Board Multiplicity and Corporate Tax Avoidance Behaviour of Quoted Healthcare Manufacturing Firms in Nigeria

Obiora, Fabian C. Ph.D
Department of Accountancy,
Chukwuemeka Odimegwu University, Igbariam

Onuora, Joshua K. Ph.D
Department of Accountancy,
Chukwuemeka Odimegwu University, Igbariam

Mayah, Eunice
Department of Accounting Education
Federal College of Education(T), Asaba, Delta State.

Abstract
This study investigated the effect of board multiplicity on corporate tax avoidance of quoted healthcare manufacturing companies in Nigeria from (2010-2019). Two research questions and two hypotheses were formulated for the study. Ex-post facto research design was employed in the study. The population of the study included all manufacturing firms quoted on the Nigerian Exchange Group (NXG) (NSE) as at 31st December 2021 with a sample size of Six (6) healthcare manufacturing companies selected from the population sector. The study relied on secondary sources of data which was obtained from Annual reports of sampled companies as provided by individual companies and Nigerian Exchange Group (NXG) website. The Robust least square regression analysis was employed in validating the hypotheses. The study revealed a significant positive significant effect of racial multiplicity on corporate tax avoidance. Gender multiplicity was not significant. Consequent on the findings, the study therefore recommends amongst others that that there is need to diversify the board of companies with due consideration to ethnicity and nationality. This has a way of bringing balance to the policies formulated by the board of directors.

Keyword: *Tax avoidance, Board Multiplicity, Effective tax rate*

1.1 Background of the Study

The corporate boardroom discussion is filled presently with issues on multiplicity. According to Russell Reynolds (2018) this trend is essential giving the complex and dynamic issues companies are presently facing. Thus, it became widely necessary to tackle the 'inherent risk of insularity and hindrance brought by homogeneity'. Scholars have opined that board multiplicity lends itself as one way of enhancing corporate governance (ACCA, 2015).

There are several views on corporate board multiplicity; while some opine that it entails demographics (such as age, gender, and ethnicity); others, view it is a structural phenomenon (Hoang, Abeysekera, & Ma, 2016). Although, a vast literature indicates that multiplicity related parameters are such like, 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, & Venuti, 2015).

In Nigeria, the practical situation is characterized with sexual stereotyping of social roles (Lincoln & Adedoyin, 2012), which places 'men as the leaders of the society' and therefore limits female participation in top leadership positions (Şener & Karaye, 2014). Studies have also shown that female directors are sensitive to soft issues and unpalatable issues than male directors boards (McInerney-Lacombe, Billimoria, & Salipante, 2008; Huse & Solberg, 2006) and avoid groupthink (Adams, Gray, & Nowland, 2010). With a greater proportion of female directors, a company would most likely appear ethical and demonstrate good corporate citizenship (Landry, Bernardi, & Bosco, 2016).

The nationality of the director is another issue presently in contention; as scholars have opined that it plays a significant role in determining the ethical stance of the director. Foreign directors were often stated to bring along beneficial attributes to the firm, such as experience, moral posture, among others some ethical balance which prevents petty practices like tax evasion and/or avoidance (Masulis, Wand, & Xie, 2012).

Tax avoidance attitude can be divided into acceptable tax avoidance and unacceptable tax evasion (Fadhilah, 2014). According to Budiman and Miharjo (2012), the character of executives has a significant impact on corporate tax avoidance. There is evidence that tax avaoidance behaviour in the past is practiced and prevalent among manufacturing firms in Nigeria (Onyali & Okafor, 2018; Uadiale, & Fagbemi, Ogunleye, 2010). Some firms have maintained high profitability over the years due to efficient tax planning schemes (PwC, 2013).

