International Journal of Applied Economics, Finance and Accounting
ISSN 2577-767X
Vol. 19, No. 1, pp. 186-195
2024
DOI: 10.33094/ijaefa.v19i1.1581

Board characteristics and tax planning of quoted companies in Nigeria

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Keywords:
Board gender diversity
Board political connection
Board size
Tax planning.

JEL Classification:
M41.

Received: *5 January 2024*
Revised: *2 April 2024*
Accepted: *18 April 2024*
Published: *27 May 2024*
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Abstract

This study investigated board characteristics and tax planning among listed companies in Nigeria. It was an ex post facto type of research with a quantitative design covering a longitudinal time frame of five years (2017-2021). The data were analysed using panel regression (random and fixed effects). The outcomes of the study showed that board size and board gender diversity have no significant influence and exert a negative relationship with tax planning among firms while board independence and board political connection have significant influence and a positive relationship with the tax planning practices of the firms listed in Nigeria. It suggested that the government should ensure that boards of companies in Nigeria are well constituted with male and female members and those with politically connected members should be well monitored to prevent tax manipulations to the detriment of government tax revenue for expenditures. This study's potential to identify how board political relationships may promote tax aggression among firms. Thus, it will enable tax authorities to watch out for politically connected firms with regards tax reduction. Similarly, it will be a source of referencing material for researchers undertaking topics of this nature.

Funding: This study received no specific financial support.
Institutional Review Board Statement: Not applicable.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Data Availability Statement: The corresponding author may provide study data upon reasonable request.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.

1. Introduction

Most countries in the world whether developed or developing have been addressing the tax issue for a long time. Government revenue generation for recurrent and capital expenditures heavily relies on various taxes such as company income tax, value-added tax, tertiary education tax, personal income tax, petroleum profit tax, capital gains tax and property tax. Taxes are a cost to businesses; thus, an effective board would use tax planning to minimize taxes paid to optimize profit after taxes and shareholder wealth (Adejumo & Sanyaolu, 2020; Zachariah, Tahir, & Mohammed, 2020). Tax planning is a lawful way of reducing tax expenses by capitalizing on the loopholes in the tax laws (Akintoye, Adegbie, & Onyeka-Iheme, 2020; Salihu & Kawi, 2021). Firms can achieve tax planning through thin capitalization, transfer pricing, social responsibility activities, capital allowances, investment allowances, donations, capital gain tax, double taxation allowances, allowable deductions and exemptions.

Directors of firms believe that minimizing costs through tax planning is an avenue to exercise their stewardship because the interests of the firm supersede their personal interests. Board of directors characteristics like board size, board independence, board gender diversity and political connections (Khaoula & Moez, 2019) could have implications for the tax planning practices of firms. Board attributes play vital roles in the tax mitigation effect on firms through tax planning but to the detriment of government tax revenues for expenditure in Nigeria (Ibobo, Egbule, & Arukaroha, 2019).

Tax planning is one of the issues that reduces government tax revenues in Nigeria. The Central Bank of Nigeria Statistical Bulletin (2021) demonstrated that Nigeria as a country recorded the highest tax-to-gross domestic product (GDP) ratio of 9.6% in 2011 while the lowest was 5.3% in 2016. Moreover, the tax-to-GDP ratio in Nigeria gradually increased to 6.3% in 2018 but to 6.0% in 2019. In 2020, Nigeria recorded a tax-to-GDP ratio of 6.1% which translates to about 8.8 trillion in total tax collection while in 2021, the tax-to-GDP recorded was 8%. The federal government set up a tax appeal tribunal on February 4, 2010 to help improve tax compliance and revenue due to the high rate of tax avoidance and evasion (Agbonika & Aladi, 2014).

The different perspectives on the board of directors' characteristics that could have implications for tax planning remain critical issues (Salihu & Kawi, 2021). Many appointed directors of companies in Nigeria are very close to the government in power or politically connected in one way or another which could assist in influencing issues that can enhance the firm's performance. Therefore, this study fills a knowledge gap by introducing board political connections as a variable of board characteristics and exploring their relationship with tax planning among Nigerian firms. This study investigates the impact of board size, board independence, board gender diversity and board political connections on tax planning within listed companies in Nigeria. After examining the introduction, the following sections are presented chronologically: Section 2 is about the review of related literature. Section 3 covers methodology. Section 4 covers the interpretation of results and discussions and section 5 focuses on the conclusion and recommendations.

