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RESEARCH ARTICLE

The Role of Board Attributes in Improving Disclosure of Corporate Sustainability Reporting Practices of Listed Financial Firms in Nigeria

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ABSTRACT

Companies that want to be seen as leaders in Corporate Sustainability Reporting Practices (CSRP) by society and its stakeholders should have a board structure that protects the interests of investors while also considering the demands of other stakeholders. Hence, we assume that competent boards, principally if well organised, drive influence on CSRP. Accordingly, we investigate the effect of board attributes, mainly Board Size (BDZE), Board Independence (BDIND), Board Gender Diversity (BOGD), and board CSR Committee (CSRC), on CSRP. The research covers the period from 2016 to 2021. Using a content analysis technique adapted from the Global Reporting Initiative (GRI)-G4 guideline, 56 items were applied to assess the level of CSRP. We used a sample of 34 companies, with 204 observations from the listed firms, assessed by world consensus rater CSRHUB. We hypothesised that all the board attributes positively influence CSRP. The data for this study was analysed using panel-corrected standard error and Driscoll/Karaay regression models. Our findings support all the hypotheses except for BDIND; therefore, we settle that board features such as BDZE, BOGD, and CSRC boost the disclosure of CSRP. Contrary to our forecasts, BDIND negatively affects CSRP. This study offers empirical evidence supporting the legitimacy of the board attributes and stakeholders' opinions on the firm's ability to improve CSRP. Legislators and supervisory bodies might use the study's results to suggest a board attribute that would ensure a responsible CSR plan is implemented, benefiting society and the environment. Additional research into the importance of women's representation on boards of directors is warranted.

INTRODUCTION

At the highest administration level, companies may keep their relationships with investors and society healthy by being transparent about their corporate sustainability reporting (CSR) trials (Pucheta-Martínez and Gallego-Álvarez, 2019). That is an excellent way for businesses to show their local community that they care about meeting the expectations and requirements of their stakeholders, including investors (Pforr et al., 2021). Reducing stakeholder challenges, elevating corporate status, and increasing stock values may all be possible outcomes of openly discussing social and environmental issues (Jizi et al., 2014; Jizi and Nehme, 2018). To achieve that, we assume that competent boards, primarily if well organised, drive influence on CSRP. Hence, the board of directors decides on matters such as allocating funds to relevant companies, establishing CSR policies that benefit stakeholders and society, maintaining positive relationships with all investors, and implementing CSR initiatives. Companies in this study may further increase their CSRP procedures due to these decisions. So long as the firm aims to offer gestures to all investors and humanity devoted to their aspirations, competent boards will likely promote CSRP (Pforr et al., 2021).

In addition, the host community's demands may force boards to side with all sponsors in guaranteeing the disclosure of CSRP issues. Consequently, board attributes can significantly encourage companies to be more forthcoming with information about their CSRP initiatives. According to previous research by Pucheta-Martínez and Gallego-Álvarez (2019) and Ortiz-de Mandojana and Aragon-Correa (2015), the ability of boards to motivate CSRP, maintain positive relationships with all investors, and meet stakeholders' requirements is contingent upon their structure. In contrast to publicly traded companies, corporate entities are less transparent and have a flatter profile (Alexeyeva, 2023). Regarding CEO announcements about CSRP disclosure, Bashiru et al. (2022) state that the board attribute is a significant component. According to Pucheta-Martínez and Gallego-Álvarez (2019), the main goal of selecting board members is to safeguard stockholder interests while ensuring that all stakeholders' needs are effectively met.

Due to the increased stakeholder interest in an establishment's ESG performance, regulatory authorities may normatively compel firms developing CSRP to provide non-financial information for their stakeholders (Alexeyeva, 2023). Hence, due to these recent changes, firms are expected to act socially by paying more attention to their social responsibilities to society to generate more legitimacy. Moreover, to prevent future generations from being burdened with the residual consequences of unsustainable corporate practices, CSRP programmes are being implemented to ameliorate the adverse impacts of corporate activity on the environment, society, and the economy (Jizi and Nehme, 2018). Concerning the above, this study intends to investigate the role of board attributes in improving the disclosure of corporate sustainability reporting practices of listed financial firms in Nigeria. It equally aims to achieve the role of board attributes in improving CSRP. Thus, several scholars, including Moses et al. (2020), Nwude and Nwude (2021), Bashiru et al. (2022), and Kartika et al. (2023), have written various scholarly works concerning sustainability reporting practice. Still, evidence from the review pieces of the literature reveals that they have yet to address the role of board attributes in improving the disclosure of CSRP. Thus, this study fills this gap and contributes to the body of knowledge by studying the determining of the board attributes' roles in improving the CSRP among the listed Nigerian firms.