The problem tackled in this study is therefore two-fold: *firstly*, the relatively lack of empiricism on board multiplicity and tax aggressiveness behaviour within the healthcare sector, as existing studies; such as, Onyali and Okafor (2018), Salaudeen and Ejeh (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, while 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 & Okafor, 2018; Salaudeen & Ejeh, 2018; Oyenike, Olayinka, & Emeni, 2016). According to Harjoto, Laksmana, and Yang (2018), research on board multiplicity, has focused on gender multiplicity, leaving board multiplicity beyond gender largely unexplored. A recent study by Osiregbmhe (2017) addressed ethnic and nationality multiplicity, but focused on its effect on financial performance. Also, Opusunju and Ajayi (2016) focused on nationality diversity and corporate social responsibility. Against this backdrop, the current study therefore investigates the effect of board multiplicity on corporate tax avoidance behaviour of quoted manufacturing firms in Nigeria. Specifically, the study investigates:

i. the effect of racial multiplicity on effective tax rate.
ii. the influence of gender multiplicity on effective tax rate.

2.1 Conceptual Framework

2.1.1 Concept of Board Multiplicity

Diversity from a simple point of view indicates varieties (Turgut and Hafsi, 2008). This diversity can be related to age, physical appearance, culture, role or work experience, disability, ethnicity, personal style, gender, and religious affiliation (Turgut & Hafsi, 2008). Multiplicity, therefore, refers to a wide range of people who are different from each other

(ACCA, 2015).
According to Gomezmejia, Balkin, and Cardy (2007), multiplicity is a human trait that distinguishes one person from another. This includes biological characteristics such as race, gender, age, skin colour, national origin, and the family and society into which you were born. There is no consensus on the definition of directory multiplicity (ACCA, 2015; Rose, 2015). However, Kang, Cheng, and Gray (2007) defined board multiplicity as diversity in board composition. It refers to the composition of the board and the diverse mix of attributes, characteristics and experience brought to it by individual board members. in relation to the board process and decision-making" (van der Walt and Ingley, 2003).

2.1.2 Nationality/Race

The nationality of the board members refers to the country of origin of the board members. This is critical for two reasons: First, with foreigners on the board, a large pool of qualified board candidates (with broader industry experience) would be available. With the presence of foreign independent directors on a board, their international experience and background enrich the company (Masulis, Wand & Xie, 2012). Second, because of their diverse backgrounds, foreign members can bring valuable and diverse experiences that domestic members do not have (Lee & Farh, 2004). From the agency's perspective, foreign directors can also help reassure foreign minority investors that the company is being run professionally in their best interests (Oxelheim & Randøy, 2001). The inclusion of foreign board members increases board independence, which leads to a reduction in rootedness (Randøy, Thomsen & Oxelheim, 2006).

2.1.3 Gender Multiplicity

Studies have shown that women are more ethically sensitive and empathetic to soft issues (Webb, 2004; Williams, 2003; Wang & Coffey, 1992). Women may be particularly sensitive "to - and may exercise influence on - decisions pertaining to certain organizational practices", such as corporate social responsibility, corporate tax practices, among others (Nielsen & Huse, 2010). According to gender socialization theory, men and women are different in their orientation toward moral principle, largely because women have better internalized ethical and communal values through their social roles (Hyun, Yang, Jung, & Hong, 2016). Females bring different characteristics to boards (Eagly, Johannsen-Schmidt, & Van Engen, 2003; Eagly & Johnson, 1990), which may lead to improved board effectiveness as a result of the improved quality of board deliberations and better supervision of the firm's disclosures (Gul, Srinidhi, & Ng, 2011). Females bring a host of different soft-skills to their jobs which could manifest in the form of leadership competencies (Zenger & Folkman, 2012). Women through forming alliance, prepare and involve themselves in board matters, and take part of vital decision making (Huse & Solberg, 2006). Groysberg and Bell (2013) found from a survey, that 90% of female and 56% of male directors agreed that women bring fresh perspectives and thought multiplicity to boards of directors.

2.1.4 Corporate Tax Avoidance

There is no widely accepted definition of tax avoidance activities in the literature (Hanlon & Heitzman, 2010). However, Dyreng, Hanlon, and Maydew (2010) defined corporate tax avoidance as "anything that reduces the firm's taxes relative to its pre-tax accounting income". Tax avoidance is considered beneficial to a firm and the shareholders as long as it implies higher cash flows, net income and residual income for the shareholders (Blouin, 2014). It involves "taking advantage of legitimate concessions and exemptions foreseen in

the tax law; and, involves the process of organizing business operations so that tax obligations are optimized at their minimum amount" (Martinez, 2017). Tax planning is part of overall business planning, aimed at reducing explicit and implicit taxes (Franca, Moraes, & Martinez, 2015).

