

BOARD INDEPENDENCE AS A MODERATOR BETWEEN SUSTAINABILITY REPORTING AND CORPORATE VALUE: EVIDENCE FROM LISTED INDUSTRIAL GOODS COMPANIES IN NIGERIA

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Abstract

The motivation for this study stems from growing concerns about the weak value relevance of sustainability reporting in emerging markets and the need for effective governance mechanisms to enhance stakeholder confidence. This study examined sustainability reporting, board independence and corporate value of listed industrial goods companies in Nigeria. An ex-post facto research design was employed using secondary data from annual reports of sampled listed industrial goods companies for the period 2013–2024. Corporate value was proxied by Price-to-Book Value (PBV), while sustainability reporting was disaggregated into environmental, social, and economic disclosure. Board independence served as the moderating variable, with firm leverage, size, and age as controls. Data were analyzed using the Random-Effects regression model. The results reveal that environmental sustainability reporting has a significant negative relationship with corporate value, implying that such activities may be perceived as cost inducing rather than value creating. Economic SR shows a significant positive relationship, whereas social SR is insignificant. Board independence exerts a strong positive and significant influence on corporate value, indicating that governance structures enhance investors' confidence in sustainability practices. The study contributes to corporate governance literature by demonstrating that board independence strengthens the value relevance of sustainability disclosures in Nigeria's industrial goods sector. It recommends among others that firms improve board composition and transparency to foster sustainable value creation.

Keywords: Board independence, sustainability reporting, corporate value.

P-ISSN: 2315-9391 AJAF June 2026, 10(1)18-32

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1. Introduction

Corporate financial reporting is the medium through which entities communicate to the external parties about their operational performance in terms of responsibility, efficiency and profitability for informed decision. Financial reporting constitutes a combination of qualitative and quantitative financial information, which are referred to as a company's bill of health. Various stakeholders take their decisions relative to a company's performance and position based on the information supplied by it in its annual reports and accounts.

Corporate value remains a central focus for stakeholders, investors, and management, as it encapsulates a firm's financial health, growth potential, and long-term sustainability. In an increasingly competitive and environmentally conscious global market, the determinants of corporate value have evolved beyond traditional financial metrics to encompass non-financial indicators such as sustainability reporting. For listed industrial goods firms in Nigeria, which play a vital role in the nation's industrialization and economic development due to its role in providing input materials to other economic sectors. Although sustainability reporting is still voluntary in Nigeria, but the strategic integration of sustainability practices into corporate operations has become economic imperative.

Sustainability reporting, which entails the disclosure of environmental, social, and economic initiatives has gained prominence for firms to enhance transparency, attract socially responsible investors, and improve long-term corporate value (Akhtar et al., 2023; Olayemi & Ogunleye, 2022). Sustainability reporting impact firms directly in cost and risk reduction, while indirectly in competitive advantages. Firms stand to be more attractive to investors by engaging in sustainability reporting.

However, the effectiveness of sustainability reporting in driving corporate value may be contingent on internal governance structures, particularly board independence. Independent directors are presumed to offer objective oversight, limit managerial opportunism, and ensure that sustainability disclosures align with stakeholder interests and long-term corporate strategy (Uwuigbe et al., 2021; Li et al., 2022). Their presence on the board is therefore posited to moderate the relationship between sustainability reporting and corporate value, either by strengthening the credibility of sustainability disclosures or by influencing the strategic emphasis placed on such initiatives.

Among the major providers of sustainability reporting guidance, is the Global Reporting Initiative (GRI). The GRI's sustainability reporting framework are the most adopted frameworks for sustainability reporting worldwide. In 2018, the GRI together with the United corporate actions towards achieving the United Nations Sustainable Development Goals (SDGs).

Nations Global Compact (UNGC) established a collaborative initiative aimed at empowering The SDGs have been introduced in 2015 by the United Nations as part of the 2030 Agenda for Sustainable Development aimed to provide a framework for institutions and organizations to work towards a more sustainable world (United Nations, 2015). The initiative has enabled companies to incorporate sustainable development goals into their existing business and reporting processes. Financial reporting on the sustainable development goals should integrate the GRI Standards and the UN Global Compact Communication on Progress (Global Reporting Initiative 2018). This would Contribute to the achievement of the SDGs, thereby assisting companies to achieve sustainable development in different areas (Kuzey & Uyar 2017; Moldavska and Welo 2019), and succeed in the short and long term (Agarwal 2013).

Success often breeds complacency. When a company becomes overly focused on achieving its business objectives, it risks neglecting broader social and environmental responsibilities. This can result in excessive environmental degradation, deviations from corporate regulations, and

compromises to employee safety (Whetman, 2017). Global challenges such as climate change due to greenhouse gas emission and resource depletion couple with social inequality and poverty have prompted a shift towards promoting sustainable business practices (Karaman et al. 2018). Concerns about how modern corporate entities support sustainable economic growth globally have necessitated the use of sustainability reports to efficiently communicate with stakeholders, build the corporate reputation, and defend its social status (Lewa, et al. 2024; Orazalin et al. 2019).

