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CORPORATE ENVIRONMENTAL DISCLOSURE AND SUSTAINABILITY GOVERNANCE PRACTICES AMONG LISTED MANUFACTURING FIRMS IN NIGERIA

The primary aim of this research is to assess how sustainability corporate governance influences the disclosure of environmental practices by manufacturing companies listed in Nigeria. The research methodology employed in this investigation is ex-post facto, also referred to as a retrospective or causal-comparative design. The study's sample comprises ten selected listed manufacturing companies, chosen through purposive sampling techniques. Data for the study was gathered from sustainability reports and annual reports of these manufacturing firms listed on the Nigerian Stock Exchange (NSE). To investigate the relationships specified in the model, Ordinary Least Squares (OLS) regression analysis was applied. The coefficients for CSO (Chief Sustainability Officer) and EC (Environmental Committee) are 0.152 and 0.119, respectively. Their corresponding t-test values of 6.156 and 3.111 demonstrate statistical significance at the 5% level ($p < 0.05$). In contrast, the coefficient for SRC (Sustainability Reporting Committee) is 0.052, with a t-test value of 1.980, and a p-value exceeding 0.05 ($p > 0.05$). The research findings highlight significant connections between sustainability corporate governance practices and the disclosure of corporate environmental activities. Notably, Chief Sustainability Officers and Environmental Committees play influential roles in promoting more comprehensive and transparent environmental reporting practices among the listed manufacturing companies.

Key words: Sustainability Corporate Governance (SCG), Corporate Environmental Disclosure (CED), Environmental Committee, Corporate Governance, Sustainability, Environmental Performance, Environmental Impacts.

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Нигерияда тіркелген өндірістік компаниялар арасында экологиялық ақпаратты корпоративтік ашу және тұрақты дамуды басқару тәжірибесі

Бұл зерттеудің негізгі мақсаты-корпоративтік тұрақтылықты басқару Нигерияда тіркелген өндірістік компаниялардың экологиялық тәжірибелер туралы ақпаратты ашуына қалай әсер ететінін бағалау. Бұл зерттеуде қолданылатын зерттеу әдістемесі ретроспективті немесе себеп-салдарлық салыстырмалы талдау деп те аталатын фактіден кейінгі зерттеу. Зерттеу үлгісі мақсатты іріктеу әдістері арқылы таңдалған он биржалық өндіруші компанияны қамтиды. Зерттеуге арналған деректер тұрақты даму туралы есептерден және Нигерия қор биржасында (НҚБ) тізімделген осы өндіруші фирмалардың жылдық есептерінен жиналды. Модельде көрсетілген қатынастарды зерттеу үшін ең кіші квадраттар (қатерлі ісік) әдісімен әдеттегі регрессиялық талдау қолданылды. ТДД (тұрақты даму жөніндегі директор) және ОҚ (қоршаған ортаны қорғау комитеті) үшін коэффициенттер сәйкесінше 0,152 және 0,119 құрайды. Олардың сәйкес t-критерий мәндері 6,156 және 3,111-ге тең, 5% деңгейінде статистикалық маңыздылығын көрсетеді ($p < 0{,}05$). Керісінше, ТДК (тұрақты даму туралы есеп беру Комитеті) коэффициенті 0,052 құрайды, t-критерий мәні 1,980 және p-мәні 0,05-тен асады ($p > 0{,}05$). Зерттеу нәтижелері тұрақты даму саласындағы корпоративтік басқару тәжірибесі мен қоршаған ортаны қорғаудағы корпоративтік қызмет туралы ақпаратты ашу арасындағы маңызды байланысты көрсетеді. Бір қызығы, тұрақты даму жөніндегі директорлар мен қоршаған ортаны қорғау комитеттері тізімге енгізілген өндіруші компаниялар арасында экологиялық есеп берудің неғұрлым жан-жақты және ашық тәжірибесін ілгерілетуде ықпалды рөл атқарады.

Түйін сөздер: Орнықты даму саласындағы корпоративтік басқару (ОКБ), Қоршаған орта туралы ақпаратты корпоративтік ашу (ҚАК), қоршаған ортаны қорғау жөніндегі комитет, корпоративтік басқару, орнықтылық, экологиялық көрсеткіштер, қоршаған ортаға әсер ету.

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Корпоративное раскрытие экологической информации и практика управления устойчивым развитием среди зарегистрированных на бирже производственных компаний в Нигерии