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).

2.2 Theoretical Framework

The study is anchored on the *Agency Theory*. The justification for the theory is that, corporate tax avoidance activities are attempts by managers (agents) who form part of the corporate governance system of modern corporations. Moreover, *decisions* on corporate tax avoidance are made by firm managers (Desai & Dharmapala, 2006, 2007); as such, its analysis is embedded in an agency framework (Mohammed, 2017).

2.2.1 Agency Theory

Agency theory paradigm was first formulated by Ross in the 70's (Ross, 1973). It was first associated with agency costs by Jensen and Meckling (Shapiro, 2005; Jensen & Meckling, 1976). According to Ross (1973, p.134) agency relationship is "one of the oldest and codified modes of social interaction", and explains the contractual arrangements between principal and agents. Jensen and Meckling (1976, p.5) explained an agency relationship in terms of a "contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent". The theory is rooted in information economics (Turnbull, 1997), and complements the risk sharing literature by addressing the problem that occurs when goals of cooperating parties differ (Jensen & Meckling 1976; Ross, 1973).

Agency theory tries to resolve two problems that usually occur when one party (the principal) delegates work to another (agent). The first is the conflict of goals between the principal and agent and the costs associated with the minimisation of such discrepancy; and, secondly, is the problem of sharing risk when the risk preference of the principal and agent differs (Eisenhardt, 1989). According to Davis, Schoorman, and Donaldson (1997) agency theory provides "a useful way of explaining relationships where the parties' interests are at odds and can be brought more into alignment through proper monitoring and a well-planned compensation system".

2.3 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 sample comprised forty-four (44) listed manufacturing firms. The study relied on secondary data; obtained from annual reports and accounts from the period 2005 to 2016. The hypotheses were tested using fixed and random effects regression procedures. 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 sample for the study comprised ninety-seven (97) firms. The study relied on secondary data drawn from individual company websites and the Rahavard Novin software. The duration of the data was from the period 2011 to 2015. 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.

Hoseini, Gerayli, and Valiyan (2018) conducted a study titled 'Demographic characteristics of the board of directors' structure and tax avoidance: Evidence from Tehran Stock Exchange'. The sample comprised a total of five hundred and five (505) firm-year observations from companies listed on the TSE. The study relied on secondary data; between the periods 2012 to 2016. The hypothesis was tested using panel regression models. The results showed that presence of women on corporate boards reduces corporate tax avoidance; also, firms with larger board sizes were associated with more tax avoidance.

Mohammad, Abdullatif, and Zakzouk (2018) conducted a study titled 'The effect of gender diversity on the financial performance of Jordanian banks'. The sample comprised eleven (11) banks listed on the ASE. The study relied on secondary data; obtained from annual reports and accounts of the studied companies from the period 2009 to 2016. The study employed ordinary least squares (OLS) multiple regression technique to analyse the data. The results showed that there was a negative non-significant relationship between percentage of women on boards and top and medium-level executive management and financial performance (ROA) of the banks.

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 study used the correlational research design. The sample comprised ninety-seven companies listed on Tehran Stock Exchange. The study relied on secondary data; obtained for the period 2010 to 2015. 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 sample comprised four hundred and eighteen (418) U.S. firms, which gave rise to a total of 1672 firm-year observations. 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. The results were consistent to several measures of tax aggressiveness and additional robustness checks.

Osiregbmhe (2017) conducted a study titled 'Effects of board nationality and ethnic diversity on the financial performance of listed firms in Nigeria'. The study adopted the ex post facto research design. The sample comprised sixty (60) non-financial firms with periodic observations from 2012-2015. The study relied on secondary data; obtained from the annual reports and accounts of the selected companies. 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).

Kartikaningdyah and Putri (2017) carried out a study titled 'Pengaruh Tax Avoidance dan Board Diversity terhadap Kinerja Perusahaan dalam Perspektif Corporate Governance'. The objective of the study was to analyze the impact of tax avoidance and board diversity on corporate performance. The sample comprised two hundred and eighty-four (284) non-financial firms listed on the Indonesia Stock Exchange. The study relied on secondary data; obtained from the period 2010 to 2013. The data was analysed using multiple regression technique (fixed effects model). The results of the study showed that Cash Effective Tax Rate (CETR) had a significant negative effect on Tobin's Q and board diversity.

