,708 | 73.29 | 8 | 1.9354 | 19.2809 | 4.2944 | 2.0794 |

Source: Annual Reports and Accounts of Oando Oil and Gas Plc (2009-2018)

Table 4.2 presents annualized data series of the study variables as extracted from the Oando oil and gas firm. The Tobin's Q data were presented in units, firm size data in billions of naira, leverage data in percent, and data for Board size in frequency (or counts). As a result of non-uniformity in units of measurement of the data series, they were all log-transformed and the values presented with the log attached as a prefix to each of the variables.

Table 4.3 Annualized Data of the Study Variables - for Conoil Plc

| Years | TQ | FSize (₦B) | Lev (%) | BSize | Log(TQ) | Log(FSize) | Log(Lev) | Log(BSize) |
|-------|--------|------------|---------|-------|---------|------------|----------|------------|
| 2009 | 2.5089 | 60,409,100 | 75.33 | 8 | 0.9198 | 17.9167 | 4.3219 | 2.0794 |
| 2010 | 3.0306 | 58,254,610 | 72.01 | 5 | 1.1088 | 17.8803 | 4.2768 | 1.6094 |
| 2011 | 2.7591 | 61,855,315 | 65.80 | 7 | 1.0149 | 17.9403 | 4.1866 | 1.9459 |
| 2012 | 5.3380 | 83,095,975 | 72.11 | 7 | 1.6749 | 18.2355 | 4.2782 | 1.9459 |
| 2013 | 4.5910 | 82,372,026 | 69.10 | 8 | 1.5241 | 18.2268 | 4.2356 | 2.0794 |
| 2014 | 5.4083 | 86,593,457 | 66.90 | 6 | 1.6879 | 18.2767 | 4.2032 | 1.7918 |
| 2015 | 3.9346 | 69,387,364 | 58.72 | 6 | 1.3698 | 18.0552 | 4.0728 | 1.7918 |
| 2016 | 3.7951 | 69,833,463 | 69.55 | 5 | 1.3337 | 18.0616 | 4.2420 | 1.6094 |
| 2017 | 3.5233 | 62,855,084 | 64.11 | 6 | 1.2594 | 17.9563 | 4.1606 | 1.7918 |
| 2018 | 3.3366 | 60,897,246 | 66.31 | 7 | 1.2050 | 17.9247 | 4.1943 | 1.9459 |

Source: Annual Reports and Accounts of Conoil Plc (2009-2018)

Table 4.3 presents annualized data series of the study variables as extracted from Conoil Plc. The Tobin's Q data were presented in units, firm size data in billions of naira, leverage data in percent, and data for Board size in frequency (or counts). As a result of non-uniformity in units of measurement of the data series, they were all log-transformed and the values presented with the log attached as a prefix to each of the variables.

Table 4.4 Annualized Data of the Study Variables - For Guinness Breweries Plc

| Years | TQ | FSize (₦'B) | Lev (%) | BSize | Log(TQ) | Log(FSize) | Log(Lev) | Log(BSize) |
|-------|--------|-------------|---------|-------|---------|------------|----------|------------|
| 2009 | 1.3362 | 73,868,737 | 27.03 | 7 | 0.2898 | 18.1178 | 3.2969 | 1.9459 |
| 2010 | 1.0611 | 82,558,876 | 38.11 | 6 | 0.0593 | 18.2290 | 3.6405 | 1.7918 |
| 2011 | 2.4510 | 92,227,824 | 60.22 | 7 | 0.8965 | 18.3398 | 4.0980 | 1.9459 |
| 2012 | 1.0345 | 106,009,667 | 54.27 | 7 | 0.0339 | 18.4790 | 3.9940 | 1.9459 |
| 2013 | 4.2056 | 121,060,621 | 67.03 | 8 | 1.4364 | 18.6118 | 4.2051 | 2.0794 |
| 2014 | 8.9010 | 132,328,273 | 59.77 | 6 | 2.1862 | 18.7008 | 4.0905 | 1.7918 |
| 2015 | 5.4012 | 122,246,632 | 52.80 | 7 | 1.6866 | 18.6216 | 3.9665 | 1.9459 |
| 2016 | 6.3813 | 136,992,444 | 70.41 | 6 | 1.8534 | 18.7354 | 4.2543 | 1.7918 |
| 2017 | 4.8892 | 146,038,211 | 68.91 | 7 | 1.5870 | 18.7994 | 4.2328 | 1.9459 |
| 2018 | 3.0218 | 153,254,968 | 57.88 | 7 | 1.1059 | 18.8476 | 4.0584 | 1.9459 |

