

BOARD DIVERSITY AND CORPORATE TAX AGGRESSIVENESS BEHAVIOUR OF QUOTED HEALTHCARE MANUFACTURING FIRMS IN NIGERIA

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Abstract

The study investigates the effect of board diversity on corporate tax aggressiveness of quoted healthcare manufacturing firms in Nigeria. The study specifically examined five board diversity proxies; nationality diversity, age diversity and gender diversity. The study adopts the *ex-post facto* research design. The sample was restricted to eleven companies quoted under the healthcare sector of the Nigerian Stock Exchange. The study relied on secondary data obtained from annual reports and accounts for the periods 2011 to 2018. The hypotheses were tested using Panel Estimated Generalised Least Squares; and, Two Stage Least Squares for Robustness check. The results of the empirical data analysis revealed that nationality diversity has a non-significant positive effect; age diversity and gender diversity were significant and positive. The study concludes that board diversity affects the effective tax rate of quoted healthcare manufacturing firms in Nigeria. Based on these, the study recommended among others; that the inclusion of directors from different ethnic groups, tribes or nationalities. The age of a director should be considered a crucial factor in appointing an individual. The issue of female boardroom participation should be re-visited.

Keywords: Board Diversity, Corporate Tax Aggressiveness, nationality diversity, age diversity and gender diversity

INTRODUCTION

There are several views on board diversity; while some opine that, it entails demographics (such as age, gender, and ethnicity); others, view it as a structural phenomenon (Hoang, Abeysekera, & Ma, 2016). However, there is a consensus that effective boards are composed of individuals with different skills, knowledge, information and power (Conger & Lawler, 2001). They provide a better understanding of the company's market position and more effective in problem solving (Carter, Simkins, & Simpson, 2003). Diversity in the board of directors limits the myopia of decision-making processes (Alfiero, Cane, De Bernardi, & Venuti, 2015), which may result in unhealthy and possibly unethical decisions (Arfken, Bellar, & Helms, 2004). A vast literature indicate that diversity related parameters; such as, gender, age, ethnicity, nationality, educational background, industrial experience and organizational membership (Campbell & Mínguez-Vera, 2008) ultimately determine the effectiveness of the board's composition (Alfiero, Cane, De Bernardi, and Venuti, 2015).

Prior studies have shown that diversity plays a significant role in explaining firm performance and ultimately determining firm value. Carter, Simkins, and Simpson (2003) using a sample of Fortune 1000 firms; reported that gender diversity and nationality diversity had a significant positive relationship with firm value. The literature has taken predominant interest in gender diversity in recent times, with issues such as the "glass ceiling" popping up (Arfken, Bellar, & Helms, 2004). For example, Norway has legislated 40% female board representation with penalties for non-compliance, Spain and Sweden require female board representation of 40% and 25% respectively. Other countries such as France and Canada are following suite (Burke & Vinnicombe, 2008). In developing economies, such as India, China, and Middle East countries (Tunisia and Jordan) there is also emphasis on the importance of female boardroom participation (Singh, 2008).

The tenure diversity of directors is also related to their level of experience and knowledge of the firm (Hafsi & Turgut, 2013). Longer tenures were often associated to familiarity to strategic issues, management team practices and better oversight (Kesner, 1988). However, another school of thought opines that long tenures may jeopardise the independence of the directors and cause board members to become captives of managers (Vafeas, 2003; Finkelstein & Hambrick, 1988).

The age of a director also plays a role in his/her risk-taking posture, which therefore supports or discourages tax aggressiveness behaviour by managers. This follows from risk taking behaviour of the director, as younger directors are more likely to take more risks than older directors (Ramos, 2015).

Non-executive directorship status can also confer some positive benefits to a firm by increasing board independence. Board independence refers to the extent to which a board is composed of non-executive directors who have no relationship with the firm beyond the role of director (Davidson, Goodwin-Stewart & Kent, 2005). Baysinger and Hoskisson cited in Michelin and Parbonetti (2012) recognised that independent directors are not "homogeneous in terms of specific skills, knowledge, and expertise".

Considering duty of the board of directors to maintain transparency, accountability, responsibility, independence, and fairness (Winarsih, Prasetyono, & Kusufi, 2014) they play a crucial role in enshrining or mitigating tax aggressiveness activities (Richardson, Taylor, & Lanis, 2013). Tax aggressiveness is defined as the effort of a company to minimize tax payments using aggressive tax planning activities and/or tax avoidance (Chen, Chen, Cheng, and Shevlin, 2010). According to Budiman and Miharjo (2012), the character of executives has a significant impact on corporate tax avoidance.

However, tax aggressiveness activities are characterized by complexity and obfuscation, and generally difficult to detect (Desai & Dharmapala, 2006). As such, several countries have enacted governance codes aimed at ensuring transparency in corporate behaviour. For instance, in Nigeria codes of corporate governance include the Central Bank of Nigeria (CBN) reviewed Code 2014 for Banks established under the provision of the Bank and Other Financial Institution Act (BOFIA), Security and Exchange Commission (SEC) reviewed code 2011, National Insurance Commission (NAICOM) Code 2009, and, the Pension Commission (PENCOM) Code 2008 (Onyali & Okafor, 2018). Despite these reforms, tax aggressiveness is still in practice in the country and worldwide.

The healthcare sector is vital to the growth and development of any nation. It plays a key role to the health of citizens. The Nigerian pharmaceutical industry was for almost five decades dominated by foreigners; while, the indigenous industry remained non-performing and epileptic. The industry has grown at an average annual rate of between 10 and 15 per cent over the last five years (Pharmaceutical Manufacturing Group of the Manufacturers' Association of Nigeria [PMG-MAN]). In 2009, the estimated size of the total pharmaceuticals and healthcare products market to be in excess of US\$ 2 billion annually (PMG-MAN).

There is evidence that tax aggressiveness behaviour is practiced and prevalent among manufacturing firms in Nigeria (Onyali and Okafor, 2018; Uadiale, and Fagbemi, Ogunleye, 2010). Some firms have maintained high profitability over the years due to efficient tax planning schemes (PwC, 2013).