2.5 Gap in knowledge

Despite the abundance of studies, several issues remain in contention in the Nigerian context. The relatively lack of empiricism on board multiplicity and tax aggressiveness practices by firms in the healthcare sector, as existing studies; such as, Onyali and Okafor (2018), Salaudeen and Ejeh (2018) focused on consumer and industrial goods firms; while, Oyenike, Olayinka, and Emeni (2016) and Olaoti (2016) focused on listed banks.

Also, existing studies mainly focused on gender multiplicity (Onyali & Okafor, 2018; Salaudeen & Ejeh, 2018; Oyenike, Olayinka, & Emeni, 2016). Studies by Osiregbmhe (2017) which focused on other aspects of multiplicity; such as, ethnic and nationality multiplicity examined its effect on financial performance. Opusunju and Ajayi (2016) examined the effect of nationality multiplicity on corporate social responsibility; while, Olaoti (2016) which addressed gender, ethnicity and nationality multiplicity of the board directors focused on financial performance of 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.

3.0 METHODOLOGY

3.1 Research Design

The research work adopted 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. The choice of *ex-post facto* research design is based on the fact that the study relies on historical accounting data obtained from annual reports and accounts.

3.2 Population of the Study

The population of the study comprises of quoted manufacturing firms on the Nigerian Exchange Group (NXG) as at end of 2021 financial year. The exclusion of the population was consistent with prior studies; firms from the Natural resources and Oil & gas are mainly excluded because of different regulatory environment, and it is also challenging to estimate discretionary accruals for these firms (Abid, Shaique, & Anwar-ul-Haq, 2018; Tsipouridou & Spathis, 2012).

3.3 Sample Size of the Study

The sample selection criteria are shown in the table below.

Table 3.1: Sample selection

S/No	Sector	Number of firms
1	Healthcare	6
	Total	**6**

Source: The Nigerian Exchange Group (2021)

Table 3.1 revealed that the study was limited to Six (10) Healthcare companies selected using purposive sampling technique for a 10-year period (2010-2019); the decision was premised on the classification of the firms as manufacturing (based on the nature and description of activities) as shown on the Nigerian Exchange Group (NXG) website.

3.4 Sources of Data

The data for this study was obtained from secondary sources. Secondary data is information or data that has previously been collected and recorded for other purposes (Blumberg, Cooper, & Schindler, 2008). One major advantage of secondary data is that analysis time can be saved (Blumberg, Cooper, & Schindler, 2008). The data was extracted from the annual reports and accounts of the selected companies. Specifically, the Statement of Financial Position and Statement of Profit or Loss and Comprehensive Income provided data in computing the selected ratios; and, the Statement of Cash Flows.

3.4.1 Reliability of Data

The data from the Annual Report is considered reliable, because, annual reports and accounts of publicly quoted companies are subject to independent external audit by auditors in accordance with CAMA in order to give a true and fair view of the state of affairs of the company. Hence, on the strength of the external audit of each company's financial statement, the data employed in the study is considered reliable.

3.5 Methods of Data Analysis

The study employs *descriptive* and *inferential* statistics in analysing the data for the study where the multiple regression was adopted in validating the hypotheses. The Robust least square regression analysis is used to determine the independent variables' ability to explain the dependent variables' variance (Mussalo, 2015). The strength of Multiple Regression Models is its ability to analyze several variables simultaneously (Mussalo, 2015).

Model Specification:

$$ETR_{(i,t)} = \eta_0 + \eta_1 RM_{(i,t)} + \eta_2 GM_{(i,t)} + \eta_3 ROA_{(i,t)} + \eta_4 LEV_{(i,t)} + \eta_5 Size_{(i,t)} + \mu \ldots (1)$$

Where:

ETR	=	Effective tax rate
RM	=	Racial multiplicity
GM	=	Gender Multiplicity
ROA	=	Returns on asset
Size	=	Firm size
Lev	=	Firm leverage
t	=	Time dimension of the variables
η_0	=	Constant or Intercept.
$\eta_{1\text{-}5}$	=	Coefficients to be estimated or the Coefficients of slope parameters.