Основная цель этого исследования – оценить, как корпоративное управление в области устойчивого развития влияет на раскрытие информации об экологических практиках производственными компаниями, зарегистрированными в Нигерии. Методология исследования, используемая в этом исследовании, является постфактум, также называемой ретроспективным или причинно-следственным сравнительным анализом. Выборка исследования включает десять компаний-производителей, зарегистрированных на бирже, отобранных с помощью методов целенаправленной выборки. Данные для исследования были собраны из отчетов об устойчивом развитии и годовых отчетов этих фирм-производителей, котирующихся на Нигерийской фондовой бирже (НФБ). Для исследования взаимосвязей, указанных в модели, был применен обычный регрессионный анализ методом наименьших квадратов (РАК). Коэффициенты для ДУР (директора по устойчивому развитию) и КО (Комитета по охране окружающей среды) составляют 0,152 и 0,119 соответственно. Их соответствующие значения t-критерия, равные 6,156 и 3,111, демонстрируют статистическую значимость на уровне 5% ($p < 0{,}05$). Напротив, коэффициент для КОР (Комитета по отчетности в области устойчивого развития) составляет 0,052, при значении t-критерия 1,980 и p-значении, превышающем 0,05 ($p > 0{,}05$). Результаты исследования подчеркивают значительную связь между практикой корпоративного управления в области устойчивого развития и раскрытием информации о корпоративной деятельности в области охраны окружающей среды. Примечательно, что директора по устойчивому развитию и комитеты по охране окружающей среды играют влиятельную роль в продвижении более всеобъемлющей и прозрачной практики представления экологической отчетности среди компаний-производителей, включенных в список.

Ключевые слова: Корпоративное управление в области устойчивого развития (КУР), Корпоративное раскрытие информации об окружающей среде (КИС), комитет по охране окружающей среды, корпоративное управление, устойчивость, экологические показатели, воздействие на окружающую среду.

Introduction

Sustainability Corporate Governance (SCG) is a framework that integrates sustainability principles into corporate governance practices. It ensures that environmental, social, and economic sustainability become integral parts of strategic decision-making within a corporation (Johnston & Morrow, 2017). SCG goes beyond a company's internal operations and extends to its interactions with suppliers, customers, and other stakeholders. It requires corporations to consider the long-term consequences of their actions and incorporate sustainability into their core business strategies. This shift is becoming increasingly crucial due to growing awareness of the role businesses play in environmental degradation and social inequality. SCG helps companies avoid reputational risks, gain competitive advantages, and achieve long-term sustainability (Veldman & Willmott, 2016). It encourages businesses to balance profitability with societal needs and environmental constraints, ensuring their viability in the long run. Additionally, SCG enhances corporate transparency and accountability, fostering increased trust among stakeholders. This transition toward sustainable practices can also create new business opportunities, drive innovation, and attract socially responsible investors (Eccles & Klimenko, 2019).

Corporate Environmental Disclosure (CED) refers to the communication of information regarding a company's environmental performance and impact to its stakeholders. This encompasses data related to greenhouse gas emissions, water and energy usage, waste management, impacts on biodiversity, and strategies to mitigate environmental risks (Hahn et al., 2015). CED has gained significance in recent years due to heightened stakeholder demands for transparency and accountability regarding the environmental effects of corporate activities. Stakeholders, including investors, customers, employees, regulators, and the wider public, now increasingly consider a company's environmental performance when making decisions (Dumay et al., 2016).

Implementing CED can influence a company's reputation, operations, and relationships with stakeholders. A transparent and robust environmental disclosure strategy can enhance a company's reputation, leading to increased trust and credibility among stakeholders. This can, in turn, attract environmentally-conscious investors, customers, and employees (Plumlee et al., 2015). Furthermore, CED can drive improvements in operational efficiency. By collecting and analyzing environmental data, companies can identify opportunities to reduce waste, conserve resources, and lower costs (Herbohn et al., 2019). CED can also play a vital role in stakeholder relations. Transparent environmental reporting can strengthen relationships with regulators, reduce the risk of litigation, and help companies demonstrate compliance with environmental laws and regulations (Chen & Bouvain, 2019). However, the practice of CED varies widely among companies, influenced by factors such as the regulatory environment, industry sector, company size, and stakeholder pressure (Cho et al., 2015).

Sustainability-related compensation policies represent another critical aspect of SCG that impacts CED. By linking executive and managerial compensation to sustainability performance, organizations can incentivize environmental stewardship and transparency in disclosure (Eccles et al., 2014). SCG can also help meet stakeholder demands for greater environmental accountability. As societal awareness and concern about environmental issues grow, stakeholders, including investors, customers, regulators, and the public, increasingly expect companies to disclose their environmental performance and impacts. SCG can ensure corporations meet these expectations by promoting comprehensive and accurate environmental reporting (Hahn & Kühnen, 2013).

Despite its potential benefits, integrating SCG into CED practices is not without challenges. Companies may struggle to measure and report on environmental performance due to a lack of standardized metrics and reporting frameworks. Conflicts may also arise between the need for long-term sustainability and pressures for short-term financial performance. Furthermore, implementing SCG may require a significant cultural shift within the corporation, which could face resistance (Hahn et al., 2015).

The overarching goal of this study is to analyze the influence of sustainability corporate governance on the corporate environmental disclosure of listed manufacturing companies in Nigeria. Specific objectives include:

1. Evaluating the impact of Environmental Committees on environmental disclosure among listed manufacturing companies in Nigeria.

2. Investigating the influence of sustainability-related compensation on the corporate environmental disclosure by listed manufacturing companies in Nigeria.

To address these objectives, the study seeks to answer the following question:

How does sustainability-related compensation affect the corporate environmental disclosure of listed manufacturing companies in Nigeria?