However, the tax strategy of a firm is a function of not just the internal governance system (Minnick and Niga, 2010), but also the structural make-up which is a reflection of the diversity in the board. According to Conger and Lawler (2001), diversity gives access to a wide range of expertise and information, because "it is unrealistic to expect an individual director to be knowledgeable and informed" on all phases of business. However, there is little empirical evidence on the specific effect of board diversity on corporate tax aggressiveness.

The problem tackled in this study is therefore three-fold: *firstly*, the relatively lack of empiricism on board diversity and tax aggressiveness behaviour within the healthcare sector, as existing studies; such as, Onyali and Okafor (2018), focused on consumer and industrial goods firms; while, Oyenike, Olayinka, and Emeni (2016) focused on listed banks. According to Alfiero, Cane, De Bernardi, and Venuti (2015), the impact of diversity varies with firm

characteristics; therefore, it may have positive effect in some instances in others it may have a negative effect.

Secondly, existing studies have mainly focused on gender diversity (*cf* Onyali and Okafor, 2018; Oyenike, Olayinka, and Emeni, 2016). A recent study by Osiregbmhe (2017) addressed ethnic and nationality diversity, focused on its effect on financial performance. Also, Opusunju and Ajayi (2016) focused on nationality diversity and corporate social responsibility; while, Olaoti (2016) which addressed gender, ethnicity and nationality diversity of the board directors focused on financial performance of banks.

The third problem is the issue of *endogeneity* in corporate governance studies (Zheka, 2006). As posited by Schultz, Tan, and Walsh (2010), the inconsistent findings in the governance-performance literature is symptomatic of inadequacies in econometric techniques employed when adjusting for all forms of endogeneity. To solve this issue and others (e.g. optimal differences problem, quality signaling, omitted variable bias (Black, Jang, and Kim, 2004); the study employs the instrumental variables approach.

Thus, the study will fill an empirical gap by tackling the above specified problems and investigating the influence of board diversity on corporate tax aggressiveness of quoted healthcare manufacturing firms in Nigeria.

Objectives of the Study

The broad objective of this study is to ascertain the effect of board diversity on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria. The specific objectives of the study are as follows, to:

- 1. Ascertain the effect of nationality diversity on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria.*
- 2. Examine the effect of age diversity on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria.*
- 3. Determine the effect of gender diversity on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria.*

REVIEW OF RELATED LITERATURE

Conceptual Framework

Concept of Board Diversity

Diversity in its simplest form refers to ‘differences, differences “can be associated with age, physical appearance, culture, job function or experience, disability, ethnicity, personal style, gender, and religion (Turgut & Hafsi, 2008). Diversity refers to a wide range of people different from each other (ACCA, 2015).

It refers to “differences between individuals on any personal attributes that determine how people perceive one another” (Gonzales & Denisi, 2009). According to Gomez-mejia, Balkin and Cardy (2007) diversity is a human characteristic that differentiates one person from another. This includes biological characteristics of race, gender, age, colour, national origin as well as family and society in which they were born into. There is no consensus on the definition of board diversity (ACCA, 2015; Rose, 2015). Kang, Cheng, and Gray (2007) defined board diversity as the “variety in the composition of the board of directors”. Board diversity can be defined as variety amongst the members of boards of directors with regard to characteristics such as kinds of expertise, managerial background, personality, learning style, age, gender, education and values (Swartz & Firer, 2005). It relates to the “board composition and the varied combination of attributes, characteristics and expertise contributed by individual board members in relation to board process and decision making” (van der Walt & Ingley, 2003).

Nationality/Racial Diversity

Board member nationality refers to the country of origin of members of the Board of Directors. This is crucial for two reasons: first, with foreigners on the board, a large stock of qualified candidates would be available for the board (with broader industry experience). With the presence of foreign independent directors on a board, their international experience and background, brings with it value add to the firm (Masulis, Wand, & Xie, 2012). Second, because of their different backgrounds, foreign members can add valuable and diverse expertise which domestic members do not possess (Lee & Farh, 2004). From an agency perspective, foreign board members can also help assure foreign minority investors that the company is managed professionally in their best interests (Oxelheim & Randøy, 2001). The inclusion of foreign board members increases the independence of the board, resulting in reduced CEO entrenchment (Randøy, Thomsen, & Oxelheim, 2006).

The presence of foreign nationals is expected to bring competitive advantages to the firm, namely international networks, commitment to shareholder rights, and managerial entrenchment avoidance (Oxelheim & Randøy, 2003). On the other hand, opponents to this view argue that foreign board members may be less informed about domestic affairs and therefore, less effective. Also, changing the board language to fit foreign members may be costly and add to adjustments problems (Hassan, Samian & Silong, 2006). Studies have proven that nationality determines cultural values, and is a critical factor in determining individual’s value and belief systems (Huijsmans, 2017; Cai, Pan, and Statman, 2016; Ho, Wang, and Vitell, 2012). According to Omoye, Alade, and Eriki (2013) though cultural heterogeneity in organisations may result in conflicts; however, it is linked positively to improved problem-solving options. Zhang (2012) on a sample of publicly traded firms in Fortune 500 showed that racial diversity of the board is positively related to institutional strength rating.

The literature presents mixed findings on the relationship between foreign directors and firms’ performance. While some document a significant positive relationship between the presence of foreign directors and firms’ financial performance (Tornyeva and Wereko,

2012b), others find a significant negative relationship between foreign directors and firms' financial performance (Schwizer, Soana & Cucinelli, 2012).

Darmadi (2011) using a sample of 169 listed firms in Indonesia Stock Exchange, finds that nationality diversity had no influence on firm performance (for both accounting and market-based performance measures). In the Nigerian context, the study by Osiregbmhe on a sample of quoted non-financial firms documented that ethnic diversity and board nationality had no significant influence on profitability (ROA and ROE) and growth measure (Tobin's Q).