The expected signs of the coefficients (a priori expectations) are such that $\eta 2 > 0$; while, η_1, η_3, η_4 and $\eta_5 < 0$

Table 3.3: Description of variables

Label	Description	Measurement	Source
ROA	Returns on Assets	Ratio of earnings before interest, tax, and depreciation to Total Assets. (EBIT/ASSET)	(Chen, et al ,2005
ETR	Effective tax rate	Measured as the ratio of total tax cost of firm *i* in year *t to* pre-tax earnings of firm *i* in year *t*.	(Landry, Deslandes, & Fortin, 2013).
Lev	Leverage (Gearing)	The ratio of debt to equity as at the year-end (DEBT/EQUITY)	(Riahi- Belkaoui, 2003).
RM	Racial multiplicity	Measured as the proportion of foreigners in the board for the period.	Onyali & Okafor, 2018
GM		Measured as the proportion of women directors in the board for the period.	Onyali & Okafor, 2018

Source: Author's Compilation, (2022).

3.5.2 Decision rule

The decision rule is based on the sign and significance of the computed *t-statistic* from the regression output. The level of significance was set at p < .05. Hence, if the p value of the *t statistic* < *.05* (the chosen alpha level) the null hypothesis is rejected; and, the variable is postulated to have a significant effect.

4.0 DATA PRESENTATION AND ANALYSIS

4.1 Descriptive statistics

The data presentation and analysis reveal the descriptive statistics of the variables utilized in the study as presented in Tables 4.1a-b. below shows the mean, median, standard deviation, observations, minimum and maximum values of each selected variable. The description helps in showing the nature of the data in terms of dispersion and central tendencies.

Table 4.1a: Descriptive statistics of dependent variables

	ETR	GM	LEV	RM	ROA
Mean	25.94830	0.149537	0.758978	0.186911	-0.883175
Median	-7.580800	0.111111	1.120050	0.173611	1.868200
Maximum	1179.322	0.375000	3.321700	0.333333	26.62580
Minimum	-160.5761	0.000000	-15.41160	0.090909	-35.20870
Std. Dev.	191.3151	0.143296	2.327843	0.089509	12.17221
Skewness	4.887469	0.468567	-5.820795	0.394654	-0.851253
Kurtosis	27.59342	1.676507	40.41546	1.701769	4.188745
Jarque-Bera	1750.964	6.574633	3838.609	5.771028	10.77911
Probability	0.000000	0.037354	0.000000	0.055826	0.004564
Sum	1556.898	8.972222	45.53870	11.21465	-52.99050
Sum Sq. Dev.	2159487.	1.211484	319.7122	0.472695	8741.602

Observations	60	60	60	60	60

Source: E-views, 9.0

The observations row in table 4.1a shows the number of cases included in each analysis of the variables of the study as sixty for all variables. The Mean of each variable shows the measure of central tendency which calculates as the average of a set of observations; while, the Standard Deviation (SD) is the measure of the average distance between the values of the data in the set and the mean. A low SD indicates that the data points tend to be very close to the mean; while a high SD indicates that the data points are spread out over a large range of values.

Table 4.1b: Covariance Analysis of independent and dependent variables

	C	RM	GM	ROA	LEV
C	92.77666	-350.2187	-74.15294	1.541977	-2.761380
RM	-350.2187	1979.528	-171.6720	-5.448126	1.427231
GM	-74.15294	-171.6720	693.9929	-1.707255	1.258054
ROA	1.541977	-5.448126	-1.707255	0.124093	-0.209189
LEV	-2.761380	1.427231	1.258054	-0.209189	2.795519

Source: E-views, 9.0

Table 4.1b showed the nature of relationship between the independent and control variables employed in the study. From the table, Racial multiplicity has a positive relationship with leverage (1.427231); Gender multiplicity also showed a positive relationship with leverage (1.258054).