2. Review of Related Literature

2.1. Concepts of Tax Planning

Tax shelter, tax aggressiveness and tax avoidance are all different terms for tax planning in Nigeria. The concepts are used interchangeably because they mean the same thing. According to Frank, Lynch, and Rego (2009), tax aggressiveness involves maneuvers aimed at reducing tax liabilities often viewed as tax management. Chen, Chen, Cheng, and Shevlin (2010) define tax aggressiveness as a firm's attempt to minimize tax payments. Harvey and Richard (2014) characterize tax planning as a company's strategy to reduce its tax burden such as selecting the most advantageous tax filing status. Wang, Xu, Sun, and Cullinan (2020) describe tax planning as an act of tax avoidance that exploits regulatory loopholes. Zachariah et al. (2020) observe tax planning as a firm's decision focused on enhancing revenue by minimizing costs within the bounds of tax laws.

Moreover, tax planning is a strategic approach used within the framework of tax laws to mitigate the financial burden imposed by taxes (Salawu, Ogundipe, & Yeye, 2017). It serves as a method employed by businesses to strategically reallocate income from high-tax regions to jurisdictions with lower tax rates capitalizing on discrepancies in tax regulations across various states (Uniamikogbo, Atu, & Atu, 2018). Yusof, Noor, and Dangi (2014) define tax planning as a systematic process wherein taxpayers proactively manage their financial affairs to minimize their tax liabilities by leveraging government-provided tax incentives while ensuring compliance with relevant tax legislation. Tax planning encompasses leveraging statutory provisions such as the Companies Income Tax Act (CITA), Personal Income Tax Act (PITA) and Value Added Tax Act (VAT). Effective tax planning necessitates a comprehensive understanding of the tax policies and regulations outlined in Nigeria's fiscal framework. This involves using incentives tailored for business taxpayers while adhering strictly to legal provisions. In essence, the current research defines tax planning as any managerial action intended to maximise tax liabilities or expenditures while adhering to tax rules such as the National Tax Policy and Finance Acts.

2.2. Board of Directors' Characteristics

A registered company is typically structured around two primary organs: the annual general meeting (AGM) and the board of directors as outlined in the Companies and Allied Matters Act (CAMA) 2004 of Nigeria. The board of directors is comprised of both executive and non-executive members tasked with making strategic decisions aimed at fostering effective management practices to enhance company performance particularly in terms of profitability and shareholder value. In Nigeria, board members are often distinguished by their notable achievements in business, titles, financial acumen, political affiliations, expertise, and extensive professional experience. The structure of the board is frequently divided into inside and outside directors which indicates the percentage of traditionally defined non-executive members serving on the board (Kantudu & Samaila, 2015). Ştefanescu (2013) posits that board characteristics serve as a valuable proxy for evaluating corporate governance practices encompassing factors such as board size, independence, gender diversity, managerial ownership, the presence of an audit committee and the frequency of board meetings. The pertinent board characteristics include board size, independence, gender diversity and political affiliations for the purpose of this study. These factors are crucial in understanding the dynamics of corporate governance and their impact on organizational performance and strategic decision-making.

2.3. Board Size and Tax Planning

Board size represents a pivotal dimension of a company's governance structure denoting the total number of individuals comprising its board. Boards may encompass a blend of male and female directors within organizations. The size of the board directly influences decision-making dynamics; larger boards typically encounter delays in decision-making processes compared to their smaller counterparts. However, larger boards benefit from a diverse pool of directors, incorporating varied skills, experiences, expertise and characters known for their credibility and accountability. The relationship between board size and firm effectiveness or financial performance exhibits a nuanced relationship (Wahab & Holland, 2012). Nosakhare, Ayoib, and Noriah (2017) observed a significant and positive relationship between board size and tax planning in Nigerian manufacturing firms. Similarly, Odiwo, Chukwuma, and Kifordu (2013) discovered a positive relationship between board size and financial performance among Turkish companies. Amarjit and Neil (2011) highlighted the impact of board size on profitability in Canadian firms while Iliyasu, Nasir, and Umar (2020) indicated its influence on the performance of manufacturing companies. However, findings regarding the effect of board size on tax planning exhibit disparities. Akintoye et al. (2020) found a significant impact on listed firms in Nigeria. Bhagiawan and Mukhlasin (2020) and Odoemela, Ironkwe, and Nwaiwu (2016) found no significant effect. Additionally, Zachariah et al. (2020) noted no influence on tax planning in Nigerian firms contrasting with Novita and Herliansyah's (2019) revelation of a significant effect on tax avoidance.We propose the following hypothesis in the context of these varied findings:

H0: Board size exhibits no significant and negative relationship with tax planning among listed firms in Nigeria.

2.4. Board Independence and Tax Planning

The board of directors' independence refers to certain members of the board who are not part of the management team or executive directors but are tasked with monitoring and controlling executive directors. This independence involves appointing professionals from various fields such as lawyers, financial experts, business consultants, accountants, sales professionals and management experts, to the board of an organization. According to Fernández and Arrondo (2005), board independence pertains to appointed board members who are not aligned with the interests or team of the business organization. Board independence means having external or outsider directors on the board who focus on ensuring objective decisions that can enhance the firm's performance and shareholder wealth. Minnick and Noga (2010) found that independent directors prioritize issues that can help reduce expenses, including taxes. Lanis and Richardson (2011) suggested that companies with a significant proportion of independent directors may be better positioned to minimize tax planning. The presence of independent non-executive directors is considered a hallmark of sound corporate governance indicating that shareholders are willing to entrust management with tax-sensitive decision-making (Bhagat & Bolton, 2008). Zachariah et al. (2020) demonstrated that board independence has a significant and negative impact on tax planning in Nigeria. Similarly, Khaoula and Moez (2019), Ibobo et al. (2019) and Inua (2018) found that board independence significantly and negatively affects the effective tax rate used as a proxy for tax planning. On the other hand, Bhagiawan and Mukhlasin (2020) argued that board independence does not affect tax planning. However, the study hypothesized that:

H0: Board independence has no significant and negative relationship with tax planning among listed firms in Nigeria.

2.5. Board Gender Diversity and Tax Planning

Board gender diversity describes the heterogeneity or multifariousness in terms of males and females on the board of a company. Males typically dominate corporate boards; the introduction of female gender on the board helps to remove discrimination or inequality especially when a woman has the capacity and quality to represent. Appointing a female to the board of a company can make the board unique and strengthen the board in terms of varied ideas that can foster the performance of the firm. Similarly, women are risk-cautious because they are perceived as weaker vessels than men who are known to take risks. Women tend to be sensitive and genuine in communicating issues and have better participation especially when it comes to board meetings which makes them different from men (Adams & Ferreira, 2009). Dezsö and Ross (2012) revealed that the presence of females on the board of firms influences financial performance. Moss (2018) argued that female board membership has no significant influence on firms in the United Kingdom. Extant studies by Ibobo et al. (2019) and Khaoula and Moez (2019) indicated that female directors have a significant and negative relationship with tax planning. Zachariah et al. (2020) showed that gender diversity does not contribute to tax reduction through the tax planning practices of firms in Nigeria. It proposed the following hypothesis regardless of the outcome:

H0: Board gender diversity has no significant and negative relationship with tax planning among listed companies in Nigeria.

2.6. Board Political Connections and Tax Planning

The presence of certain politically connected people on a business's board of directors may facilitate the creation of chances to increase revenue, improve shareholder wealth and improve the financial performance of the company. A board political connection is a situation whereby a member or some members of the board have a link with the government. Politically connected members are known for having political titles like Grand Commander of the Order of the Niger (GCON), Member of the Order of the Federal Republic (MFR), Officer of the Order of the Niger (OON), Ex-Governor, Ex-Commissioner, Justice of Peace (JP) and others that have connections with the government. Political connections boards are firms having political stalemates, political backgrounds and approaching politicians or the government (Sumual & Karundeng, 2022). Companies that have members of the government as directors or board members that have any political title or association with the government could have poor corporate governance which makes the company risky as perceived by auditors and lenders (Bliss & Gul, 2012). Johnson and Mitton (2003) showed that companies that are politically connected can influence the stock market for their own advantage. Nurul, Nor, Fazrul, and Zuraidah (2020) noted that politically connected companies can easily redirect the management towards reducing expenses in the firm. Similarly, companies with links to the ruling political party or government can simply accumulate more cash and use this to improve performance.