Age Diversity

Age diversity, refers to differences in age distribution among employees; which describes the composition of an organization as a whole or composition of workgroups within an organization (Pytlovany & Truxillo, 2015). Age influences a person's background and personal experiences (Wiersema & Bird, 1993). Age is associated "with vigor, availability to take risk, careless decisions, and learning. Therefore, firms managed by younger individuals are expected to risk more, taking on more leverage, obtaining higher returns, and a greater variability of performance" (Ramos, 2015). This is because older managers tend to be more risk averse (Barker & Mueller, 2002). By contrast, age dissimilarity can result in major differences in beliefs and value systems, which in turn; can affect the level of integration and cohesion within a group. These experiences influence attitudes and beliefs that contribute to the creation of a shared language among members of an age cohort (Rhodes, 1983).

Studies present mixed findings on the relationship between age diversity and corporate performance. The study by Marinova, Plantenga, and Remery (2016) on diversity and firm performance on a sample of Danish and Dutch firms, found that age had a negative impact on corporate performance. Darmadi (2011) using a sample of 169 listed firms in Indonesia Stock Exchange, finds that the proportion of young board members is positively related to market performance.

Mahadeo, Soobaroyen, and Hanuman (2012) found no positive effect of age diversity on company performance. Randøy, Thomsen, and Oxelheim (2006) found no effect between age diversity in Scandinavian countries. Engelen, van den Berg, and van der Laan (2012) find a hyperbolic relationship in the Netherlands. This means that age diversity will increase company performance, but until a certain point. From that point, more age diversity will decrease company performance.

Gender Diversity

Studies have shown varying aspects of female boardroom participation on corporate performance. Cumming, Leung, and Rui (2015) showed that as female representation on boards increased, the level of corruption in their sample companies declined. Ibrahim, Angelidis, and Tomic (2009) showed that female managers tend to exhibit more positive attitudes toward the adoption of an ethics code in their organization. Curtis, Schmid, and Struber (2012) using data from more than 2000 global companies found that female

representation on boards was associated with better performance and share prices, including lower volatility in earnings and share prices.

The literature also documents gender differences in risk attitudes between males and females. Scholars posit that corporate decisions made by female executives differ significantly from that of their male counterparts (Francis, Hasan, Park, & Wu, 2013). As such, existing studies present mixed findings on the effect of gender diversity on tax aggressiveness and accruals management. Faccio, Marchica, and Mura (2016) found that more reliance on female CEOs leads to a reduction in corporate risk-taking, lower leverage and lower volatility of earnings. Francis, Hasan, Park, and Wu (2014) found that female CFOs are more conservative in financial reporting decision-making. Huang and Kisgen (2013) reported that female executives were less likely to make significant acquisitions and issue debt. Abbott, Parker, and Presley (2012) hypothesized and found a negative relation between female board presence (defined as whether or not a board has at least one female director) and a lower likelihood of financial restatement. Barua, Davidson, Rama, and Thiruvadi (2010) and Peni and Vahamaa (2010) found that firms with female CFOs had lower absolute discretionary accruals and absolute accrual estimation errors. Peni and Vähämaa (2010) found that companies with female executive managers adopt a more conservative and risk-averse financial reporting style compared with companies with male executive managers. Rodriguez-Dominguez, Gallego-Alvarez, and Garcia-Sanchez (2009) found no relationship between the proportion of women in the Board and the divulgation of corporate ethics. Thus, in conclusion, the literature documents mixed findings on the subject.

Corporate Tax Aggressiveness

Tax aggressiveness is a “plan or arrangement established for the sole or dominant purpose of avoiding tax” (Braithwaite, 2005). Braithwaite (2005), define tax aggressiveness as a scheme or arrangement put in place with the sole or dominant purpose of avoiding tax. Tax aggressiveness has significant costs and benefits for the management and reduces the cash flows available to the shareholders (Desai & Dharmapala, 2008).

According to Hanlon and Heitzman (2010) “if tax avoidance represents a continuum of tax planning strategies where something like municipal bond investments are at one end, then terms such as ‘noncompliance,’ ‘evasion,’ ‘aggressiveness,’ and ‘sheltering’ would be closer to the other end of the continuum”. Tax evasion means illegal arrangements for hiding or ignoring tax liability; and it may be perpetrated in the following ways (Sandmo, 2005):

- Lack of mentioning of taxable income or transactions in declarations
- Reporting more deductible expenses
- Refraining from filing declarations for transactions
- Reduction of the tax debt through false declarations

According to Osuegbu (2007), tax avoidance is “the legal application of the tax laws to one’s own advantage, in order to reduce the amount of tax that is payable by means that are within the law.” To the extent that tax aggressiveness is deemed by tax authorities to be

non-compliant, it may suffer from negative consequences such as large penalties, negative publicity (Lisowsky, 2009), political costs (Mills, Nutter, and Schwab, 2013), or the firm labelled as a “poor corporate citizen” (Hanlon & Slemrod, 2009). Three conditions are necessary before a tax payer can participate in tax avoidance; incentive, access and awareness (Alstadsaeter & Jacob, 2013). Incentive implies that, for one to partake in tax avoidance, the benefit must outweigh its costs. Access presupposes that the taxpayer needs to have actual access to tax-minimizing strategies. Finally, the taxpayer must be aware of the applicable tax laws that allow him gain knowledge of the opportunities available to him to avoid taxes.

There are several methods and/or schemes by which corporations engage in tax avoidance. Sikka (2010) identified the use of transfer pricing, royalty programs, off shore tax havens and structured transactions. Gravelle (2013) identified other methods such as debt allocation and earnings stripping, contract manufacturing, check-the-box, hybrid entities and instruments as well as cross crediting and sourcing rules for foreign tax credits.