4.2 Test of Hypotheses

Table 4.2: Robust LS regression output

Dependent Variable: ETR
Method: Robust Least Squares
Included observations: 60
Method: M-estimation
M settings: weight=Bisquare, tuning=4.685, scale=MAD (median centered)
Huber Type I Standard Errors & Covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	3.838985	9.632064	0.398563	0.6902
RM	-106.2711	44.49189	-2.388550	0.0169
GM	8.985314	26.34374	0.341080	0.7330
ROA	-0.123371	0.352268	-0.350218	0.7262
LEV	-0.715132	1.671981	-0.427716	0.6689

Robust Statistics

R-squared	0.063589	Adjusted R-squared	-0.004513
Rw-squared	0.200011	Adjust Rw-squared	0.200011
Akaike info criterion	117.7710	Schwarz criterion	131.1787
Deviance	56438.58	Scale	22.57878

Rn-squared statistic	8.291332	Prob(Rn-squared stat.)	0.081471
	Non-robust Statistics		
Mean dependent var	25.94830	S.D. dependent var	191.3151
S.E. of regression	204.6065	Sum squared resid	2302509.

Source: E-views, 9.0

4.2.1 Hypothesis one

H_{01}: There is no significant effect of racial multiplicity on effective tax rate.

The Robust least square regression output shown above with one IV and two CVs, as follows: returns on asset (ROA) and debt to equity ratio (Leverage). The overall R-squared is 0.063585. The *p*-value of the F-statistic is less than .05 (i.e., margin of error), which confirms the statistical significance of the model. The *coefficient* of the variable of interest: Racial multiplicity (RM) was (0.0169) and *z-statistic* (-2.388550) negative and statistically significant (*p*-value<.05). Therefore, the null hypothesis is rejected and alternate, accepted. Hence, there is a significant effect of racial multiplicity on effective tax rate.

4.2.2 Hypothesis two

H_{01}: There is no significant influence of gender multiplicity on effective tax rate.

Table 4.2 the Robust least square regression output shown above with one IV and two CVs, as follows: returns on asset (ROA) and debt to equity ratio (Leverage). The overall R-squared is 0.063585. The *p*-value of the F-statistic is less than .05 (i.e., margin of error), which confirms the statistical significance of the model. The *coefficient* of the variable of interest: Gender multiplicity (GM) was (0.7330) and *z-statistic* (0.341080) negative and statistically significant (*p*-value>.05). However, the null hypothesis is accepted. Hence, there is no significant influence of gender multiplicity on effective tax rate.

4.3 Discussion of Findings

This study examined board multiplicity and corporate tax avoidance behaviour of quoted healthcare manufacturing firms in Nigeria. The findings of the study revealed that there is a significant effect of effect racial multiplicity on effective tax rate. This is in line with Onyali and Okafor (2018) who undertook a study on the effect of corporate governance mechanisms on tax aggressiveness of quoted manufacturing firms on the Nigerian Stock Exchange'. They found that the proportion of foreign directors had negative significant effect on tax aggressiveness (ETR).

The current study also found that there is no significant influence of gender multiplicity on effective tax rate. This result conforms to the findings of Mohammad, Abdullatif, and Zakzouk (2018) who investigated the effect of gender diversity on the financial performance of Jordanian banks. And found a negative non-significant relationship between percentage of women on boards and top and medium-level executive management and financial performance (ROA) of the banks.

Although, Lanis, Richardson, and Taylor (2017) found a contrary result in their study on Board of director gender and corporate tax aggressiveness. They found that there is a negative and statistically significant association between female representation on the board

and tax aggressiveness after controlling for endogeneity. Rahimipour (2017) also revealed a contrary result in a study conducted on 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 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).

5.0 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 summary of findings

This section summarises the results of the empirical findings from the test of hypotheses as given below:

i. There is a significant effect of racial multiplicity on effective tax rate ($p<0.05$)
ii. There is no significant influence of gender multiplicity on effective tax rate ($p>0.05$).