The following is a structured outline of the thesis. Research hypotheses, theoretical inferences, and a literature review followed the introduction. Following a discussion of the methods used in this study, the variables' empirical results according to the sample are presented. In the fourth section, we discuss and evaluate the results; in the fifth, we conclude and explore the ramifications of our analysis.

LITERATURE REVIEW

Companies all over the globe now use the Brundtland Report, published in 1987, as a springboard for their sustainability reports. This paper defined sustainability as "change that meets existing demands without jeopardising future peer groups' ability to meet their desires" (Keeble, 1988). This research stirs a long-slumbering behemoth among academics, experts, and scholars searching for a solution to the pressing global poverty crisis: the integration of evolving ESEG techniques. According to Zaernyuk et al. (2020), environmental improvement is not an inevitable endogenic consequence of increased economic growth.

The sustainability issue reached a turning point at the 1990 United Nations Conference on Sustainable Development in Rio de Janeiro, Brazil (Nahar et al., 2023). Documents about the Sustainable Development Goals, penned twenty years later, provide a comprehensive account of how the Rio + 20 conference redirected attention to sustainability concerns, how the Millennium Development Goals came to be, and how the final round of discussions focused on environmental and economic development while ensuring that corporations do not overlook social goals. The Global Reporting Initiative (GRI) 2013, which distinguishes between economic, social, environmental, and governance factors, defines business sustainability as becoming more crucial over time. Chang (2016) asserts that corporate sustainability is an approach that puts societal well-being first and includes concerns like worker safety, social justice, environmental preservation, product safety, company leadership, and community development. Developed and developing economies must prioritise financial sustainability (Atiya et al., 2021; Radhakrishnan et al., 2019; Purba and Yenny, 2017). Consequently, everyone should be interested in tactical improvements related to sustainability challenges (Adedeji et al., 2020; Ugwuanyi, 2016). Hence, stakeholders in a company can learn about that company's sustainability initiatives through corporate sustainability reporting (Moses et al., 2020; Utami, 2019).

Furthermore, according to Moses et al. (2020), companies use CSR to defend their actions by giving misleading information about sustainability through popular narratives. Therefore, stakeholders expect to demand more credible and transparent corporate sustainability reports that showcase the firm's capacity to overcome financial challenges, the efficacy of the board of directors, and the firm's actual sustainability commitments. This legislation raises the bar for such reports (Gatti et al., 2021). Conversely, research into the elements that affect sustainability disclosure has garnered interest from developed and developing countries (Al-Shaer and Zaman, 2016). Until this point, studies have mainly concentrated on the specific company characteristics' effects and board qualities (Moses et al., 2020; Nwude and Nwude, 2021; Bashiru et al., 2022; Kartika et al., 2023). It still needs to be determined how the elements above affect improving CSRP through governance attributes in Nigeria, and research in this field is only beginning (Bashiru et al., 2022). Therefore, it is critical to study the consequences of governance qualities on the state of sustainability reporting in corporations. As an additional contribution to the current literature, this study analyses the connection between governance aspects and CSR initiatives in developing nations like Nigeria.

Theoretical inferences and hypotheses development

Previous CSR research has studied the nature and motivations of corporate sustainability activities using various theoretical frameworks. Kumar et al. (2022) assert that a multi-theory approach is required to monitor CSR operations due to the complexity of understanding corporate sustainability disclosure. To regulate the impact of governance elements on CSRP, a quantitative analysis is conducted utilising stakeholder and legitimacy theories.

Stakeholder theory is helpful in this setting because it protects investors' interests, helps firms improve their sustainability disclosure procedures, and increases their linkages to other interested parties (Kumar et al., 2022). According to legitimacy theory (Martínez et al., 2022), companies need to adhere to societal norms to maintain their public image. According to Mamun et al. (2018), legitimacy theory highlights CSR disclosure procedures as a way for a company to show its commitment to social and environmental issues and influence how stakeholders view the company. This study examines the effect of board attributes on the sustainability reporting practices of Nigerian businesses, considering stakeholder and legitimacy theories. Board characteristics include independence, gender diversity, board size, and the existence of a CSR committee.