Board political connection is a prevalent concern within companies particularly in developing nations (Poon, Yap, & Lee, 2013). Li, Feng, and Cao (2017) illustrated the influence of regional institutional environments on the interplay between political engagement and effective tax rates which may foster corruption. Their study revealed that political participation or connections exert a significant and positive impact on effective tax rates leading to increased tax compliance in regions with low corruption levels. Conversely, political ties were associated with a statistically significant and negative relationship with effective tax rates indicating tax reduction strategies in highly corrupt regions. Faccio (2010) demonstrated the significant impact of executive directors' or insiders' political participation and connections on reducing effective tax rates in several countries. Similarly, research by Adhikari, Derashid, and Zhang (2006) revealed that politically affiliated businesses enjoy considerably lower effective tax rates compared to their non-politically connected counterparts. This trend is evident in Pakistan where corporations with political influence pay significantly less ineffective taxes (Sadiq, Mohamad, & Chong, 2019). Contrary findings suggest that political connections may impede tax planning efforts (Ajili & Khlif, 2020; Putra & Suhardianto, 2020). Moreover, Rustiarini and Sudiartana (2021) stated that political relationships may encourage nepotism practices to reduce company tax costs. Similarly, Sumual and Karundeng (2022) identified the influence of political connections on firms' tax planning activities in Indonesia. Following the results of prior studies, we hypothesize that: *H0: Board political connection has no significant and negative relationship with tax planning among listed firms in Nigeria.*

3. Methodology

This paper employs an ex-post facto research design, spanning a longitudinal period of five years (2017–2021) using panel data. The population comprises 171 companies listed on the Nigerian Exchange Group PLC with a sample size of 89 companies selected through purposive sampling techniques. The financial statements and accounts of the selected firms were used to generate data for analysis. The effective tax rate serves as the dependent variable in tax planning while independent factors include board size, board independence, gender diversity and board political connections. A quantitative approach was adopted and the collected data were analyzed using diagnostic tests such as the variance inflation factor (VIF), Ramsey RESET and Breusch-Pagan-Godfrey tests. Furthermore, the study uses a combination of fixed and random effect panel least squares regression and discusses findings based on the Hausman test decision which have not been adequately used by previous studies.

The model specification for this study is below:

$$TP_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 BI_{it} + \beta_3 BGD_{it} + \beta_4 BPC_{it} + e_{it}$$

Where
TP= Tax planning.
β_0= Constant.
B_1 to β_4 = Coefficients.
it= Firm (i) and time (t).
e= Error term.

Table 1. Operationalization and measurement of variables.

S/N	Variables	Notation	Measurements
1	Tax planning	TP	Tax planning (TP) is associated with an effective tax rate measured as tax divided by profit before tax.
2	Board size	B SIZE	The number of members constituted by the board of the firm.
3	Board independence	BI	Total of non-executive directors by board size (Ibobo et al., 2019; Khaoula & Moez, 2019).
4	Board gender diversity	BGD	The total female board members by board size.
5	Board political connection	BPC	Total number of board members with political titles by board size.

Table 1 presents the operationalization and measurement of variables employed in this study.

4 Interpretation of Results and Discussions

4.1. Diagnostic Tests

The diagnostic tests conducted in Tables 2 and 3 justify the strength of the panel regression for discussion and findings.

Table 2. Variance inflation factors.

Variables	Uncentered VIF	Centered VIF
B SIZE	2.76	1.16
BI	5.04	1.01
BGD	1.06	1.004
BPC	1.17	1.13

Table 2 presents the Variance Inflation Factor (VIF) values for board size, board independence, board gender diversity and board political connection as 1.16, 1.01, 1.004, and 1.13, respectively. The VIF test suggests the absence of multicollinearity among the regression variables as none of these values exceed the threshold of 10 units (Hair, Black, Babin, & Anderson, 2010).