5.2 Conclusion

This study examined board multiplicity and corporate tax avoidance behaviour of quoted healthcare manufacturing firms in Nigeria. A number of such studies have been undertaken in the context of a few developed economies. Hence, this study makes contribution to the literature by addressing the issue in a developing economy that has different economic, legal, and cultural environments. Two demographic characteristics of the board members—gender, and nationality (race) are addressed in this study. The study employed the proportion of women, and foreign nationals as the key explanatory variables. Returns on asset and leverage Firm are also included in the model as control variables. The study conducted a Robust least square regression analysis using a sample comprising 60 firms listed on the Nigerian exchange group. The study was anchored on the agency theory which tries to resolve two problems that usually occur when one party (the principal) delegates work to another (agent). The study thus found that there is a significant effect of board multiplicity on corporate tax avoidance behaviour of quoted healthcare manufacturing firms in Nigeria.

5.3 Recommendations

The study therefore makes the following recommendations:

i. It is highly recommended that policies be made to check-mate aggressive tax practices because of its potential negative effect on a firm's image and reputation; as concerns are presently growing on the link between such practices and business ethics.
ii. The strong positive effect of racial multiplicity on effective tax rate of quoted healthcare manufacturing firms is a strong pointer to the need to diversify the board of companies with due consideration to ethnicity and nationality. This has a way of bringing balance to the policies formulated by the board of directors.

5.4 Contribution to knowledge

The study has several academic contributions to the literature and more broadly to board multiplicity. Firstly, it developed links between board multiplicity and effective tax rate with the various control variables employed in the study as well as corporate performance which can be beneficial to managers in understanding actual effect of board multiplicity on corporate tax avoidance. It also provides additional evidence from a developing country perspective in sub-Saharan Africa such as Nigeria.

5.5 Suggestions for Further Studies

Future studies may consider a distinction between large and small firms in investigating the effect of board multiplicity and corporate tax avoidance in Nigeria. Although, only one of the findings seem to conflict with some earlier studies on the issue, the development may be attributed to the evolving market and the institutional structures of developing countries like Nigeria. The reasons for this contradiction should therefore constitute an area of future research. Moreover, analysis of the effect of board multiplicity on corporate tax avoidance can be extended to neighbouring economies in West Africa.

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APPENDIX: Variable Data extract