Board size and CSRP: Lin and Nguyen (2022) offer theoretical evidence and empirical ideas that maintain the quality of the research, adding to the ongoing study of board size and CSRP. According to Stakeholder Theory (ST), an inclusive board of directors boosts organisational fairness, encourages stakeholders to have a say in CSRP, and makes it easier for businesses to take an active role in decision-making (Friedman and Miles, 2002; Freeman and Evan, 1990). Having a giant board makes it easier to monitor CSR initiatives and improves communication with shareholders (Pucheta-Martínez and Gallego-Álvarez, 2019). Therefore, a good indicator of a company's operational expertise is the size of the board of directors (Bashiru et al., 2022). According to Bashiru et al. (2022), an efficient board of directors can push for better CSR implementation and sustainability disclosure standards.

Additionally, researchers such as Hussain et al. (2018) and Nwude and Nwude (2021) have also demonstrated a weak association between the size of the board and CSR initiatives. Despite diverse outcomes in the link between the two factors, Mustapha et al. (2020) found no substantial effect of board size on CSRP. However, many previous studies have shown a positive correlation (Bashiru et al., 2022; Pucheta-Martínez and Gallego-Álvarez, 2019; Nguyen et al., 2023). This study, therefore, proposes the following hypotheses:

H1: Board size is positively related to CSRP.

Board independence and CSRP: It is crucial to highlight the reputation of independent directors for achieving a significant role in board monitoring and connecting the company's policies to the advantages for stakeholders (Lin and Nguyen, 2022). Therefore, a need for board independence with a more active monitoring and supervision system helps the management increase their CSRP (Jizi and Nehme, 2018). According to stakeholder theory, more autonomous boards are in a better position to help bring all parties involved into harmony and improve CSRP through increased transparency and better coordination of efforts (Hussain et al., 2018). It backs up the claim by Javaid Lone et al. (2016) that an independent board can strengthen a company's CSR initiatives. The empirical evidence regarding the connection between board independence and CSRP is contradictory, with some studies finding a negative correlation (Akbas 2016; Pucheta-Martínez et al., 2019), others found no correlation at all (Chang et al., 2019), and still others finding a positive correlation (Lin and Nguyen, 2022; Mousa et al., 2018; Ahmad et al., 2017). Consequently, it is equally important to investigate and shed light on this connection. In light of this, the study postulates that:

H2: Board independence is positively related to CSRP.

Board gender diversity and CSRP: Gender diversity on boards improves CSRP, stakeholder interactions, and board governance (Simionescu et al., 2021). According to research by Pucheta-Martínez and Gallego-Álvarez (2019) and Issa et al. (2022), having female directors significantly influences BOGD's ability to promote excellent CSRP and increases board efficiency. Rashid (2018) often refers to legitimacy theory when explaining the gender gap and the breadth of CSRP. The presence of female directors encourages more CSRP efforts, which has a positive effect on social and environmental concerns, as Bannò et al. (2021) stated. The presence of female directors encourages more corporate social responsibility (CSR) efforts, which has a positive effect on social and environmental concerns, as Bannò et al. (2021) stated. Previous research has also discovered a favourable correlation between BOGD and CSRP (Naveed et al., 2021; Ben-Amar et al., 2017).

However, Glass et al. (2016) found that there was an inverse relationship between ESG disclosure and a higher proportion of female CEOs. Companies may improve their CSR activities and environmental policies with the support of proactive decisions, which are more prevalent among women (Moses et al., 2020). Conversely, no proof exists that more women on boards result in better CSRP (Suciu et al., 2021). Thus, the following are the hypotheses in this investigation:

H3: There is a positive relationship between board gender diversity and CSRP.

Board CSR committee and CSRP: An essential subject in governance qualities and CSRP committees, such as board CSR committees, can improve rules for CSR activities. That is according to Pucheta-Martínez and Gallego-Álvarez (2019). Al-Shaer and Zaman (2016) held the opinion that through board CSR committees, corporations demonstrate their concern for the reputation of the host communities regarding the economic, social, and environmental well-being of each. Consequentially, more meetings would lead to higher-quality CSRP if the board of directors established CSR committees (Pucheta-Martínez and Gallego-Álvarez, 2019). According to da Costa Tavares and Dias (2018), who used a stakeholder theory approach, companies establish CSR committees on boards to help fulfil stakeholders' demands and

interests in social responsibility and ensure that investors and all stakeholders are held accountable.
Similarly, Fuente et al. (2017) deduce that advanced CSRP is favourably allied with board CSR committees. Beyond that, Konadu (2017) shows that an organisation's willingness to disclose environmental information voluntarily and CSRP creativity is enhanced when a CSR committee is present on the board. Yet, prior research by Michelon and Parbonetti (2012) shows that the CSR committee's presence is only weakly correlated with CSRP. Thus, this study hypothesises as follows:
H4: There is a positive relationship between the board CSR committee and CSRP.