Some of these methods are explained briefly below as follows:

1. *Transfer pricing* - This is a situation whereby intra-group prices for certain commodities that are traded within the same group of companies are manipulated in such a way as to enjoy tax savings (Mohammed, 2017). It is a means often employed by Multinational Corporations (MNCs) and group company structures, in order to avoid being taxed at a higher statutory tax rate (Rego, 2003). According to Kwaghkehe and Samuel (2011), the abuse of transfer pricing is “the biggest single problem to the tax systems of developing and developed countries”.
2. *Tax havens* - There is no universal definition of tax havens (Henn, 2013), but they possess three major characteristics. Firstly, they are usually states, countries or jurisdictions with zero or very low tax rates. Secondly, they have low level of regulation regarding legal entities such as companies, foundations, or trusts. Thirdly, they have very strict secrecy laws especially in relation to banking and exchange of tax information with other jurisdictions. Black’s Law Dictionary, cited in Fisher (2014) described tax havens as “financial conduits that, in exchange for a fee, use their one principal asset- their sovereignty- to serve a non-resident constituency of accountants and lawyers, bankers and financiers, who bring a demand for the privileges that tax havens can supply”.
3. *Royalty programs* - Royalty programs mainly use income shifting mechanism and are channelled through tax havens.
4. *Structured transactions, hybrid entities and instruments* – According to Mohammed (2017) structured transactions is an umbrella term used to describe a multitude of transactions designed to be complex. For instance, hybrid entities and instruments, financial instruments, among others. According to Needham (2013), hybrid entities revolve around obtaining a deduction of the same cost, such as loan interest, from two different countries based on the company’s affiliates’ structures. Thus such entities are subject to different tax rates in one national jurisdiction and a different tax rate in the other. This could facilitate overall tax savings for such entities. Other structured

transactions such as conduits and shell companies, collateralized debt obligations, as well as mortgage-backed securities have also been found to be variously used for corporate tax avoidance purposes (Needham, 2013).

Empirical Review

Several studies globally and locally were reviewed, they are briefly stated and summarised below as follows:

Onyali and Okafor (2018) undertook a study titled 'Effect of corporate governance mechanisms on tax aggressiveness of quoted manufacturing firms on the Nigerian Stock Exchange'. The study used the ex-post facto research design. The results showed that board size had a negative non-significant effect on tax aggressiveness (ETR); while, board diversity and independent director had positive significant effect on tax aggressiveness (ETR). The proportion of non-executive directors to executive directors had negative significant effect on tax aggressiveness (ETR). Hoseini and Gerayli (2018) conducted a study titled 'the presence of women on the board and tax avoidance: Evidence from Tehran Stock Exchange'. The study used the ex-post facto and descriptive research design. The hypothesis was tested using panel regression models. The results showed that the presence of women on corporate boards had negative significant effect on book tax differences and the effective tax rate. Prastiwi (2018) conducted a study titled 'Does corporate governance moderate the effect of earnings management on tax aggressiveness?' The data was analyzed using multiple regression technique and Principal Component Analysis [PCA]. The results showed that corporate governance moderates the relationship between earnings management and tax aggressiveness.

Rahimipour (2017) conducted a study titled 'Investigation of the impact of women's representation and participation on board of directors on tax avoidance in listed companies on the Tehran Stock Exchange (TSE)'. The data was analysed using multiple regression model technique. The results showed a positive association between presence of women on board of directors and the effective tax rate (higher ETR means lower tax avoidance in companies). Lanis, Richardson, and Taylor (2017) conducted a study titled 'Board of director gender and corporate tax aggressiveness: an empirical analysis'. The study relied on secondary data; obtained from the period 2006 to 2009. The data was analysed using ordinary least squares regression. The empirical results showed a negative and statistically significant association between female representation on the board and tax aggressiveness after controlling for endogeneity. Osiregbmhe (2017) conducted a study titled 'Effects of board nationality and ethnic diversity on the financial performance of listed firms in Nigeria. The data was analysed using ordinary least squares regression method. The results showed that ethnic diversity and board nationality had no significant influence on the financial performance (ROA, ROE, and Tobin's Q).

Streefland (2016) conducted a study titled 'Gender board diversity and corporate tax avoidance - Does female board participation influence the level of corporate tax avoidance in public firms?' The formulated hypotheses were tested using multiple

regression technique. The results showed that female directors negatively influence the GAAP ETR but not CASH ETR. The Blau's index also showed a negative non-significant effect. Oyenike, Olayinka, and Emeni (2016) conducted a study titled 'Female directors and tax aggressiveness of listed banks in Nigeria'. The study used a cross sectional time-series research design. The sample comprised eleven (11) listed banks. The study relied on secondary data obtained from 2012 to 2014. The hypotheses were tested using panel regression analysis. The results showed that there was a positive non-significant effect of female directors on tax aggressiveness. Board size had a negative effect; while, independent board members was positive and significant.

Francis, Hasan, Wu, and Yan (2014) conducted a study titled 'Are female CFOs less tax aggressive? Evidence from tax aggressiveness. The hypothesis was tested using multiple regression technique (Logit and OLS). The results showed that female CFOs were associated with less tax aggressiveness when compared to their male counterparts.

Khaoula and Ali (2012) conducted a study titled 'Demographic diversity in the board and corporate tax planning in American firms'. The study relied on secondary data from the period 1996 to 2009. The hypotheses were tested using multiple regression technique. The results showed that gender diversity has a non-significant effect on tax planning. Khaoula and Ali (2012) conducted a study titled 'the board of directors and the corporate tax planning: Empirical evidence from Tunisia'. The study relied on secondary data extracted from annual reports from the period 2000 to 2007. They used a panel regression technique to analyse the data. The results showed that diversity has positive and significant effect; while duality had negative and significant effect. Aliani and Zarai (2012a) conducted a study titled 'Demographic diversity in the board and corporate tax planning'. The study relied on secondary data obtained from the period 1996 to 2009. The authors used gender as proxy for demographic diversity; while, tax planning was measured by ETR. The data was analyzed using multiple regression technique. The results showed that gender diversity had no significant effect on tax planning. Aliani and Zarai (2012b) carried out a study titled 'the board of directors and the corporate tax planning: Empirical evidence from Tunisia'. The data was analyzed using multiple regression procedure. The results showed that CEO duality and board diversity significantly influence tax planning.

Lanis and Richardson (2011) conducted a study titled 'The effect of board of director composition on corporate tax aggressiveness'. The authors used correlation and logit regression to analyse the data. The results showed that proportion of board members who are non-employees of the company had a negative and significant effect on the effective tax rate; and, separating the measure into the proportion of board members who are grey directors and proportion of board members who are independent directors also showed a negative significant effect. Darmadi (2011) conducted a study titled 'Board diversity and firm performance: The Indonesia evidence'. The data was analyzed using cross-sectional regression technique. The author found three results: First, there is negative significant association between gender diversity and firm performance. Second, they found positive significant relationship between age diversity and firm performance.