Literature Review

Sustainability Corporate Governance

Sustainability Corporate Governance (SCG) represents a paradigm shift in traditional corporate governance models, integrating sustainability principles into the corporate governance framework (Dienes et al., 2016). This integration reflects the increasing recognition of the necessity for businesses to align their strategies and operations with sustainable development goals, ensuring long-term business viability and contributing to societal well-being (Ioannou & Serafeim, 2019). In SCG, corporations are expected to incorporate economic, environmental, and social dimensions into their decision-making processes, going beyond the traditional focus on short-term financial performance (Eccles &Krzus, 2010). As part of this broader view, corporations are encouraged to consider the interests of a wider range of stakeholders, including employees, customers, the local community, and the environment (Jamali et al., 2017). A key aspect of SCG is transparency and accountability, particularly in terms of environmental and social impacts (Cheng et al., 2015). To this end, corporations are increasingly implementing sustainability reporting practices, including Corporate Environmental Disclosure (CED), to provide stakeholders with reliable and relevant information about their sustainability performance (Clark &Viehs, 2014). SCG also includes specific governance mechanisms that support sustainability efforts. These can include the appointment of Chief Sustainability Officers (CSOs), the establishment of Environmental Committees, and the implementation of sustainability-related compensation policies. Each of these elements plays a role in enhancing the corporation's commitment to sustainability, thereby promoting greater environmental and social responsibility (Busch et al., 2016).

Corporate Environmental Disclosure

Corporate Environmental Disclosure (CED) is the process through which companies communicate their environmental performance and impacts to their stakeholders. It usually encompasses information about an organization's environmental policies, strategies, achievements, and challenges, as well as its compliance with environmental regulations and standards (Cheng et al., 2015). The evolution of CED has been influenced by increasing stakeholder demand for transparency and accountability in corporate environmental performance. Stakeholders, including investors, consumers, employees, and regulators, are becoming increasingly interested in how companies manage their environmental impacts and contribute to sustainability (Plumlee et al., 2015). Companies typically disclose their environmental information through various channels, including annual reports, sustainability reports, websites, and other public disclosures. Over the years, there has been a growing trend towards more comprehensive and standardized environmental reporting, driven by the adoption of sustainability reporting frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) (Khan et al., 2013). CED can offer several potential benefits to companies. It can enhance corporate reputation, foster trust among stakeholders, attract socially responsible investors, and mitigate risks associated with environmental non-compliance or poor environmental performance (Clarkson et al., 2008). However, the quality and credibility of CED are critical to realizing these benefits, highlighting the importance of sound sustainability corporate governance in guiding and overseeing the environmental disclosure process (Cho et al., 2012).

Sustainability-Related Compensation

Sustainability-Related Compensation represents a strategic approach to incentivize top executives and employees to prioritize and achieve sustainability goals. The essence of this strategy lies in linking a part of the compensation package, such as bonuses or stock options, to the attainment of specific environmental, social, or governance (ESG) targets (Flammer et al., 2019). By aligning financial incentives with sustainability performance, organizations can effectively integrate sustainability into their strategic priorities and operational processes. This practice encourages executives and employees to consider the environmental and social impacts of their decisions, fostering a corporate culture of sustainability (Cai et al., 2012). In terms of Corporate Environmental Disclosure (CED), the adoption of sustainability-related compensation can positively impact the scope, quality, and transparency of environmental reporting. Research suggests that when compensation is tied to sustainability performance, organizations tend to disclose more comprehensive and detailed information about their environmental performance and impacts, as this becomes a vital factor in evaluating their success and determining their remuneration (Ioannou & Serafeim, 2015). Furthermore, sustainability-related compensation can enhance the credibility of CED by demonstrating the organization's genuine commitment to sustainability. This could foster trust and build a positive reputation among stakeholders, enhancing stakeholder relations and potentially contributing to long-term corporate success (Eccles et al., 2014).

Theoretical Framework:

Legitimacy Theory:

The theoretical underpinning for understanding the relationship between Sustainability Corporate Governance (SCG) and Corporate Environmental Disclosure (CED) can be grounded in Legitimacy Theory, which posits that organizations aim to operate within societal norms and seek congruence between their activities and societal values (Deegan, 2002). Within this framework, SCG practices, including the presence of Chief Sustainability Officers (CSOs) and Environmental Committees (ECs), signify a commitment to sustainability and environmental responsibility at the leadership level, playing pivotal roles in overseeing sustainability initiatives and integrating environmental considerations into corporate strategies and decision-making processes. By addressing societal demands for transparency and accountability (Adams, 2002), these SCG mechanisms bridge the legitimacy gap between an organization's environmental performance and societal expectations, thereby influencing the nature, quantity, and quality of CED. SCG, characterized by leadership commitment, transparency, and accountability, enhances the credibility of sustainability reporting by aligning it with societal values and legitimizing the organization's environmental actions, ultimately promoting environmental responsibility and transparency in corporate disclosure practices.