Control variables

This study uses several control factors to ensure that the results remain unchanged. Previous research in CSRP has also utilised these characteristics.
Company size: This variable denotes the firm's size. Rodriguez-Fernandez (2016) states that giant corporations are more likely to engage in CSRP. That is because these corporations contribute extra economic resources to the cost of CSRP, which are more visible in the community and subject to social pressure and inspection. According to several researchers Elijido-Ten and Tjan (2014), Bala et al. (2021), Pham et al. (2021) and Uwuigbe et al. (2018) gigantic corporations are more likely to be transparent about their CSRP wits when it comes to environmental and social concerns. However, according to Thomas et al. (2020), smaller businesses place less emphasis on CSR since they have a more localised view of social and environmental issues. Further, there was no statistically substantial connection between the size of a corporation and its dedication to environmental sustainability, according to de Villiers et al. (2014).
Age: According to Trencansky and Tsaparlidis (2014), the periods during which companies take these indices seriously correlate with the times when they intend to implement sustainability evaluation guides into their CSRP. Based on their findings, new policies take extended periods to implement at well-established companies rather than startups. For instance, Godos-Díez et al. (2014) and Basuony et al. (2014) discovered an encouraging association between a corporation's age and its CSRP. CSRP strategies are said to be better when there is a stronger focus on efficiency and pride in work. As with Trencansky and Tsaparlidis (2014) and Younis and Sundarakani (2020) discovered no connotation amongst a company's age, CSR score, or CSRP. Benjamin et al. (2017) found a favourable correlation between firm age and CSRP in their survey of Nigerian firms.
Leverage: This metric addresses the potential dangers of the establishment's financial obligations and ability to pay. The demands of creditors and other investors may force companies with larger debt loads to adopt stricter CSRP policies (Orazalin and Baydauletov, 2020). LEV remains predicated as the ratio of total debt to total assets. Understanding companies' debt levels and CSRP initiatives is vital, according to research by Chang et al. (2019). In addition, they mentioned that businesses with a lot of debt sometimes offer voluntary instructions to reduce spending and, consequently, investments. Past research by researchers like Yang and Lai (2021) and Nwude and Nwude (2021) has established a connection between financial leverage and CSR behaviours. However, research by Uwuigbe et al. (2018) shows a strong and negative correlation between the amount of financial leverage a company uses and its environmental disclosure.

METHODOLOGY

This research's population comprises all 168 companies that trade on the Nigerian Stock Exchange (NSE) (March 1, 2022). This research sample contains companies trading on the NSE by the end of 2021 and assessed by CSRHUB, a consensus rater across all economic, social, environmental, and governance (ESEG) sectors. It evaluates companies in these sectors for their massive global contributions to CSR. This study only uses the 34 listed financial sectors of Nigerian corporations as its sample because complete data from the other sectors between 2016 and 2021 is unavailable for this research. A balanced panel remained utilised to test the hypotheses; the samples were generated using purposive sampling. The final sample consisted of 34 companies with 204 firm-year observations from 2016 to 2021.
There has been a prior study that has focused on either the monetary or non-monetary sectors of a subset of Nigerian listed businesses (Kumo et al., 2023;

Uwuigbe et al., 2018; Orazalin and Baydauletov, 2017; Mohammed et al., 2016). Nevertheless, this research concentrates on publicly listed Nigerian corporations from all sectors that are financially classified and graded according to the global CSR consensus ranking. Therefore, we based our findings on publicly listed corporations' financial statements and annual reports. The interrelationships of our study's variables can be better understood with the help of descriptive statistics and multivariate panel regression analysis.

Variables measurement

Quantifying CSRP remained done using the unweighted disclosure index in this study. Consistent with previous work by Bashiru et al. (2022), Waheed et al. (2021), and Jamil et al. (2021), they employed the weightless disclosure index for CSRP measurement. We marked a "1" for every company whose annual report contained information about their CSRP and a "0" for any company whose report did not (Gujarati and Porter, 2009).

An organisation's CSR disclosure score is the sum of its sub-scores on the following dimensions: economics (14 points), socials (12 points), environment (15 points), and governance (15 points). Indexes remain computed using the additive and weightless interpretation grading system. All told, 56 CSR metrics were part of the disclosure index. Divide the company's values by the maximum possible score to get its overall score.