2.4 Summary of Reviewed Literature

This chapter reviewed concepts, which addressed the link between board diversity and corporate tax aggressiveness. Despite the lack of consensus on the definition of diversity; it is generally perceived to mean ‘differences’ (Turgut and Hafsi, 2008); which could be associated with age, experience, ethnicity, gender, and /or religion among several others. The issue of corporate boardroom diversity has taken predominant interest in recent times and has been suggested as alternative form of corporate governance. Within the boardroom it refers to the “variety in the composition of the board of directors” (Kang, Cheng, and Gray, 2007). Based on the proposed conceptual framework; the study focused on five diversity concepts identified from the literature.

The concepts were linked to corporate tax aggressiveness; which has been defined from an accounting perspective as “anything that reduces the firm’s taxes relative to its pretax accounting income” (Dyreg, Hanlon, and Maydew, 2010). The study adopted a multi-theoretical perspective (agency theory, upper echelons theory and resource dependence theory) to assess the link between board diversity and corporate tax aggressiveness. Agency theory explained managerial intention to engage in tax aggressiveness practices from the separation of ownership and control in modern corporations; and, the information asymmetry problem from such. The upper echelons theory explains that managerial actions or inactions are often a result of background characteristics, which are often reflected in their thought processes and decision-making. Moreso, the theory has a dominant focus on the top management team; such as CEOs, CFOs, etc. often responsible for tax decisions of the firm. The resource dependence theory focused on the benefits of diverse board structures in the acquisition of resources needed in the firm. The study reviewed several empirical works globally and locally.

Despite the abundance of studies, several issues remain in contention in the Nigerian context. The relatively lack of empiricism on board diversity and tax aggressiveness practices by firms in the healthcare sector, as existing studies; such as, Onyali and Okafor (2018), focused on consumer and industrial goods firms; while, Oyenike, Olayinka, and Emeni (2016) and Olaoti (2016) focused on listed banks. The existing studies have used panel regression techniques; such as, fixed or random effects regression. However, prior studies have pointed out the issue of *endogeneity* in corporate governance studies (Zheka, 2006). In other words, the inconsistent finding in the governance-performance literature is symptomatic of inadequacies in econometric techniques employed.

METHODOLOGY

Research Design

This research work will adopt the *ex-post facto* research design. *Ex-post facto* means after the event, meaning that the events under investigation had already taken place and data already exist.

Population of the Study

The population of the study comprises manufacturing firms listed on the Nigerian Stock Exchange (NSE) as at 31st December, 2018. The firms are classified under eleven (11) sectors, the details are shown in Table 3.1:

Table 1: Population of the study

S/No	Sector	No. of Firms
1.	Agriculture	5
2.	Conglomerates	6
3.	Consumer Goods	21
4.	Construction/ Real Estate	9
5.	Financial Services	57
6.	Health Care	11
7.	ICT	7
8.	Industrial Goods	14
9.	Natural Resources	4
10.	Oil and Gas	12
11.	Services	25
	Total	171

Source: Nigerian Stock Exchange Website (2018)

Sample Size and Sampling Technique

The sample size comprised of eleven (11) firms quoted under the healthcare sector of the Nigerian Stock Exchange. The study used ‘non-probability purposive sampling technique’ in choosing the sample. A non-probability sample is arbitrary (that is, non-random) and subjective; while, the purposive sampling is a non-probability sample that conforms to certain criteria (Blumberg, Cooper, and Schindler, 2008). The details of the firms included in the sample are shown in table 3.2.

Table 2: Names of firms included in the sample

Company	Ticker	Date Listed	Date of Incorporation
AFRIK PHARMACEUTICALS PLC.[DIP]	AFRIK	Delisted	November 30th 1972
EKOCORP PLC.[BLS]	EKOCORP	Invalid date	October 9th 1991
EVANS MEDICAL PLC.[DIP]	EVANSMED	July 23rd 1979	April 23rd 1954
FIDSON HEALTHCARE PLC	FIDSON	April 6th 2008	March 13th 1995
GLAXO SMITHKLINE CONSUMER NIG. PLC.	GLAXOSMITH	Invalid date	June 23rd 1971
MAY and BAKER NIGERIA PLC.	MAYBAKER	November 10th 1994	April 9th 1944
MORISON INDUSTRIES PLC.	MORISON	Invalid date	June 29th 1955
NEIMETH INTERNATIONAL PHARMACEUTICALS PLC	NEIMETH	September 21st 1979	August 30th 1957
NIGERIA-GERMAN CHEMICALS PLC.[MRS]	NIG-GERMAN	Invalid date	January 10th 1964
PHARMA-DEKO PLC.	PHARMDEKO	Invalid date	April 18th 1969
UNION DIAGNOSTIC and CLINICAL SERVICES PLC	UNIONDAC	September 11th 2008	March 16th 1999

Source: Nigerian Stock Exchange (2019)

Method of Data Analysis

Firstly, descriptive analysis was employed to describe the data in terms of mean, minimum and maximum values, standard deviation, kurtosis and skewness. Secondly, Pearson's correlation analysis was used to examine the inter-relationships between the independent variables in the study (Aganyo, 2014). The study uses the panel regression technique. Panel approaches are particularly strong in dealing with threats of unit heterogeneity and temporal instability (Halaby, 2004; Allison, 1994; Hsiao, 1986; Maddalla, 1986); and, considered suitable for cause and effect studies. The study used the Fixed Effects (FE) regression. However, if the omitted variables are not stationary over time, the fixed effects estimated coefficients are inconsistent; see Wooldridge (2002). FE estimation builds on the error components model,

$$y_{it} = x_{it}\beta + \alpha_i + \epsilon_{it}$$

Model Specification:

$$ETR_{(i,t)} = \alpha_0 + ND_{(i,t)} + ETR(-1) + Board\ Size_{(i,t)} + DO_{(i,t)} + ROA_{(i,t)} + CAPINT_{(i,t)} + LEV_{(i,t)} + Size_{(i,t)} + \mu \dots \dots \dots (1)$$

$$ETR_{(i,t)} = \alpha_0 + AD_{(i,t)} + ETR(-1) + Board\ Size_{(i,t)} + DO_{(i,t)} + ROA_{(i,t)} + CAPINT_{(i,t)} + LEV_{(i,t)} + Size_{(i,t)} + \mu \dots \dots \dots (2)$$

$$ETR_{(i,t)} = \alpha_0 + GD_{(i,t)} + ETR(-1) + Board\ Size_{(i,t)} + DO_{(i,t)} + ROA_{(i,t)} + CAPINT_{(i,t)} + LEV_{(i,t)} + Size_{(i,t)} + \mu \dots \dots \dots (3)$$

The level of significance was set at p at 5%.