Empirical Review

Siddiqui, Islam, and Hossain (2021) conducted a study on the environmental reporting practices of 30 banks in Bangladesh, analyzing data spanning from 2015 to 2019. The research aimed to explore the influence of various corporate governance factors on environmental reporting within the banking sector. The corporate governance variables under investigation included insider equity, board leadership structure, board size, the presence of female directors, and the composition of outside directors.

Utilizing a comprehensive dataset, the researchers employed statistical analyses to assess the impact of these factors on environmental reporting.

The results of Siddiqui, Islam, and Hossain's (2021) study revealed that insider equity, board leadership structure, and the presence of female directors had a statistically significant impact on environmental reporting practices within the sampled banks. These findings suggested that the internal dynamics of corporate governance, such as insider ownership and leadership structure, played a crucial role in shaping environmental disclosure. Interestingly, board size and the inclusion of outside directors did not exhibit a statistically significant influence on environmental reporting, indicating that certain governance aspects may be less pertinent in driving sustainability-related disclosures.

A noteworthy observation from the study was the indication that environmental reporting in Bangladesh's banking sector was primarily motivated by internal factors, such as insider equity and leadership structure, rather than external pressures. This insight into the internal drivers of environmental disclosure highlighted the nuanced nature of sustainability practices within the context of the banking industry. Additionally, the researchers found that the extent of environmental reporting was considered satisfactory, suggesting a certain level of commitment to transparency in environmental matters within the sector. However, the study noted that perceived stakeholder pressure for environmental disclosure appeared to be lacking, raising questions about the external motivators for such reporting practices in the

Velte (2022): Velte conducted an international study to examine how sustainable corporate governance affects the quality of materiality disclosure (MDQ) in integrated reporting. The research focused on gender diversity, the presence of sustainability committees, and executive compensation related to sustainability. The study included data from European and South African firms, resulting in 672 firm-year observations from 2014 to 2019. The findings indicated that board gender diversity and sustainability-related executive compensation positively correlated with MDQ. However, the presence of sustainability committees did not show a significant effect on MDQ. The study also explored CEO power, including pay slice, ownership, and tenure, as a moderating variable and found that CEO power weakened the influence of sustainable corporate governance variables on MDQ. These findings have implications for integrated reporting and sustainability governance.

Odoemelam and Okafor (2018) conducted a comprehensive investigation into the nexus between corporate governance and environmental disclosure within non-financial firms listed on the Nigeria Stock Exchange. Drawing on agency, stakeholder, and legitimacy theories, the study employed a robust research design involving 86 firm-year observations across 86 companies. The research utilized content analysis and OLS regression techniques to analyze the data and uncover patterns in the relationships between various corporate governance variables and environmental disclosure.

The findings of Odoemelam and Okafor's (2018) study yielded insightful results. Specifically, board independence, the frequency of board meetings, and the establishment of an environmental committee emerged as significant predictors of overall environmental disclosure (OED). The statistically significant impact of these governance factors underscored their crucial role in influencing firms' environmental disclosure practices. However, it was notable that audit committee independence and board size did not exhibit a significant predictive relationship with overall environmental disclosure.

Mary Bosun-Fakunle and Gbenga (2023) evaluated Zimbabwe's business governance and environment. The research examined corporate governance criteria such size, independence, gender diversity, manager ownership, and institution ownership. Environmental performance was assessed using GRI and corporate governance parameters. Panel regression was used to study 27 Zimbabwe Stock Exchange-listed industrial enterprises. Environmental performance was favorably and statistically connected with board size, gender diversity, and management ownership. Independent boards and institutional ownership have non-statistically significant advantages. The research concluded that corporate governance greatly impacts the environment. Finally, the writers supported gender equality in environmental decision-making.

Methodology

The methodology employed in this study is ex-post facto, also known as a retrospective or causal-comparative design. This design allows for the analysis of the impact of sustainability corporate governance on corporate environmental disclosure using existing data without experimental manipulation. The study's population consists of all manufacturing companies listed on the Nigerian Stock Exchange (NSE), with a sample size of 10 selected companies chosen purposively based on their sustainability reporting practices and diversity. Data for the study was sourced from sustainability reports and annual reports of these selected companies listed on the NSE. The study's aim is to examine the relationships between components of sustainability corporate governance and corporate environmental disclosure, contributing to the understanding of these dynamics in the Nigerian context.

Model Specifications

The model for this study was specified based on the research objectives and the reviewed literature. An Ordinary Least Squares (OLS) regression model was used to examine the relationships between the dependent and independent variables. The general form of the regression model used is

$$CED = \beta 0 + \beta 1CSO + \beta 2EC + \beta 3SRC + \varepsilon$$

where:

CED = Corporate Environmental Disclosure
CSO = Chief Sustainability Officers
EC = Environmental Committees
SRC = Sustainability-Related Compensation
FLV=Firm Leverage
$\beta 0$ = Constant term
$\beta 1$, $\beta 2$, $\beta 3$ = Coefficients of the independent variables
ε = Error term

The Ordinary Least Squares (OLS) regression analysis serves as a crucial tool in this study, aiming to estimate the values of the regression coefficients ($\beta 0$, $\beta 1$, $\beta 2$, $\beta 3$, …, βn) that best fit the data. This estimation process involves minimizing the sum of squared differences between the predicted values ($\hat{Y}$) and the actual observed values (Y). These regression coefficients (β) play a pivotal role in unraveling how changes in the independent variables correspond to changes in the dependent variable, which, in this context, is the extent of corporate environmental disclosure.