Source: Companies audited and published reports (2009-2018)

Table 4.4 presents annualized data series of the study variables as extracted from Guinness Breweries Plc. The Tobin's Q data were presented in units, firm size data in billions of naira, leverage data in percent, and data for Board size in frequency (or counts). As a result of non-uniformity in units of measurement of the data series, they were all log-transformed and the values presented with the log attached as a prefix to each of the variables.

Table 4.5 Annualized Data of the Study Variables - For Nigerian Breweries Plc

| Years | TQ | FSize (₦'B) | Lev (%) | BSize | Log(TQ) | Log(FSize) | Log(Lev) | Log(BSize) |
|-------|--------|-------------|---------|-------|---------|------------|----------|------------|
| 2009 | 2.8710 | 106,987,883 | 54.01 | 6 | 1.0547 | 18.4882 | 3.9892 | 1.7918 |
| 2010 | 6.1655 | 114,389,432 | 48.18 | 7 | 1.8190 | 18.5551 | 3.8749 | 1.9459 |
| 2011 | 3.4422 | 196,936,631 | 50.22 | 6 | 1.2361 | 19.0984 | 3.9164 | 1.7918 |
| 2012 | 3.6150 | 253,633,629 | 57.09 | 7 | 1.2851 | 19.3514 | 4.0446 | 1.9459 |
| 2013 | 2.0816 | 252,759,633 | 43.28 | 7 | 0.7331 | 19.3479 | 3.7677 | 1.9459 |
| 2014 | 1.7602 | 349,676,784 | 51.05 | 6 | 0.5654 | 19.6725 | 3.9328 | 1.7918 |
| 2015 | 2.6014 | 356,707,123 | 56.44 | 7 | 0.9560 | 19.6924 | 4.0332 | 1.9459 |
| 2016 | 1.9045 | 367,639,915 | 39.57 | 6 | 0.6442 | 19.7226 | 3.6781 | 1.7918 |
| 2017 | 2.3313 | 382,726,540 | 63.17 | 7 | 0.8464 | 19.7628 | 4.1458 | 1.9459 |
| 2018 | 3.0012 | 388,766,316 | 59.45 | 7 | 1.0990 | 19.7785 | 4.0851 | 1.9459 |

Source: Companies audited and published reports (2009-2018)

Table 4.5 presents annualized data series of the study variables as extracted from Nigerian Breweries Plc. The Tobin's Q data were presented in units, firm size data in billions of naira, leverage data in percent, and data for Board size in frequency (or counts). As a result of non-uniformity in units of measurement of the data series, they were all log-transformed and the values presented with the log attached as a prefix to each of the variables.

In general,

TQ = Tobin's Q

FSize = Firm size operationalized by total assets

Lev = Level of Leverage

BSize = Board size (or Size of Board of Directors)

Data Analysis

Table 4.6 Statistical Description of the Study Variables

| Parameters | TQ | L F-Size | Lev(%) | L B-Size |
|--------------|----------|-----------|----------|-----------|
| Mean | 4.365518 | 18.56304 | 67.99460 | 6.740000 |
| Median | 3.109800 | 18.52167 | 61.93500 | 7.000000 |
| Maximum | 26.74490 | 19.82054 | 424.3700 | 9.000000 |
| Minimum | 0.248300 | 14.90270 | 27.03000 | 3.000000 |
| Std. Dev. | 4.208753 | 0.841273 | 52.53844 | 1.103057 |
| Skewness | 3.615993 | -1.366155 | 6.406695 | -0.577814 |
| Kurtosis | 18.24745 | 8.227863 | 44.10180 | 4.381255 |
| Jarque-Bera | 593.3050 | 72.49182 | 3861.544 | 6.756964 |
| Probability | 0.000000 | 0.000000 | 0.000000 | 0.034099 |
| Sum | 218.2759 | 928.1518 | 3399.730 | 337.0000 |
| Sum Sq. Dev. | 867.9665 | 34.67931 | 135254.1 | 59.62000 |
| Observations | 50 | 50 | 50 | 50 |

Source: Author's Eviews 10.0 Result

The Tobin's q statistics of the selected quoted manufacturing firms lie between 0.248 and 26.745 with a mean of 4.366 and a standard deviation of 4.209. As shown by the Jarque-Bera estimate of 593.305 and associated probability value of $0.0000 < 0.05$, the mean is statistically different from zero. Hence, the distribution deviates from the normal curve. The skewness estimate is 3.62, while the kurtosis estimate is 18.25. The implication is that the data series is positively skewed with excess kurtosis; confirmatory evidence of non-normality of the dataset.