Robustness Check

The Instrumental Variable Approach builds on a normal regression model as follows:

$$y = \beta_0 + \beta_1x + u,$$

Based on the assumption that x and u are correlated: $Cov(x, u) \neq 0$.

To obtain consistent estimators for β_0 and β_1 , a new variable the *instrumental variable* is needed. The *Instrumental Variable z*, has to satisfy following properties:

- 1) z is uncorrelated with u , $Cov(z, u) = 0$.
- 2) z is correlated with x , $Cov(z, x) \neq 0$.

i.e.,

- (1) $\Rightarrow z$ is exogenous in the regression equation.
- (2) $\Rightarrow z$ must be related to the endogenous variable x .

$\text{Cov}(x, u) \neq 0$, holds if and only if $\pi_1 \neq 0$. Thus leading to a rejection of the null hypothesis:

$$H_0: \pi_1 = 0;$$

against the two-sided alternative that $H_A: \pi \neq 0$.

The *Two-Stage Least Squares* builds on the following regression model as follows:

$$y_1 = \beta_0 + \beta_1 z_1 + \beta_2 y_2 + u,$$

$$\text{Cov}(z_1, u) = 0; \text{Cov}(z_2, u) = 0.$$

The 2SLS satisfies a linear combination of all *orthogonality* conditions, and the weight of each condition depends on how good the instrument is (Mora, 2013). Assuming there are ky_2 endogenous variables and kz_2 instruments:

if $kz_2 = ky_2$, the model is said to be just identified; and,

if $kz_2 \geq ky_2$, the model is said to be over identified.

Description of Variables

The measure of tax aggressiveness is the Effective Tax Rate (**ETR**), which is calculated as follows:

$$\text{ETR}_{i,t} = \frac{\text{TTE}_{i,t}}{\text{PTE}_{i,t}}$$

Where:

ETR_{i,t} is the effective tax rate of firm *i* in year *t*, **TTE_{i,t}** is the total tax cost of firm *i* in year *t* and **PTE_{i,t}** is the pre-tax earnings of firm *i* in year *t*. Since decreased effective tax rate leads to a rise in the level of tax avoidance, 1 to obtain a direct measure for tax avoidance multiplies the calculated tax rates. The lower the effective tax rate, the more tax aggressive firms are and the closer they get to tax avoidance and possibly tax evasion (Landry, Deslandes, and Fortin, 2013).

ROA_{it}: profitability of firm *i* at time *t*; measured as earnings before interest and tax divided by total assets.

CAPINT_{it}: capital intensity of firm *i* at time *t*; measured as the beginning of period balance of property, plant and equipment divided by book value of total assets.

LEV_{it}: Financial leverage of firm *i* at time *t*; measured as the amount of total liabilities divided by total assets (both @ book value).

DATA PRESENTATION AND ANALYSIS

Descriptive Statistics

The descriptive analysis was used to examine the properties of the data in terms of mean, minimum and maximum values, standard deviation, kurtosis and skewness.

Table 3: Descriptive Statistics of the independent variables and effective tax rate

	ETR	ND	AD	GD
Mean	0.247270	0.909091	0.363636	0.500000
Median	0.016770	1.000000	0.000000	0.500000
Maximum	3.148124	1.000000	1.000000	1.000000
Minimum	0.000000	0.000000	0.000000	0.000000
Std. Dev.	0.503463	0.289127	0.483802	0.502865
Skewness	3.231369	-2.846050	0.566947	0.000000
Kurtosis	15.64819	9.100000	1.321429	1.000000
Jarque-Bera	739.7267	255.2367	15.04549	14.66667
Probability	0.000000	0.000000	0.000541	0.000653
Sum	21.75976	80.00000	32.00000	44.00000
Sum Sq. Dev.	22.05237	7.272727	20.36364	22.00000
Observations	88	88	88	88

Source: E-Views 9.0 Output, 2019

4.2 Correlation Analysis

Table 4: Correlation output between independent variables and effective tax rate

	ETR	ND	AD	GD
ETR	1.000000			
ND	0.154325	1.000000		
AD	0.112231	-0.418330	1.000000	
GD	0.196819	-0.316228	0.377964	1.000000

Source: E-Views 9.0 Output, 2019

Pearson's correlation analysis was used to examine the inter-relationships between the variables in the study. The correlation output in Table 4; showed that ETR is positively related to nationality diversity, age diversity, gender diversity. The surrogate for nationality diversity is negatively related to age diversity, gender diversity. The variable age diversity is positively related to gender diversity; but, negatively related to tenure diversity and non-executive diversity. Gender diversity is positively related to tenure diversity and non-executive diversity; while, tenure diversity is negatively related to non-executive diversity. The output also shows that none of the statistical strength of the relationship between the variables were greater than .70 (suggesting absence of the likelihood of multi-collinearity) (Smith, 2015).

Analysis of Research Questions

This section analyses the research questions posed in the study:

Research Question One

What is the influence of nationality diversity on effective tax rate?