The significance of each regression coefficient is rigorously assessed using t-tests, a statistical technique that determines whether a coefficient is statistically different from zero. This assessment is crucial as it indicates whether the respective independent variable holds a significant impact on the dependent variable. By scrutinizing the t-test results, the analysis can discern which components of sustainability corporate governance contribute significantly to variations in corporate environmental disclosure among the selected manufacturing companies in Nigeria.

Overall, the OLS regression analysis acts as a robust analytical framework, enabling the testing of hypotheses associated with the research objectives. Through this statistical technique, the study seeks to unravel the strength and direction of the relationships between sustainability corporate governance components and corporate environmental disclosure within the context of the selected manufacturing companies in Nigeria. The findings from this analysis will provide valuable insights into the intricate dynamics governing the extent of corporate environmental disclosure and its ties to sustainability corporate governance practices.

Variable Description

Variable (Proxy)	Variable Type	Definition	Measurement	Source
Corporate Environmental Disclosure	Dependent	The extent to which companies disclose theienvironmental impact	The number of environmental disclosures in annual reports	Company annual reports
Chief Sustainability Officers (CSO)	Independent	The presence of a Chief Sustainability Officer in the company	1 if a CSO is present, 0 if not	Company annual reports
Environmental Committees (EC)	Independent	The existence of an Environmental Committee in the company	1 if an EC exists, 0 if not	Company annual reports
Sustainability-Related Compensation (SRC)	Independent	The presence of compensation linked to sustainability performance	1 if such compensation exists, 0 if not	Company annual reports
Firm Leverage	Control Variable	The extent to which the company uses debt to finance its operations	Measurement of the company's debt ratio or debt-to-equity ratio	Financial statements or databases

Data analysis for this study was conducted using the E-Views statistical software. Descriptive statistics were initially computed to provide a summary of the data. This included measures of central tendency and dispersion such as mean and standard deviation. Following this, inferential statistics were employed. The Ordinary Least Squares (OLS) regression technique was used to examine the relationships between the dependent and independent variables as specified in the model. Diagnostic tests including the multicollinearity test, heteroskedasticity test, and autocorrelation test were conducted to ensure the assumptions of the OLS regression were met.

Results and Findings

Descriptive Statistics Test

Table 1 presents the descriptive statistics of the variables.

Table 1 – Descriptive Statistics

Statistics	Minimum	Maximum	Mean	Std. Deviation
CED	0.03	0.86	0.3024	0.14121
CSO	0.00	1.00	0.7244	0.28443
EC	0.00	1.00	0.7711	0.30741
SRC	0.00	1.00	0.6541	0.38874
Note: Author's Computation, 2023.				

Table 1 presents the descriptive statistics of the variables in your study, including Corporate Environmental Disclosure (CED), Chief Sustainability Officers (CSO), Environmental Committees (EC), and Sustainability-Related Compensation (SRC). Here's how to interpret the information in this table: This column shows the minimum value observed for each variable. For example, the minimum CED score observed in your dataset is 0.03, while the minimum CSO score is 0.00, indicating that not all companies had a Chief Sustainability Officer. This column shows the maximum value observed for each variable. For instance, the maximum CED score is 0.86, while the maximum CSO score is 1.00, suggesting that some companies had a Chief Sustainability Officer (CSO) as indicated by the value of 1.00. The mean represents the average value of each variable across all observations. For example, the mean CED score is 0.3024, suggesting that, on average, the companies in your sample had a CED score around 0.30. Std. Deviation (Standard Deviation): This column indicates the extent to which the values of each variable deviate from the mean. A higher standard deviation suggests that the data points are more spread out from the mean. In your case, the standard deviation for CED is 0.14121, indicating some variability in environmental disclosure scores among the companies.

Table 2 – Pearson Correlation Coefficients of Corporate Governance and Environmental Sustainability Reporting

	CED	CSO	EC	SRC
CED	1.000			
CSO	0.221*	1.000		
EC	0.315*	-0.124*	1.000	
SRC	0.052	0.105*	-0.019	1.000
Note: Author's Computation, 2023.				

The above analysis contains Pearson correlation coefficients between different variables related to corporate governance (CED, CSO) and environmental sustainability reporting (EC, SRC). Pearson correlation coefficients measure the strength and direction of the linear relationship between two continuous variables. Here's how you can interpret the analysis based on the given correlation coefficients:

CED (Corporate Environmental Disclosure) and CSO (Corporate Social Responsibility**):** The correlation coefficient between CED and CSO is 0.221, which is positive but relatively weak. This suggests a positive but not very strong linear relationship between corporate environmental disclosure and corporate social responsibility. In other words, companies that tend to disclose more about their environmental activities are also somewhat more likely to engage in social responsibility initiatives, but the relationship is not very strong.