The four independent variables used in our study are Board Size (BDSZE), Independence (BDIND), Gender Diversity (BOGD), and CSR Committee, which represent different aspects of boards. In addition, we implemented operational control features like firm size, age, and leverage to eliminate bias. Quantifying BDSZE has already been attempted by scientists such as Ain et al. (2021), Issa et al. (2022), and Nwude and Nwude (2021) by enumerating the total number of members on board. In the same way, as Pavić Kramarić et al. computed BDSZE, the natural logarithm of the total board members' numbers was used (2018). Many scholars have looked at the percentage of independent non-executive directors relative to the total number of directors as an additional metric for board independence (Rashid, 2018; Nwude and Nwude, 2021; Jizi and Nehme 2018). The term BOGD stood out as the percentage of female directors relative to all board members in various studies (Ain et al., 2021; Chams and García-Blandón, 2019; Nwude and Nwude, 2021; Orazalin and Baydauletov, 2020). Nonetheless, to show that the CSR committee is there for transparency regarding sustainability issues, earlier studies like Dias et al. (2017), Fuente et al. (2017), Konadu (2017), and Velte and Stawinoga (2020) used a dummy variable to measure board CSR Committees (CSRC), assigning '1' when needed and '0' otherwise.

The control operating variables that makeup SZE were also determined by taking the natural logarithm of the firm's total assets (Ain et al., 2021; Malik et al., 2020). We used company age (AGE), the years a company has operated (Issa et al., 2022; Jam et al., 2010; Wu et al., 2020). One measure of financial health is leverage, which is calculated as total debt divided by total assets (Ain et al., 2021; Wu et al., 2020).

Model description

This study aims to assess the role of board attributes as predictors of CSRP over six years for listed financial firms in Nigeria. Hence, the study introduced a computation-based panel regression model:

$$CSRP_{it} = \beta_{0it} + \beta_1 BDZE_{it} + \beta_2 BDIND_{it} + \beta_3 BOGD_{it} + \beta_4 CSRC_{it} + \beta_5 SZE_{it} + \beta_6 AGE_{it} + \beta_7 LEV_{it} + \mu_{it} \quad \ldots \text{ i}$$

Where:

β_0 signifies the panel model regression's beta coefficient value.

β_1–β_7 show the beta values of the study's descriptive variables.

μ represents the term due to error in the regression model, i - signifies the number of companies, and t indicates the number of years. BDSZE = directors' number on the board, BDIND = proportion of independent directors, BOGD = ratio of feminine directors, CSRC = board CSR committees, SZE = corporations' size, AGE = duration of the company's existence, and LEV = the total debt or assets.

Table 1: Measurement of operational variables

Dependent Variables	Code	Measurement	Sources
Corporate Sustainability Reporting Practices	CSRP	The sustainability disclosure total is the sum of the subscores of CSR by firms.	Corporate sustainability or annual reports
Independent Variables			
Board size	BDSZE	The total amount of board members.	Annual report
Board Independence	BDIND	The proportion of non-executive board members to total board members.	Annual report
Board Gender Diversity	BOGD	Number of women on the board as a proportion of all board members	Annual report
Board CSR Committee	CSRC	The dummy variable takes '1' if the firm set up a CSR committee or '0' otherwise.	Velte and Stawinoga (2020), Dias et al. (2017)
Company Size	SZE	Estimated using the asset value's natural logarithm.	Annual account
Company Age	AGE	Time in business	Periodic report
Company Leverage	LEV	Measured as total debt to total assets.	Periodic report
μ		Error term	

FINDINGS

The results of the study's statistical analyses are multivariate regression, descriptive statistics, and Pearson correlation. Table 2 provides a statistical overview.

Based on the descriptive summary of figures for the existing variables in Table 2, it shows that a mean value of 11 directors serve on the boards of the financial sector firms assessed by CSRHUB. The number of board members might be as high as 22 and no lower than 4. Also, independent non-executive directors, on average, 4.5 members out of the maximum of 20, equally served on the company's boards of financial sector firms.

Table 2: Summary of descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
CSRP	204	0.320	0.046	0.000	0.375
BDSZE	204	11.500	3.889	4.000	22.000
BDIND	204	4.534	3.244	0.000	20.000
BOGD	204	17.800	11.668	0.000	44.444
CSRC	204	0.137	0.345	0.000	1.000
SZELOG	204	18.459	3.352	15.831	23.181
AGE	204	7.479	0.916	1.860	76.095
LEV	204	0.823	0.772	0.000	5.601

Since some firms have no autonomous non-executive directors, CSRP must increase to accommodate the giant board. Similarly, women account for about 17.8 percent of executive positions. While some corporations have no female directors, others have as many as 44% of female board members. Furthermore, on average, only 13.7% of the firms under consideration have CSR committees among the financial sector companies assessed by CSRHUB.