Table 5: Effect of nationality diversity on effective tax rate

Dependent Variable: EFFECTIVE_TAX_RATE					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
ND	0.071109	0.089656	0.793127	0.4307	
BOARD_SIZE	0.016590	0.017276	0.960303	0.3406	
DO	-0.010856	0.065762	-0.165080	0.8694	
ROA	0.053681	0.126642	0.423885	0.6731	
CAPITAL_INTENSITY	-0.026655	0.014250	-1.870543	0.0661	
LEVERAGE	-0.036738	0.015025	-2.445166	0.0173	
AVERAGE_ASSET	-5.06E-13	1.86E-13	-2.726874	0.0083	

Source: E-Views 9.0 Output, 2019

Table 5 shows that nationality diversity has a positive influence on effective tax rate; this is suggestive that as the value of nationality diversity increases the mean of effective tax rate also increases. In other words, as board members are increasingly dominated by individuals from different tribes or ethnic groups or foreigners the higher likelihood for an increase in effective tax rate.

Research Question Two

What is the influence of age diversity on effective tax rate?

Table 6: Effect of age diversity on effective tax rate

Dependent Variable: EFFECTIVE_TAX_RATE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.221718	0.075296	2.944622	0.0045
EFFECTIVE_TAX_RATE(-1)	0.317560	0.121557	2.612424	0.0113
AD	0.233514	0.074569	3.131527	0.0027
BOARD_SIZE	0.001412	0.008677	0.162766	0.8712
DO	-0.083627	0.034974	-2.391129	0.0198
ROA	-0.068438	0.077274	-0.885654	0.3792
CAPITAL_INTENSITY	-0.027964	0.008885	-3.147385	0.0025
LEVERAGE	-0.062047	0.019129	-3.243651	0.0019
AVERAGE_ASSET	-3.83E-13	8.32E-14	-4.600295	0.0000

Source: E-Views 9.0 Output, 2019

Table 6 shows that age diversity has a positive influence on effective tax rate; this is suggestive that as the value of age diversity increases the mean of effective tax rate also increases. In other words, as board members are increasingly dominated by individuals from different age groups the higher likelihood for an increase in effective tax rate.

Research Question Three

What is the influence of gender diversity on effective tax rate?

Table 7: Effect of gender diversity on effective tax rate

Dependent Variable: EFFECTIVE_TAX_RATE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.327193	0.120012	2.726330	0.0083
EFFECTIVE_TAX_RATE(-1)	0.264654	0.097960	2.701639	0.0089
GD	0.235258	0.083657	2.812153	0.0066
BOARD_SIZE	-0.016161	0.017641	-0.916084	0.3632
DO	-0.019325	0.056969	-0.339226	0.7356
ROA	-0.027467	0.093609	-0.293420	0.7702
CAPITAL_INTENSITY	-0.019877	0.008809	-2.256501	0.0276
LEVERAGE	-0.047143	0.018105	-2.603843	0.0115
AVERAGE_ASSET	-7.33E-13	1.98E-13	-3.691734	0.0005

Source: E-Views 9.0 Output, 2019

Table 7 shows that gender diversity has a positive influence on effective tax rate; this is suggestive that as the value of gender diversity increases the mean of effective tax rate also increases. In other words, as board members are increasingly composed of the female gender the higher likelihood for an increase in effective tax rate.

4. Test of Hypotheses

Test of Hypothesis One

H₀₁: Nationality diversity has no significant effect on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria.

H₁₁: Nationality diversity has significant effect on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria

Table 8: Panel EGLS output for hypothesis one

Dependent Variable: EFFECTIVE_TAX_RATE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.080069	0.209337	0.382488	0.7034
EFFECTIVE_TAX_RATE(-1)	0.292341	0.121662	2.402887	0.0193
ND	0.071109	0.089656	0.793127	0.4307
BOARD_SIZE	0.016590	0.017276	0.960303	0.3406
DO	-0.010856	0.065762	-0.165080	0.8694
ROA	0.053681	0.126642	0.423885	0.6731
CAPITAL_INTENSITY	-0.026655	0.014250	-1.870543	0.0661
LEVERAGE	-0.036738	0.015025	-2.445166	0.0173
AVERAGE_ASSET	-5.06E-13	1.86E-13	-2.726874	0.0083
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.400677	Mean dependent var	0.294235	
Adjusted R-squared	0.265346	S.D. dependent var	0.517865	
S.E. of regression	0.457696	Sum squared resid	12.98811	
F-statistic	2.960718	Durbin-Watson stat	1.563459	
Prob(F-statistic)	0.001672			
Unweighted Statistics				
R-squared	0.260323	Mean dependent var	0.249686	
Sum squared resid	14.95368	Durbin-Watson stat	2.082466	

Source: E-Views 9.0 Output, 2019

The Panel EGLS (Period weights) output shown in the Table 8, is used to analyses hypothesis one, the technique used the ‘White period standard errors and covariance (d.f. corrected)’, the Adjusted R-squared [Weighted statistics] value of the model is .265 (R^2 measures the proportion of the variance in the dependent variable that is explained by the independent variables). Thus, the independent variables accounted for approximately 27% variation in the effective tax rate. The F statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) which is used to evaluate the statistical significance of the model showed a value of 2.960; p value $<.05$; therefore, the hypothesis that all the regression coefficients are zero is rejected. The Durbin Watson stat is 1.563; within the context of the sample size used for this research clearly show the absence of autocorrelation.

Decision:

The decision to accept or reject the null hypothesis is based on the coefficient value of the t-statistics and its associated p-value; evaluated at 5% significance level. The t-statistics value of the variable ‘nationality diversity’ was 0.793; and, p-value 0.431 ($p>.05$). Therefore, the study accepts the null hypothesis (H_{01}) and rejects the alternate; Nationality diversity has no significant influence on effective tax rate.

Test of Hypothesis Two

H_{02} : Age diversity has no significant influence on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria.

H_{12} : Age diversity has significant influence on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria.