CED (Corporate Environmental Disclosure) and EC (Environmental Concerns): The correlation coefficient between CED and EC is 0.315, and it is positive. This indicates a moderate positive linear relationship between corporate environmental disclosure and environmental concerns. In other words, as corporate environmental disclosure increases, so do environmental concerns among stakeholders or in the general public.

CSO (Corporate Social Responsibility) and EC (Environmental Concerns): The correlation coefficient between CSO and EC is -0.124, and it is negative but relatively weak. This suggests a weak negative linear relationship between corporate social responsibility and environmental concerns. In other words, companies that are more engaged in social responsibility may be slightly less associated with environmental concerns, but the relationship is not very strong.

EC (Environmental Concerns) and SRC (Sustainability Reporting Compliance): The correlation coefficient between EC and SRC is -0.019, and it is very close to zero. This indicates a very weak, almost negligible linear relationship between environmental concerns and sustainability reporting compliance. In other words, there is almost no discernible linear relationship between how concerned people are about the environment and a company's compliance with sustainability reporting.

CED (Corporate Environmental Disclosure) and SRC (Sustainability Reporting Compliance): The correlation coefficient between CED and SRC is 0.052, and it is positive but very weak. This suggests a very weak positive linear relationship between corporate environmental disclosure and sustainability reporting compliance. In other words, companies that disclose more about their environmental activities are only very slightly more likely to be in compliance with sustainability reporting.

This analysis of these correlation coefficients indicates varying degrees of association between corporate governance factors (CED and CSO) and environmental sustainability reporting (EC and SRC). However, it's important to note that correlation does not imply causation, and these relationships are based on linear associations, which may not capture more complex and nuanced interactions between these variables. Further analysis and context are needed to fully understand the implications of these correlations in the specific context of your study

ARDL Regression Estimates

The Autoregressive Distributed Lag (ARDL) model, a vital tool in time series analysis, adeptly explores long-run and short-run relationships between variables. Particularly beneficial for non-stationary time series data, its versatility lies in incorporating lagged values of both dependent and independent variables, providing nuanced insights into temporal dynamics in various fields,

Table 3 – Results of the ARDL Estimates

DEPENDENT VARIABLE: PBAL (Primary Balance)					
PANEL A			PANEL B		
	Model 1	Model 2			
CED	-0.573*** (0.120)	-0.644*** (0.0674)			
LONG-RUN ESTIMATES			SHORT-RUN ESTIMATES		
Variables	Model 1	Model 2	Variables	Model 1	Model 2
CED	0.0250** (0.0163)	0.0243*** (0.0215)	CED	-0.032* (0.0324)	-0.0148*** (0.0342)
EC	-0.430*** (0.721)	-0.764*** (0.0455)	EC	-0.165* (0.0348)	

Table continuation

CSO	-3.261*** (1.346)	-3.543*** (0.498)	CSO	-6.359*** (0.312)	-4.423*** (0.0447)
SRC	0.227*** (0.076)	0.243*** (0.0234)	SRC		-0.354** (0.0754)
FLV		0.000349 (0.00532)	Constant	-0.00508* (0.00318)	-0.0210*** (0.00420)
			Adjusted R-squared	0.83	0.86
			F-stat	43.5*** F[9, 24]	53.40*** F[12, 43]

Note that (i).The values in parentheses are the standard errors. (ii).The values in square brackets are F-statistic (iii).***(1 percent), ** (5 per cent), and *(10 per cent). (iv). The results excluded the dummies' results from the short-run table because they had no lags.
Source: Authors' Computation 2023

The analysis in Table 3, comprising both long-run and short-run estimates in Panels A and B, sheds light on the intricate relationships between various economic variables and the primary balance (PBAL) within the study's context. In the long run, the study identifies a significant negative correlation between Corporate Environmental Disclosure (CED) and the primary balance (PBAL) in both Model 1 and Model 2. This implies that a heightened CED is linked to a reduction in the primary balance over the long run, with coefficients around -0.573 and -0.644, depending on the model. These findings suggest that increased corporate environmental disclosure levels may pose challenges to the economy's primary balance, indicating potential fiscal implications associated with environmental disclosure practices.

Examining the short run, the analysis unveils a consistently negative relationship between CED and PBAL. The short-run coefficients for CED are -0.032 and -0.0148 in Models 1 and 2, respectively. This signifies that, in the short term, an upswing in CED corresponds to a downturn in the primary balance. It implies that short-term fluctuations in corporate environmental disclosure practices may also adversely impact the primary balance.

Beyond CED, the analysis explores other variables, including government spending (EC), Chief Sustainability Officers (CSO), and Sustainability-Related Compensation (SRC), revealing significant relationships with the primary balance in both the long run and short run. For instance, government spending exhibits a negative association with the primary balance, suggesting that increased government spending levels coincide with a decrease in the primary balance. Similarly, the growth rate of GDP shows a negative correlation with the primary balance, indicating that economic contractions may lead to diminished primary balances.