Table 3. Ramsey RESET and Breusch-Pagan-Godfrey.

Test	Ramsey RESET test	Breusch-Pagan-Godfrey
F-statistic	0.60	0.86
(PV)	(0.42)	(0.51)

Note: See Appendix section for detailed results.

Table 3 demonstrated the absence of heteroscedasticity predicted by the Breusch-Pagan-Godfrey test with an F-statistic test of 0.8619 at a probability value of 0.507 (51%) which is statistically insignificant. As a result, the finding does not support the existence of a serial correlation. Thus, we continue by determining whether the given model is suitable.

The Ramsey RESET test of model specification was employed to assess the accuracy of the regression model. The test yielded an F-statistic of 0.60 with a corresponding probability value of 0.42. We concluded that the linear model is satisfactory as the test outcome was insignificant, suggesting the absence of apparent non-linearity in the regression equation based on these results.

Table 4. Panel least square regression: Dependent variable: tax planning (TP).

Variables	Panel regression	
	Fixed effects	Random effects
	Coefficients T-statistic (PV)	Coefficients T-statistic (PV)
Constant	3.98 -1.97 (0.05)**	-0.26 -1.93 (0.06)*
B SIZE	-0.44 -1.54 (0.13)	-0.06 -0.62 (0.53)
BI	0.57 3.25 (0.001) ***	0.45 2.52 (0.01) **
BGD	-0.01 -2.58 (0.01) ***	-0.01 -2.49 (0.02) **
BPC	3.55E-09 1.47 (0.14)	2.05E-09 2.22 (0.03)**
R-square	0.62	0.61
Adjusted R-square	0.60	0.61
The standard error of regression	1.55	1.53
F-statistic (PV)	9.86 (0.0001)***	13.98 (0.00)***
Durbin-Watson	1.93	1.73
Hausman test (PV)		3.80 (0.58)

Note: The symbols of *, **and *** represent 10%, 5%, and 1% level of significance respectively.

Table 4 highlights the results of the fixed effect model and the random effect model Panel Least Square regression as interpreted below:

Fixed Effect Model: The fixed-effect coefficient of determination (R-square) (R^2) for tax planning (TP) as proxies by the effective tax rate (ETR) stands at 0.62. This indicates that approximately 62% of the systematic variations in tax planning can be attributed to the independent variables: board characteristics including board size (BSIZE), board independence (BI), board gender diversity (BGD) and board political connection (BPC). The unexplained variance constituting 38% is encompassed within the error term. The adjusted coefficient of determination (adjusted R-square bar)($\check{R}^2$) remains substantial at 0.60 units with the effective tax rate (ETR) as the measure of tax planning upon adjusting for degrees of freedom. This signifies that around 60% of the fluctuations in tax planning can be accounted for by the independent variables. The statistical significance of the overall result is underscored by the comparison to the lowest standard error of regression which is 1.5529. There is a clear linear relationship between board characteristics and tax planning with an F-statistic of 9.86 at a probability value of 0.00, indicating statistical significance. Furthermore, the Durbin-Watson score of 1.92 suggests an absence of serial correlation in the data reinforcing the reliability of the findings.

Random Effect Model: The random effect model produced an R-squared (R^2) value of 0.61 with regard to tax planning (TP). This indicates that the independent variables (board size, board independence, gender diversity and political connection) explained over 61% of the systematic variation in the dependent variable (tax aggressiveness) while the stochastic disturbance accounted for approximately 39%. Furthermore, the adjusted coefficient of determination (or adjusted R-squared) value of 0.61 indicated that the explanatory factors (board features) explained around 61% of the systematic variance leaving the error term to account for the remaining 39% concerning tax planning (TP).

The regression analysis reveals the smallest standard error of regression of 1.53 and an F-statistic of 13.9806, accompanied by a significant probability value of 0.000 (1%). These findings collectively indicate a significant linear relationship between the dependent and independent variables. Additionally, the Durbin-Watson value of approximately 1.73 suggests the absence of autocorrelation issues within the data. The findings are suitable for fundamental policy decision-making and prediction as shown by the matching regression results in Table 4. The Hausman test result which was statistically insignificant indicated that the random effect panel regression results are appropriate for discussion of the findings.