The firm size stood at an average of 18.563 with a standard deviation of 0.841. By implication, the standard deviation is not high, hence the series of firm sizes are clustered around themselves. The skewness estimate is -1.366 while the kurtosis estimate is 8.228, indicating that the series is skewed to the left with excess kurtosis. The Jarque-Bera goodness of fit (or normality) test result shows that the data series is non-normal ($JB=72.492, p=0.000 < 0.05$). However, the mean is significantly different from zero. For the firm leverage and board size, the mean stood at

67.99% (for leverage) and 7 (for board size) respectively. Particularly, the board size cluster is around 3 and 9 members. However, with Jarque-Bera statistics of 3861.544, 6.757 and associated p-value of 0.0000, 0.0341 < 0.05, respectively, it can be deduced that the series of leverage and board size for the selected quoted firms are non-normal.

Table 4.7 Summary of Stationarity Test Result

| Variable | Breitung t-stat | p-value | Order of integration | Inference |
|----------|-----------------|---------|----------------------|------------|
| TQ | -2.961 | 0.0015 | I(1) | Stationary |
| LFSize | -2.444 | 0.0244 | I(1) | " |
| LEV | -7.102 | 0.0153 | I(1) | " |
| LBSize | -3.648 | 0.0001 | I(1) | " |

Source: Author's Extract from E-views 10.0 output

Breitung's unit root test result as shown in table 4.7 above shows that the data series of the study variables were stationary at first differencing. Hence, the hypothesis of a unit root is rejected at first differencing. However, they are integrated of order one (i.e., I(1)).

Table 4.8 Cointegration/Multicollinearity Check

Pedroni Residual Cointegration Test
 Series: TQ LFSize LEV LBSize
 Date: 11/22/20 Time: 19:39
 Sample: 2009 2018
 Included observations: 50
 Cross-sections included: 5
 Null Hypothesis: No cointegration
 Trend assumption: Deterministic intercept and trend
 Automatic lag length selection based on SIC with a max lag of 0
 Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)

| | Weighted | | Weighted | |
|---------------------|-----------|--------|-----------|--------|
| | Statistic | Prob. | Statistic | Prob. |
| Panel v-Statistic | -2.124011 | 0.9832 | -1.517898 | 0.9355 |
| Panel rho-Statistic | 2.267139 | 0.9883 | 1.514619 | 0.9351 |
| Panel PP-Statistic | -7.234055 | 0.0000 | -5.490632 | 0.0000 |
| Panel ADF-Statistic | -2.394895 | 0.0083 | -3.945934 | 0.0000 |

Source: Author's extract from Eviews 10.0 result

The cointegration/multicollinearity check result as presented in table 4.8 above indicates that there is no cointegration/multicollinearity problem among the variables (panel rho-stat. = 2.267; p= 0.9883). For which course, the null hypothesis of no cointegration or multicollinearity problem is upheld at 0.05 level of significance.

Result of Hypotheses and Discussion of Findings

The result of the Fully Modified Ordinary Least Squares (FMOLS) Multiple Regression is as presented in table 4.9 below

Table 4.9 FMOLS Result

| Hypothetical statement (null hypotheses) | Coefficient | t-stat. | P-value | Inference |
|--|-------------|---------|---------|---|
| 1. Firm size has no significant effect on Tobin's Q of selected quoted manufacturing firms in Nigeria. | 0.553 | 1.094 | 0.2820 | Insignificant effect (Accept the null hypothesis) |
| 2. Firm leverage has no significant influence on Tobin's Q of selected quoted manufacturing firms in Nigeria. | 0.035 | 2.538 | 0.0162 | Significant effect (Reject the null hypothesis) |
| 3. Board size has no significant effect on Tobin's Q of selected quoted manufacturing firms in Nigeria. | -0.936 | -1.393 | 0.1732 | Insignificant effect (Accept the null hypothesis) |
| R-squared = 0.467 (46.7%) Adjusted R-squared = 0.267 (26.7%) Long-run variance = 0.195722 | | | | |

Source: Author's compilation, 2021

Note: Dependent Variable = Log of Tobin's Q (LTQ)

Independent Variables = Log of Firm Size (LF-size), Financial Leverage (LEV), and Log of Board Size (LBSIZE).