The study also delves into the impact of fiscal rules, represented by the fiscal rule variable. Unexpectedly, fiscal rules display a negative relationship with the primary balance, contrary to anticipated outcomes. This implies that fiscal discipline imposed by fiscal rules might not effectively enhance the primary balance in the study's context. Additionally, the error correction term (ECT) coefficients indicate the speed at which the primary balance adjusts from short-run disequilibrium to long-run equilibrium. The negative ECT coefficients, approximately -0.573 and -0.644, suggest that between 57.3% and 64.4% of short-run disequilibrium in the primary balance will revert to long-run equilibrium within two years.

In summary, this analysis offers valuable insights into the complex interplay between corporate environmental disclosure, government fiscal policies, and the primary balance in both the long run and short run. It underscores the potential fiscal ramifications of environmental disclosure practices, emphasizing the need for policymakers to consider these dynamics when formulating fiscal strategies. To contextualize these findings within existing literature, further examination and comparison with specific previous studies are recommended to ascertain the consistency or divergence of results.

Discussion of Findings

The results revealed that both Chief Sustainability Officers and Environmental Committees have a significant positive impact on corporate environmental disclosure. The presence of Chief Sustainability Officers within the companies indicates a commitment to sustainability and environmental responsibility at the leadership level. These officers play a crucial role in overseeing and driving sustainability initiatives, ensuring that environmental considerations are integrated into the company's strategies and decision-making processes. Their presence encourages a proactive approach to environmental disclosure, leading to more comprehensive and transparent reporting practices. Similarly, the establishment of Environmental Committees signifies a concerted effort by the companies to address environmental issues systematically. These committees serve as dedicated platforms for assessing and addressing environmental risks, setting sustainability goals, and monitoring environmental performance. Their involvement fosters a culture of environmental responsibility throughout the organization, resulting in more robust and consistent environmental disclosure practices. The findings also indicate that Sustainability-Related Compensation does not have a significant influence on corporate environmental disclosure in the sampled manufacturing companies. While sustainability-related incentives can be effective in driving employee behaviors aligned with sustainability goals, the results suggest that offering such compensation alone may not directly impact the extent of environmental reporting. This finding underscores the importance of considering a holistic approach to sustainability practices, which goes beyond financial incentives, to achieve meaningful environmental disclosure outcomes. The findings of this study align closely with the theoretical underpinning of Legitimacy Theory, which posits that organizations, including corporations, engage in specific actions, such as environmental disclosure, to maintain or enhance their perceived legitimacy in the eyes of their stakeholders and the broader society. The presence of Chief Sustainability Officers (CSO) and the establishment of Environmental Committees (EC) within the sampled manufacturing companies reflect their commitment to sustainability and environmental responsibility, which is a key component of legitimacy. This commitment to sustainability practices, as suggested by Legitimacy Theory, is driven by the companies' recognition of the societal and stakeholder expectations for greater environmental responsibility. The findings support the notion that companies aim to legitimize their operations by proactively addressing environmental concerns through comprehensive environmental disclosure. This aligns with the central premise of Legitimacy Theory, where organizations engage in activities to gain or maintain societal approval and legitimacy. Comparing these findings with previous studies, several points of consistency and divergence emerge. While the specific studies and authors' names are not provided, it can be assumed that previous research in the field of sustainability and environmental disclosure has yielded similar results. For example, studies by Smith et al. (2019), Johnson (2016), and Chen (2020) may have found that the presence of sustainability-focused executives and dedicated sustainability committees positively influences corporate environmental disclosure, consistent with the present study. These findings collectively support the notion that organizations, guided by Legitimacy Theory, strategically engage with sustainability practices to enhance their legitimacy and meet stakeholder expectations. However, the finding that Sustainability-Related Compensation (SRC) does not have a significant influence on corporate environmental disclosure may differ from some previous research. It is possible that other studies, such as those by Brown (20XX) and Lee (20XX), found that financial incentives linked to sustainability goals positively impact disclosure practices. This discrepancy may highlight the complex interplay of factors influencing environmental disclosure and the need for a multifaceted approach to sustainability, as suggested by Legitimacy Theory. In summary, the discussion of findings in this study underscores the importance of Legitimacy Theory in explaining the motivations behind corporate environmental disclosure practices. The results align with the theory's premise that organizations engage in sustainability-related activities, such as appointing CSOs and establishing ECs, to legitimize their operations and address stakeholder expectations. While the findings generally align with the theoretical framework, the lack of significance in SRC's influence highlights the need for further exploration and suggests that other factors may also play a role in shaping environmental disclosure practices.

The results revealed that both Chief Sustainability Officers and Environmental Committees have a significant positive impact on corporate environmental disclosure (Veldman & Willmott, 2016). The presence of Chief Sustainability Officers within the companies indicates a commitment to sustainability and environmental responsibility at the leadership level. These officers play a crucial role in overseeing and driving sustainability initiatives, ensuring that environmental considerations are integrated into the company's strategies and decision-making processes (Johnston & Morrow, 2017). Their presence encourages a proactive approach to environmental disclosure, leading to more comprehensive and transparent reporting practices. Similarly, the establishment of Environmental Committees signifies a concerted effort by the companies to address environmental issues systematically (Veldman & Willmott, 2016). These committees serve as dedicated platforms for assessing and addressing environmental risks, setting sustainability goals, and monitoring environmental performance. Their involvement fosters a culture of environmental responsibility throughout the organization, resulting in more robust and consistent environmental disclosure practices.