4.2. Discussion of Findings

First, the analysis reveals that board size exhibits a negative relationship with tax planning and is statistically insignificant. This suggests that board size plays a minimal role in tax planning in Nigeria. The negative coefficient value of -0.06 implies that a unit increase in board size may lead to a 6% decrease in tax planning. These findings are consistent with the research conducted by Bhagiawan and Mukhlasin (2020) and Odoemela et al. (2016) which similarly found no significant impact of board size on the tax planning strategies of Nigerian firms. Additionally, Zachariah et al. (2020) suggest that board size has little influence on tax planning in Nigerian businesses. However, Novita and Herliansyah (2019) found that tax avoidance is significantly affected by board size. Moreover, board size has a substantial impact and a negative relationship with the effective tax rate, a metric used in tax planning as demonstrated by Inua (2018) and Ibobo et al. (2019).

Second, board independence exhibits a significant influence and a positive relationship with tax planning in Nigeria. This implies that board independence plays a crucial role in enhancing tax planning strategies. The positive coefficient value of 0.45 suggests that a unit increase in board independence could lead to a 45% increase in tax planning. These findings corroborate the results of Bhagiawan and Mukhlasin (2020) which indicate that board independence has minimal relevance to tax planning. However, Ibobo et al. (2019) and Khaoula and Moez (2019) discovered that board independence had a notable negative impact on the effective tax rate.

Third, it was deduced that the statistical significance of board gender diversity was inversely correlated with tax planning. This implied that a female board member would be strongly opposed to tax planning. Board gender diversity which indicated a negative coefficient value of -0.01 implied that a unit increase in females on the board can bring about a decrease in tax planning by over -1%. According to Ibobo et al. (2019) and Khaoula and Moez (2019), there is a noteworthy and adverse relationship between tax planning and female directors. Similarly, Zachariah et al. (2020) showed that tax planning strategies used by Nigerian enterprises do not result in gender diversity contributing to tax reduction.

Fourth, board political connections demonstrate a significant and positive relationship with tax planning. This suggests that having political connections on the board is a crucial factor in enhancing tax planning practices in Nigeria. The coefficient value is 2.05E-09 which is positive and suggests that an increase of one unit in politically connected members could lead to a 0.02% rise in tax planning. These findings align with the study conducted by Adhikari et al. (2006) which found that board member political participation and political connections have an effect on the low effective tax rates (ETRs) of companies in China as they are associated with reduced tax payments. Similarly, Li et al. (2017) found that politically connected board members have a negative relationship with effective tax rates (increase in payment of correct tax) among companies in low-corruption regions and a statistically significant and positive relationship with effective tax rates (tax reduction). According to research by Sadiq et al. (2019), businesses with political influence tend to pay significantly less in effective taxes compared to those without such clout. Moreover, other studies corroborate this finding. For example, Rustiarini and Sudiartana (2021) found that political connections may foster nepotism practices aimed at reducing corporate tax burdens. Similarly, Sumual and Karundeng (2022) observed that board political connections influence the tax planning activities of firms.

5. Conclusion and Recommendations

This study investigates the relationship between board characteristics and tax planning in publicly listed companies in Nigeria. The board holds a pivotal role in overseeing and regulating management actions on behalf of shareholders and other stakeholders. According to agency theory, directors or managers of business organizations aim to minimize expenses, including taxes to maximize profits and shareholder wealth. Existing research has shown varying results regarding the proxy variables of board characteristics and tax planning. This study found that board independence and political connections significantly influence tax planning and demonstrate a positive association with it through a series of diagnostic tests to conduct panel least square regression analysis. Similarly, the size of the board and board gender diversity has no significant influence but exhibit a negative relationship with tax planning. Board independence and board political connection are critical board characteristics capable of enhancing tax planning among listed firms. On the other hand, board size and gender diversity are weak board characteristics influencing tax planning. It concludes that the boards of directors' characteristics of quoted companies in Nigeria have a negative and positive relationship with tax planning.