The average value of the SZE, when expressed as the natural log of total assets, is 18.46%. Simultaneously, the age of the ideal company varies widely (between 1.8 and 76 years of operation), with a mean of 7.5%. It's possible to extrapolate that 82.3% of financial industry trades employed LEV to support their processes, which might impact the general CSRP side by side. Therefore, if a company begins to rely more heavily on liability financing to run its operations, the CSRP may shift. It's worth noting that only 32% to 37% of financial services companies engage in CSR.

The Pearsons correlation of the study variables is presented in Table 3 below:

Table 3: Correlation analysis

Variables	1	2	3	4	5	6	7	8	VIF
CSRP	1.000								
BDSZE	0.528***	1.000							3.62
BDIND	0.165**	0.380***	1.000						2.19
BOGD	0.277***	0.162**	0.005	1.000					1.78
CSRC	0.084	0.294***	0.035	0.066	1.000				1.09
SZE	0.716***	0.646***	0.044	0.232***	0.398***	1.000			2.65
AGE	0.859***	0.361***	0.170**	0.187**	0.048	0.674***	1.000		1.31
LEV	0.305***	0.09	0.024	0.010	0.029	0.037	0.132*	1.000	1.82

Note: 0.000 ***, ** and * indicate, 1%, 5% and 10% significance levels, respectively.

The correlation matrices of the dependent and explanatory variables remain displayed in Table 3. The study found a positive association between CSRP and all four board attributes: BDSZE, BDIND, BOGD, and CSRC. The correlation matrices of the dependent and explanatory variables are displayed in Table 3. The study found a positive association between CSRP and all four board attributes: BDSZE, BDIND, BOGD, and CSRC. This data supports the idea that many CSR committees impact CSRP, a large proportion of independent directors, many board members, and women's engagement. SZE is equally favourably related to CSRP since larger corporations have more funds to implement CSR policies and approaches than smaller industries. Therefore, the firm's size influences the level of CSRP of financial sector corporations in Nigeria. In the same way, AGE and LEV also positively correlate with CSRP.

In addition, the explanatory factors are positively and statistically related. Control factors SZE, AGE, and LEV ultimately connect with all other variables. Therefore, we found no multicollinearity amongst the predictor variables, as shown in the correlation matrix, as the maximum connections among the variables are less than or equal to 0.86 (Naciti, 2019). Based on Hair et al. (2013) and Olive (2017), multicollinearity occurs if the value of the Variance Inflation Factor (VIF) is higher than the verge of 10. Thus, to better examine multicollinearity, the VIF indicates that all the values are within the tolerability threshold.

Multivariate regression results

The Breusch-Pagan/Cook-Weisberg test was performed to look for heteroscedasticity, and the results show that it is not present, which means that the results can be presented without fear of skewed statistical interpretation. Autocorrelation was also checked using the Wooldridge test, and the findings showed that it did not exist in the model, as seen in Table 4.0 below.

Table 4: Regression diagnostic test

Test		
Breusch -Pagan LM Test	Chibar 2(01)	*Prob* > Chibar2
	398.42	0.000
Cook -Weisberg: Heteroskedasticity	Chi2(1)	*Prob* > Chi2
	1.26	0.0261
Wooldridge Test for Autocorrelation	*F* (1, 33)	*Prob* > *F*
	7573.228	0.000

Thus, additional techniques were used to confirm the result of the ordinary lease square (OLS) model, which shows significant relations between most of the variables with CSRP. These models include the Panel Corrected Standard Errors (PCSEs) model that Beck and Katz (1995) presented. In the event of heteroskedasticity problems, the *p*-values for the model are less than the verge of 0.05 ($p < 0.05$). A Panel Corrected Standard Error (PCSE) could correct the heteroskedasticity problems. Accordingly, Beck and Katz (1995) suggested PCSE as the appropriate way to restore the panel data heteroskedasticity. Similarly, the Driscoll and Kraay Standard Error (SCC) model, innovated by Huber (1967) and revised by White (1980), was used to generate a more suitable robust standard error estimation for the research model, as suggested by Hoechle (2007). This study employed the PCSE and SCC.