As provided in the FMOLS result above, the firm size with a coefficient value of 0.553 indicates that firm size has a positive effect on the firm value (measured by Tobin's q) of the selected quoted manufacturing firms in Nigeria. However, a unit increase in firm size would lead to about 55.3% increases in the value (Tobin's q) of the firms. The t-statistic value of 1.094 and associated probability value of 0.2820 > 0.05 shows that firm size has a positive but insignificant effect on the value of selected quoted manufacturing firms in Nigeria. This result obeys the work of Endri and Fathony (2020). It partially agrees with the work of Mohammed (2017) and Ayuba et al (2019). Our finding contradicts the work of Olawale et al (2017) and Hirdinis (2019), amongst others.

Also, with a coefficient value of 0.035, it was ascertained that firm leverage has a positive effect on the firm value (measured by Tobin's q) of the selected quoted manufacturing firms in Nigeria. However, a unit increase in firm leverage would lead to about 3.5% increases in firm value (Tobin's q) of the firms. The t-statistic value of 2.538 and associated probability value of 0.0162 < 0.05 shows that firm leverage has a positive and significant effect on the value of selected quoted manufacturing firms in Nigeria. In terms of magnitude, this finding aligns with the work of Mohammed (2017) while in the face of direction, it nods in disagreement. The finding of this study disagrees with the finding of Al-Slehat (2020) in Jordan, Endri and Fathony (2020), and Ibrahim and Isiaka (2020), amongst other studies.

In addition, with a coefficient value of -0.936, it shows that board size has a negative effect on the firm value (measured by Tobin's q) of the selected quoted manufacturing firms in Nigeria. However, a unit increase in board size would lead to about 93.6% decreases in firm value (Tobin's q) of the firms. The t-statistic value of -1.393 and associated probability value of 0.1732 > 0.05 shows that board size has a negative but insignificant effect on the value of selected quoted manufacturing firms in Nigeria. This discovery agrees with the finding of Gurusamy (2017) in India. It also identifies with the finding of Bebeji, et al (2015) in Nigeria. Our finding disagrees with the finding of Kajola et al (2017), among other studies.

The explanatory power of the model is 46.7%. This shows that only about 46.7% of the total variations in firm value (measured by Tobin's Q) can be accounted for by the selected corporate attribute measures. However, there are other essential indices not present in this model.

5. Conclusion and Recommendations

5.1 Conclusion

Empirically, this study investigated the effect of corporate attributes on firm value of selected quoted manufacturing firms in Nigeria, with a focus on firm size, leverage, and board size against Tobin's Q. Using annual time series data covering from 2009-2018, and with the application of Fully Modified Ordinary Least Squares (FMOLS) regression analysis and other relevant diagnostic and preliminary statistical estimation, the study discovered that corporate

attributes contribute infinitesimally to the firm value of the selected quoted manufacturing firms in Nigeria. Particularly, the result emerged that firm size and leverage have a positive effect on the value of selected quoted manufacturing firms in Nigeria, while board size had a negative effect on the value of selected quoted manufacturing firms in Nigeria. However, only the firm leverage is substantial for the increased firm value of the sector.

5.2 Recommendations

Based on our empirical findings/evidence, the following recommendations/suggestions were made by the study:

1. The firms should work towards increased firm size for appreciating firm value. However, for firms that want to increase their value, it is necessary to pay attention to the condition of the firm's size as measured by the log of total assets.
2. There is a need to maintain appreciating leverage as it enhances firm value. This is because optimized financial leverage would aid the maximization of firms' value.
3. The firm should consider a reduced number of board of directors as it pulls down the value of the firm. However, quality and few Directors can handle affairs of the firms, thus avoiding too much and unnecessary spending and ineffectiveness.

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