Fiscal	Panel_ID	Companies	RM	GM	ETR	LEV	ROA

Year							
2010	121	Fidson Healthcare	0.25000	0.37500	27.4517	0.5107	5.8956
2011	121	Fidson Healthcare	0.25000	0.37500	74.0554	0.8139	0.5904
2012	121	Fidson Healthcare	0.25000	0.37500	61.702	1.062	1.919
2013	121	Fidson Healthcare	0.25000	0.37500	-37.9064	1.3341	1.2659
2014	121	Fidson Healthcare	0.25000	0.37500	-27.4442	1.7358	4.0059
2015	121	Fidson Healthcare	0.25000	0.37500	-11.1762	1.6361	4.4653
2016	121	Fidson Healthcare	0.25000	0.37500	-28.623	1.5279	1.9005
2017	121	Fidson Healthcare	0.25000	0.37500	-32.7997	1.2887	6.0802
2018	121	Fidson Healthcare	0.25000	0.37500	-160.576	1.8633	-0.4757
2019	121	Fidson Healthcare	0.25000	0.37500	-29.2666	1.1168	1.9995
2010	123	Glaxosmithkline Nig	0.33333	0.11111	-32.6337	0.8783	13.4171
2011	123	Glaxosmithkline Nig	0.33333	0.11111	34.2904	0.9973	12.8315
2012	123	Glaxosmithkline Nig	0.33333	0.11111	32.3166	1.0438	12.9563
2013	123	Glaxosmithkline Nig	0.33333	0.11111	-32.3456	1.1233	11.1361
2014	123	Glaxosmithkline Nig	0.33333	0.11111	-32.8235	1.1619	6.6047
2015	123	Glaxosmithkline Nig	0.33333	0.11111	-16.6276	1.3761	3.0803
2016	123	Glaxosmithkline Nig	0.33333	0.11111	1179.322	0.6539	8.4364
2017	123	Glaxosmithkline Nig	0.33333	0.11111	-56.7334	0.5429	1.8359
2018	123	Glaxosmithkline Nig	0.33333	0.11111	-46.7636	0.7775	3.9339
2019	123	Glaxosmithkline Nig	0.33333	0.11111	-21.5702	1.0414	4.9082
2010	131	May & Baker Nig	0.22222	0.11111	-37.3024	1.3642	2.8309
2011	131	May & Baker Nig	0.22222	0.11111	24.7448	1.231	3.6303
2012	131	May & Baker Nig	0.22222	0.11111	70.5741	1.5762	0.9411
2013	131	May & Baker Nig	0.22222	0.11111	806.6755	1.6938	-1.2633
2014	131	May & Baker Nig	0.22222	0.11111	-37.394	1.6178	0.7824
2015	131	May & Baker Nig	0.22222	0.11111	-52.223	1.6471	0.826
2016	131	May & Baker Nig	0.22222	0.11111	-111.879	1.8621	-0.4767
2017	131	May & Baker Nig	0.22222	0.11111	-38.7628	1.3058	4.8391
2018	131	May & Baker Nig	0.22222	0.11111	-58.1023	1.2398	4.2296
2019	131	May & Baker Nig	0.22222	0.11111	-20.4756	0.6165	7.5464
2010	134	Morison Industries	0.12500	0.00000	-1.6754	0.3696	-6.0971
2011	134	Morison Industries	0.12500	0.00000	-8.662	0.334	-4.9175
2012	134	Morison Industries	0.12500	0.00000	215.0447	0.3475	0.3436
2013	134	Morison Industries	0.12500	0.00000	-56.4894	0.2745	-4.1932
2014	134	Morison Industries	0.12500	0.00000	-6.7694	0.3584	-18.3346
2015	134	Morison Industries	0.12500	0.00000	135.3273	0.9037	-25.6658
2016	134	Morison Industries	0.12500	0.00000	0	1.8778	-19.0326
2017	134	Morison Industries	0.12500	0.00000	0	-15.4116	-33.3449
2018	134	Morison Industries	0.12500	0.00000	0.7676	1.128	-35.2087
2019	134	Morison Industries	0.12500	0.00000	0.4133	2.0055	-23.3887
2010	136	Neimeth Int Pharm	0.09091	0.00000	7.0784	3.3217	-3.0698

2011	136	Neimeth Int Pharm	0.09091	0.00000	-8.3922	2.0309	3.6939
2012	136	Neimeth Int Pharm	0.09091	0.00000	20.8027	0.8345	-2.3969
2013	136	Neimeth Int Pharm	0.09091	0.00000	-10.0925	0.624	4.5166
2014	136	Neimeth Int Pharm	0.09091	0.00000	15.321	0.7066	8.2133
2015	136	Neimeth Int Pharm	0.09091	0.00000	6.3052	0.9011	-15.2564
2016	136	Neimeth Int Pharm	0.09091	0.00000	-31.7404	1.1995	2.421
2017	136	Neimeth Int Pharm	0.09091	0.00000	1.626	1.8314	-18.0447
2018	136	Neimeth Int Pharm	0.09091	0.00000	-9.1091	1.3423	7.9727
2019	136	Neimeth Int Pharm	0.09091	0.00000	-27.6876	1.5688	7.9943
2010	141	Pharma-Deko	0.10000	0.30000	0.2538	-2.4663	-28.514
2011	141	Pharma-Deko	0.10000	0.30000	21.6379	-3.4051	0.6271
2012	141	Pharma-Deko	0.10000	0.30000	7.8874	1.9497	26.6258
2013	141	Pharma-Deko	0.10000	0.30000	-5.3214	2.0091	-4.8509
2014	141	Pharma-Deko	0.10000	0.30000	-32.7387	2.049	3.5576
2015	141	Pharma-Deko	0.10000	0.30000	-6.0441	0.4397	25.6515
2016	141	Pharma-Deko	0.10000	0.30000	4.883	0.3351	-9.4104
2017	141	Pharma-Deko	0.10000	0.30000	-67.9324	0.303	0.5552
2018	141	Pharma-Deko	0.10000	0.30000	3.6241	0.4608	-11.4182
2019	141	Pharma-Deko	0.10000	0.30000	0.8764	0.6755	-12.6915

Source: Annual reports of sampled Companies (2010-2019)