Table 9: Panel EGLS output for hypothesis two

Dependent Variable: EFFECTIVE_TAX_RATE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.221718	0.075296	2.944622	0.0045
EFFECTIVE_TAX_RATE(-1)	0.317560	0.121557	2.612424	0.0113
AD	0.233514	0.074569	3.131527	0.0027
BOARD_SIZE	0.001412	0.008677	0.162766	0.8712
DO	-0.083627	0.034974	-2.391129	0.0198
ROA	-0.068438	0.077274	-0.885654	0.3792
CAPITAL_INTENSITY	-0.027964	0.008885	-3.147385	0.0025
LEVERAGE	-0.062047	0.019129	-3.243651	0.0019
AVERAGE_ASSET	-3.83E-13	8.32E-14	-4.600295	0.0000
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.498851	Mean dependent var	0.317168	
Adjusted R-squared	0.385689	S.D. dependent var	0.563721	
S.E. of regression	0.452253	Sum squared resid	12.68105	
F-statistic	4.408270	Durbin-Watson stat	1.545433	
Prob(F-statistic)	0.000022			
Unweighted Statistics				
R-squared	0.254752	Mean dependent var	0.249686	
Sum squared resid	15.06631	Durbin-Watson stat	2.133376	

Source: E-Views 9.0 Output, 2019

The Panel EGLS (Period weights) output shown in the Table 9, is used to analyse hypothesis two, the technique used the ‘White period standard errors and covariance (d.f. corrected)’, the Adjusted R-squared [Weighted statistics] value of the model is .386 (R^2 measures the proportion of the variance in the dependent variable that is explained by the independent

variables). Thus, the independent variables accounted for approximately 39% variation in the effective tax rate. The F statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) which is used to evaluate the statistical significance of the model showed a value of 4.408; p value <.05; therefore, the hypothesis that all the regression coefficients are zero is rejected. The Durbin Watson stat is 1.545; within the context of the sample size used for this research clearly show the absence of autocorrelation.

Decision:

The decision to accept or reject the null hypothesis is based on the based on the coefficient value of the t-statistics and its associated p-value; evaluated at 5% significance level. The t-statistics value of the variable ‘age diversity’ was 3.132; and, p-value 0.002 (p<.05). Therefore, the study rejects the null hypothesis (Ho₂) and accepts the alternate; Age diversity has a significant influence on effective tax rate.

Test of Hypothesis Three

Ho₃: There is no significant influence of gender diversity on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria.

H₁₃: There is significant influence of gender diversity on corporate tax aggressiveness behaviour of quoted healthcare manufacturing firms in Nigeria.

Table 10: Panel EGLS output for hypothesis three

Dependent Variable: EFFECTIVE_TAX_RATE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.327193	0.120012	2.726330	0.0083
EFFECTIVE_TAX_RATE(-1)	0.264654	0.097960	2.701639	0.0089
GD	0.235258	0.083657	2.812153	0.0066
BOARD_SIZE	-0.016161	0.017641	-0.916084	0.3632
DO	-0.019325	0.056969	-0.339226	0.7356
ROA	-0.027467	0.093609	-0.293420	0.7702
CAPITAL_INTENSITY	-0.019877	0.008809	-2.256501	0.0276
LEVERAGE	-0.047143	0.018105	-2.603843	0.0115
AVERAGE_ASSET	-7.33E-13	1.98E-13	-3.691734	0.0005
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.494862	Mean dependent var	0.322209	
Adjusted R-squared	0.380799	S.D. dependent var	0.566624	
S.E. of regression	0.458690	Sum squared resid	13.04460	
F-statistic	4.338485	Durbin-Watson stat	1.426400	
Prob(F-statistic)	0.000027			
Unweighted Statistics				
R-squared	0.279965	Mean dependent var	0.249686	
Sum squared resid	14.55659	Durbin-Watson stat	2.063265	

Source: E-Views 9.0 Output, 2019

The Panel EGLS (Period weights) output shown in the Table 10, is used to analyse hypothesis three, the technique used the ‘White period standard errors and covariance (d.f. corrected)’, the Adjusted R-squared [Weighted statistics] value of the model is .381 (R^2 measures the proportion of the variance in the dependent variable that is explained by the independent variables). Thus, the independent variables accounted for approximately 38% variation in the effective tax rate. The F statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) which is used to evaluate the statistical significance of the model showed a value of 4.338; p value $<.05$; therefore, the hypothesis that all the regression coefficients are zero is rejected. The Durbin Watson stat is 1.426; within the context of the sample size used for this research clearly show the absence of autocorrelation.

Decision:

The decision to accept or reject the null hypothesis is based on the based on the coefficient value of the t-statistics and its associated p-value; evaluated at 5% significance level. The t-statistics value of the variable ‘gender diversity’ was 2.812; and, p-value 0.006 ($p<.05$). Therefore the study rejects the null hypothesis (H_{03}) and accepts the alternate; gender diversity has a significant influence on effective tax rate.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

The study summarises the results of the empirical data analysis in this section below as follows:

1. Nationality diversity has a non-significant positive influence on effective tax rate ($P>.05$);
2. Age diversity has a significant positive influence on effective tax rate ($P<.05$);
3. There is a significant positive influence of gender diversity on effective tax rate ($P<.05$);

Conclusion

The study concludes that board structure as reflected in its composition affects the effective tax rate of quoted manufacturing firms in Nigeria. While extensively studies have been conducted in this area in Nigeria focusing on product manufacturing firms; few studies have focused on companies classified under the healthcare sector. Using a purposive sample of firms classified under the healthcare sector, the study investigated the nexus of five board diversity measures on effective tax rate of healthcare manufacturing firms. The results showed differing effects. The nationality, age and gender diversity of the board of directors showed a positive effect; while, tenure and non-executive diversity of the board showed negative effect.

Recommendations

The study makes the following recommendations for implementation among manufacturing firms in Nigeria:

1. The inclusion of directors from different ethnic groups, tribes or nationalities, this is necessary because the origin of an individual plays a role in shaping the behaviour of such individual, and a more homogenous group are likely prone to think alike;
2. The age of directors should become a factor in considering the appointment of an individual. The positive effect of age diversity in the study is suggestive of the fact that older directors are more likely to exhibit a more conservative approach than younger directors;
3. The issue of female boardroom participation should be re-visited. The study recommends that more females be allowed in corporate boardrooms because of their positive influence in enhancing corporate governance; because, they have shown to be ethical and more self-conscientious. However, such inclusion should be subject to the qualification if such female arbitrary mode to fill corporate places.

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