Table 5: Multivariate regression analysis

Variables	OLS		PCSC		DRISCOLL/KRAAY	
	(Coeff.)	*t-Stat*	(Coeff.)	*z-Stat*	(Coeff.)	*t-Stat*
_CONS	-0.0002	-0.020	-0.0002	-0.030	-0.0002	-1.270
	0.983		0.980		0.212	
BDSZE	0.0023	4.450	0.0023	6.55	0.0023	13.060
	0.000***		0.000***		0.000***	
BDIND	-0.0004	-0.850	-0.0004	-1.340	-0.0004	-1.110
	0.399		0.18		0.275	
BOGD	0.0003	2.5000	0.0003	6.770	0.0003	5.690
	0.013**		0.000***		0.000***	
CSRC	-0.0102	-7.730	-0.0102	-7.730	-0.0102	-12.640
	0.000***		0.000***		0.000***	
SZE	0.0022	2.810	0.0022	7.190	0.0022	12.250
	0.005***		0.000***		0.000***	
AGE	0.0324	14.990	0.0324	23.790	0.0324	117.850
	0.000***		0.000***		0.000***	
LEV	0.0113	6.600	0.0113	22.150	0.0113	58.160
	0.000***		0.000***		0.000***	
N	204		204		204	
R2	0.8436		0.8436		0.8436	
Prob > Chi2	0.000		0.000		0.000	

Note: ***, **, and *indicate, 1%, 5%, and 10% significance levels, respectively.

Table 5 shows the various kinds of analysis, including OLS, PCSE, and SCC regressions employed for the study above. Nevertheless, as de Heus (2012) and Fairchild and MacKinnon (2009) postulate, the *R-square* value can be as low as 4.6%. The R-squared result from these models demonstrates the fitness of this study's models by showing that the explanatory variables account for 84.36% of the variance.

Discussion and results interpretations

Regression findings from the three models, OLS, PCSE, and SCC, are also quite similar. As a result, we elaborate on the Driscoll/Kraay, which shows that, at the 1% significance level (b = 0.0023, p = 0.000), the association coefficient between BDSZE and CSRP has a positive value. Since the number of directors affects CSRP, this finding supports hypothesis H1, which posits that more directors on the board are suitable for CSR. Finding a favourable and significantly associated relationship between BDSZE and CSRP, our results are comparable with those of Bashiru et al. (2022), Pucheta-Martínez and Gallego-Álvarez (2019), and Nguyen et al. (2023). As a bonus, the findings align with stakeholder theory, which holds that a giant board better influences CSRP. That, in turn, guarantees administrative justice and more proactive corporations. Nonetheless, this finding contradicts research showing a weak correlation between board size and CSRP, such as those of Hussain et al. (2018) and Nwude and Nwude (2021). Additionally, Mustapha et al. (2020) confirmed that CSRP was unaffected by board size.

The BDIND and CSRP coefficients for the SCC model are both negative and not strongly linked (b = -0.0004, p = 0.275) in Table 5, which means that hypothesis H2 can't be true. This discovery proves that CSRP is unaffected by the percentage of non-executive independent directors on the board among listed financial sector firms in Nigeria. According to several sources, Hörisch et al. (2020), Pucheta-Martínez et al. (2019), and Akbas (2016), there is a weak and unfavourable link between BDIND and CSRP. Although there is evidence linking BDIND with CSR Lin and Nguyen (2022) and Mousa et al. (2018), this conclusion contradicts stakeholder theory. According to stakeholder theory, independent directors can monitor oversight efforts and safeguard stakeholders' interests.

Additional evidence of the model's positive significance (b = 0.0003, p = 0.000) for BOGD and CSRP behaviours is shown in Table 5. This finding lends credence to hypothesis H3, which suggests that gender parity on boards does affect CSR policies and practices. Evidence from various studies, including those by Al-Jaifi et al. (2023), Ben-Amar et al. (2017), and Naveed et al., (2021) suggests a favourable correlation between BOGD and CSRP. Evidence from various studies, including those by Al-Jaifi et al. (2023), Ben-Amar et al. (2017), and Naveed et al. (2021) suggests a favourable correlation between BOGD and CSRP. This finding also supports the legitimacy theory, which states that good corporate governance requires female representation on corporate boards due to recent social and economic changes and widespread male domination. Suciu et al. (2021) and Glass et al. (2016) did not find any indication that CSRP and policies were better when more women were on boards.

Contrarily, at the 1% significance level, the link between CSRC and CSRP has an inversely significant coefficient value (b = -0.0102, *p* = 0.000). This outcome proves that CSRC has an unfavourable effect on the expected benefits of CSR initiatives. To rephrase, we find no evidence to support hypothesis H4 because, as the number of CSR committee members increases, the CSRP of the corporations in question decreases. Michelon and Parbonetti (2012) found a similar weak correlation between CSR committee presence and CSRP; our results are consistent with theirs. This finding contradicts stakeholder theory, which holds that companies establish CSR committees on the board to ensure that all stakeholders and investors are involved in corporate social responsibility initiatives (da Costa Tavares and Dias, 2018). This finding contradicts previous research by Konadu (2017) and Fuente et al. (2017), which found that a board CSR committee increases voluntary disclosure of environmental information and CSRP and that CSR committees are connected with advanced corporate transparency regarding sustainability.