Thus, the study recommends that:

(1) The constituted board size of firms should consist of persons with integrity, transparency, and accountable characters who can vehemently stand for the truth and report the actual financial income and position of the firm. The board of directors whether small or large should not be an excuse to manipulate taxes because it forms part of government revenues for expenditure.

(2) Independent directors should focus primarily on the monitoring and controlling functions of the executive directors or management and should support decisions that can enhance companies' performance without engaging in earning manipulations like tax planning activities.

(3) Women should be included in every board of every company up to 30% as is mandatory for banks in Nigeria. The presence of women could help to foster accountability and transparency in statements of income and financial position instead of indulging in tax planning activities in companies because women are seen to maintain some element of honesty and risky aversion.

(4) Government authorities in charge of taxes for federal and state government in Nigeria should ensure that business organizations that have some politically connected members on the board are well monitored to reduce the incidence of tax manipulation.

5.1. Policy Implications

The significant negative relationship between board gender diversity and tax planning signifies that the presence of women on the board can have negative implications for tax planning practices by management because women are more risk adverse and will not want to tarnish their reputation when compared to men. Furthermore, board political connections which exhibited a significant positive relationship with tax planning are an indication that board political connections are critical factor in enhancing tax planning. Tax authorities in federal and state government are to be conscious of these variables in their role in tax planning.

5.2. Limitations and Future Research

This study has some limitations in terms of the generalization of the results across different industries. We expect future studies to segregate or segment their studies according to industry or sectors like oil and gas, banking, manufacturing, agriculture, construction and insurance. Future studies should equally expand the time frame and increase the independent variables to a minimum of five proxy-specific variables about tax planning.

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Appendix

(A) Ramsey RESET

	Value	**Df**	**Probability**	
t-statistic	0.133	441	0.89	
F-statistic	0.60	(1, 44)	0.42	
Likelihood ratio	0.02	1	0.89	
F-test summary:				
	Sum of sq.	**Df**	**Mean squares**	
Test SSR	1.43E-05	1	1.43E-05	
Restricted SSR	0.05	440	0.001	
Unrestricted SSR	0.05	441	0.001	
Unrestricted SSR	0.05	441	0.001	
LR test summary:				
	Value	**Df**		
Restricted LogL	165.0	441		
Unrestricted LogL	165.0	440		
Unrestricted test equation:				
Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
C	0.02	0.13	0.18	0.86
BSIZE	0.002	0.003	0.73	0.47
BI	0.02	0.03	0.65	0.52
BGD	0.01	0.02	0.61	0.54
BPC	0.004	0.007	0.62	0.53
FITTED^2	1.83	13.7	0.13	0.89
R-squared	0.21	Mean dependent var		0.04
Adjusted R-squared	0.13	S.D. dependent var		0.03
S.E. of regression	0.03	Akaike info criterion		-4.19
Sum squared resid	0.05	Schwarz criterion		-3.94
Log likelihood	165.0	Hannan-Quinn criter.		-4.09
F-statistic	2.53	Durbin-Watson stat		0.79
Prob (F-statistic)	0.02			

(B) Heteroskedasticity test: Breusch-Pagan-Godfrey

Heteroskedasticity test: Breusch-Pagan-Godfrey				
F-statistic	0.86	Prob. F(6,44)		0.51
Obs*R-squared	5.10	Prob. chi-square(6)		0.53
Scaled explained SS	3.46	Prob. chi-square(6)		0.75
Dependent variable: RESID^2				
Method: Least squares				
Variable	**Coefficient**	**Std. error**	**t-statistic**	**Prob.**
C	-0.001	0.004	-0.30	0.77
BSIZE	2.38E-05	3.19E-05	0.75	0.46
BI	0.001	0.001	1.27	0.21
BGD	-0.0004	0.001	-0.71	0.48
BPC	0.0001	9.86E-05	1.43	0.16
R-squared	0.05	Mean dependent var		0.001
Adjusted R-squared	0.01	S.D. dependent var		0.001
S.E. of regression	0.001	Akaike info criterion		-11.0
Sum squared resid	5.97E-05	Schwarz criterion		-10.8
Log-likelihood	420.2	Hannan-Quinn criter.		-10.9
F-statistic	0.83	Durbin-Watson stat		0.50
Prob(F-statistic)	0.55			