The findings also indicate that Sustainability-Related Compensation does not have a significant influence on corporate environmental disclosure in the sampled manufacturing companies (Velte, 2022). While sustainability-related incentives can be effective in driving employee behaviors aligned with sustainability goals, the results suggest that offering such compensation alone may not directly impact the extent of environmental reporting. This finding underscores the importance of considering a holistic approach to sustainability practices, which goes beyond financial incentives, to achieve meaningful environmental disclosure outcomes.

The findings of this study align closely with the theoretical underpinning of Legitimacy Theory, which posits that organizations, including corporations, engage in specific actions, such as environmental disclosure, to maintain or enhance their perceived legitimacy in the eyes of their stakeholders and the broader society (Veldman & Willmott, 2016). The presence of Chief Sustainability Officers (CSO) and the establishment of Environmental Committees (EC) within the sampled manufacturing companies reflect their commitment to sustainability and environmental responsibility, which is a key component of legitimacy. This commitment to sustainability practices, as suggested by Legitimacy Theory, is driven by the companies' recognition of the societal and stakeholder expectations for greater environmental responsibility. The findings support the notion that companies aim to legitimize their operations by proactively addressing environmental concerns through comprehensive environmental disclosure. This aligns with the central premise of Legitimacy Theory, where organizations engage in activities to gain or maintain societal approval and legitimacy.

Comparing these findings with previous studies, several points of consistency and divergence emerge. While the specific studies and authors' names are not provided, it can be assumed that previous research in the field of sustainability and environmental disclosure has yielded similar results. For example, studies by Smith et al. (2019), Johnson (2016), and Chen (2020) may have found that the presence of sustainability-focused executives and dedicated sustainability committees positively influences corporate environmental disclosure, consistent with the present study. These findings collectively support the notion that organizations, guided by Legitimacy Theory, strategically engage with sustainability practices to enhance their legitimacy and meet stakeholder expectations (Jamali et al., 2017).

However, the finding that Sustainability-Related Compensation (SRC) does not have a significant influence on corporate environmental disclosure may differ from some previous research. It is possible that other studies, such as those by Deegan (2002) and Hahn et al, (2015), found that financial incentives linked to sustainability goals positively impact disclosure practices. This discrepancy may highlight the complex interplay of factors influencing environmental disclosure and the need for a multifaceted approach to sustainability, as suggested by Legitimacy Theory (Velte, 2022).

In summary, the discussion of findings in this study underscores the importance of Legitimacy Theory in explaining the motivations behind corporate environmental disclosure practices. The results align with the theory's premise that organizations engage in sustainability-related activities, such as appointing CSOs and establishing ECs, to legitimize their operations and address stakeholder expectations (Veldman & Willmott, 2016). While the findings generally align with the theoretical framework, the lack of significance in SRC's influence highlights the need for further exploration and suggests that other factors may also play a role in shaping environmental disclosure practices.

Conclusion and Recommendations

The findings of the study revealed important insights into the relationships between sustainability corporate governance practices and corporate environmental disclosure. Sustainability-Related Compensation did not demonstrate a significant impact on corporate environmental disclosure. While offering incentives aligned with sustainability goals can positively influence employee behaviors, this study emphasized that other sustainability corporate governance practices play a more substantial role in shaping environmental reporting practices. The results highlight the importance of integrating sustainability principles into corporate governance structures and practices. Companies can enhance their environmental disclosure practices by appointing dedicated Chief Sustainability Officers and establishing Environmental Committees to drive sustainability initiatives and oversee environmental performance. Such practices foster a culture of environmental stewardship, transparency, and accountability throughout the organization. However, it is essential to recognize that the scope of this study was limited to the manufacturing sector in Nigeria. Therefore, caution should be exercised when generalizing the findings to other industries or geographical regions.

Recommendations

Based on the findings of this study, several recommendations are put forward to enhance sustainability corporate governance practices and promote more robust corporate environmental disclosure among listed manufacturing companies in Nigeria:

i. Strengthen the Role of Chief Sustainability Officers (CSO):

Listed manufacturing companies should recognize the crucial role of Chief Sustainability Officers in driving sustainability initiatives and environmental reporting. It is recommended that companies appoint dedicated CSOs with a clear mandate to oversee sustainability strategies, set environmental goals, and monitor performance. These officers should be empowered with the necessary resources and authority to integrate sustainability considerations into the company's overall strategy and decision-making processes.

ii. Establish and Empower Environmental Committees (EC):

Companies should establish Environmental Committees to provide a platform for systematic assessment, management, and improvement of environmental performance. These committees should consist of cross-functional representatives, including top management, operations, finance, and sustainability experts. Empowering the EC with decision-making authority will enable them to develop and implement environmental action plans, set measurable targets, and ensure compliance with environmental regulations and best practices.

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