Although the influence of the control variables on CSRP reduces the significance of the coefficient value (b = 0.0022, *p* = 0.000), the positive correlation between SZE and CSRP remains statistically significant. This research illustrates the impact of a company's asset size on its CSRP strategy. This result agrees with previous research by Pham et al. (2021), Bala et al. (2021), and Uwuigbe et al. (2018), which all state that larger companies are more forthcoming about their CSRP initiatives addressing social and environmental issues. Regarding the firm's age, Table 5 shows that CSRP is positively associated with AGE, with a significant coefficient at the 1-cent level (b = 0.0324, *p* = 0.000). According to Lin and Nguyen (2022) research, an organisation's environmental sustainability efforts will improve in tandem with its age. Previous studies, such as those by Al-Jaifi et al. (2023), Benjamin et al. (2017), and Basuony et al. (2014), have also demonstrated a positive link between firm age and CSRP. Our results support these conclusions. Based on Table 4 (b = 0.0113, *p* = 0.000), there is a statistically significant positive connection between LEV and CSRP. These results agree with previous research by groups like Bashiru et al. (2022) and Uwuigbe et al. (2018).

CONCLUDING REMARKS

This research employs multivariate regression analysis to investigate the role of board attributes in influencing the CSRP of Nigerian firms from 2016 to 2021. The study utilises a sample of 204 observations and tests four hypotheses on the effects of BDSZE, BDIND, BOGD, and CSRC variables and control variables such as SZE, AGE, and LEV on CSRP. The data used in the analysis is panel data from the annual accounts and reports of listed financial sector companies. Board attributes and other independent variables may favourably influence CSRP operations, in line with legitimacy and stakeholder theories, which are the theoretical underpinning for the study.

The results of the multivariate analysis show that the Board Size (BDSZE) and Board Gender Diversity (BOGD) of a corporation are significantly associated with the quality of its CSR efforts. Additionally, CSR activities are positively correlated with size (SZE), Age (AGE), and Leverage (LEV). These findings support the stakeholder and legitimacy theories, suggesting that as the stature of the board of directors grows, so does the importance placed on CSR initiatives. Furthermore, the study reveals that large corporations, with their long operating history and rich accumulated experience, make available more capital and offer an improved opportunity to appreciate fiscal discipline in increasing sustainability practices. According to the findings, CSRP is considered a strategic programme that can boost the company's reputation, strengthen ties to the community, and produce quantifiable results.

Nevertheless, statistically, negative and significant influences of the CSRC on CSRP were also revealed, indicating that the more board CSR committee members exist, the lower the CSRP. However, this study did not discover evidence that BDIND improves CSRP. The study's results lead us to believe that board attributes like BDSZE and BDGD, as well as control variables like SZE, AGE, and LEV, have a big impact on Nigeria's CSRHUB evaluations and evaluations of listed financial corporations.

Practical inferences and social implications

This study's findings should convince businesses that increasing the representation of women and other underrepresented groups on CSR boards is one way to hasten the adoption of sustainable development strategies. The number of years a company has been in business (AGE) and the level of expertise its employees have amassed influence how much a company implements sustainable practices. Finally, legislators and supervisory bodies might use the study's results to suggest a board attribute to implement a responsible CSR plan, benefiting society and the environment.

Suggestions for future study and limitations

Consideration should be given to a few substantial study limitations. The findings, which only involve Nigerian companies that CSRHUB has examined and rated, might only apply to some businesses that trade on the Nigerian Stock Exchange or to developing economies in Africa. Furthermore, the study only covers 2016–2021 since most Nigerian companies are not included in sovereign sustainability databases such as Thomson Reuters and the Dow Jones Sustainability Indices. Despite these caveats, the study did its best to analyse how a few board features could improve CSRP by scouring the company's annual financial report, publications, and websites. On the other hand, future studies may look into sustainability practices, economic conditions, and competition as possible predictors of CSRP. In this research, findings from the survey corroborate previous research showing that CSRP improves when women's representation on boards of directors increases. Companies with larger sizes, higher shares of debt financing their operations, and extended periods of operation all had superior CSRP policies.

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