However, the impact of sustainability reporting on corporate value remains inconsistent across different studies, partly due to variations in corporate governance structures, particularly board independence. While sustainability reporting is intended to improve corporate transparency and investor confidence, its effect on corporate value may be contingent on the degree of moderating role of board independence. Independent boards, which are less influenced by internal management, could potentially strengthen the positive relationship between sustainability reporting and firm value by enhancing oversight and accountability. However, empirical evidence on the moderating role of board independence remains limited and mixed. While sustainability reporting and its impact on corporate value are well-studied, the role of independent boards as a potential moderator is relatively underexplored. By examining this dynamic, this study aims to address this gap by examining how board independence moderates the relationship between sustainability reporting and firm value, specifically in listed industrial goods firms in Nigeria.

The main objective of the study is to examine the moderating effect of board independence on the relationship between sustainability reporting and corporate value of listed industrial goods firm in Nigeria. However, the study is to achieve the following specific objectives; To examine the relationship between sustainability reporting (environmental, social and economic disclosure) and price to book value ratio of listed industrial goods companies in Nigeria, to examine the relationship between board independence and price to book value ratio of listed industrial goods in Nigeria; and to examine the moderating effect of board independence on the relationship between sustainability reporting and price to book value ratio of listed industrial goods companies in Nigeria.

2. Literature Review and hypotheses development

2.1 Concept of Sustainability

Sustainability has been defined by various stakeholders; Brundtland, (1987), defined sustainability as the development that meets the need of the present without compromising the future generations to meet their own needs. The United Nations (2015), defined sustainability as the ability to the meet the need of the present without compromising the ability of future generations to meet their own needs encompassing environmental, social and economic dimensions. These definitions highlight the interconnectedness for the environmental, social and economic aspects in achieving sustainability goals. These definition emphases on the meeting the social, economic and environmental needs of the present whereas preserving the future generation needs.

Sen (2000) approach to sustainability emphasizes the importance of ensuring that the capabilities and freedoms of individuals are preserved across generations. Sen (2000) argues that sustainability is about expanding people's choices and improving human well-being in a manner that is equitable for future generations. Similarly, Ekins (2003), views sustainability through a multi-capital lens, which includes natural, human, social, and manufactured capital. Goodland (1995), defines sustainability as the maintenance of ecosystem services and functions, arguing that the primary goal should be to maintain the earth's biophysical systems. These definitions focus on maintaining or enhancing these forms of capital over time to ensure

long-term sustainability also highlighting the importance of integrating ecological system into economic and social planning.

2.2 Sustainability Reporting

The concept of sustainability reporting has been viewed by various stakeholders. But it can be inferred from their definitions that they all focused on the dimensions of sustainability which are economic, environmental, social and governance. The prominent among which is the Global Reporting Initiative (GRI), which was created in 1997 by the Boston-based non-profit Ceres and the Tellus Institute, with the purpose of developing global standards. According to GRI (2013), sustainability reporting is the practice of measuring, disclosing and being accountable for organizational performance while working toward the goal of sustainable development.

Also, GRI (2023), defines sustainability reporting as the practice of measuring and disclosing an organization's environmental, social, and economic performance. Similarly, Onyinye and Amakor (2019), Sustainability reporting is a systematic tool for putting together and presenting sustainability information needed for the process of management, and is also useful to stakeholders. These definitions highlight the need for reporting beyond the traditional financial reporting as well as working towards sustainable development by integrating environmental, economic, social and governance initiatives.

In addition, Dincer et al (2023) defined sustainability as the information that companies provide about their impact to the outside world on a regular basis in a structured way on sustainability topics, spanning environmental, social, and governance parameters. These definitions, however advanced from concentrating only on environmental, social and economic issues to focusing on the interdependence on governance factors. It also enables organizations to be transparent about their impacts on sustainable development and helps stakeholders understand non-financial factors that influence corporate value.

2.3 Corporate value

Corporate value typically refers to the overall worth of a company, often measured by its market capitalization, assets, revenue, and other factors. Aswath (2017) defines corporate value as the value that a company has to its shareholders, determined by its ability to generate cash flows and growth over time. Similarly, Fred and Forest (2019) viewed corporate value as the sum total of a company's assets, liabilities, and intangible assets, such as brand reputation and intellectual property, which contribute to its market position and competitiveness. Furthermore, Harvard Business Review (2011) defined corporate value as the long-term sustainable value creation for stakeholders, achieved through effective governance, strategic management, and responsible business practices. According to Investopedia (2013), corporate value is the total value of a company's assets, including both tangible and intangible assets. These definitions show how entities create value not just for shareholders, but also for the society at large. It also encourages entities to integrate social issues into their core strategies. In addition, the CFA Institute (2015), viewed corporate value as the value that accrues to the equity shareholders of a corporation that results from the organization's ability to earn a rate of return on its investments that is greater than the cost of those investments. Corporate value can also be the value that a company has after considering its liabilities and assets (Financial Times Lexicon, 2022).

2.4 Board independence

Board of directors represent the organization's external stakeholders and act as a crucial liaison, subordinating stakeholder's interests (Asongu & De Moor, 2017). The boards of directors appointed as agent to direct and control the firms as well as communicate the affairs of the organisation to the shareholders. According to Alzoubi, (2014), the board of directors are

agents performing the monitoring role on behalf of the shareholders and has the major responsibilities to lead and direct the firm in order to attain corporate goals through closely monitoring the management mechanisms and shielding the interest of shareholders. The board is considered the most effective corporate governance mechanism in the management of corporate activities to increase value. The presence of effective board ensures the presence of effective alignment of both managers' and owners' interests to actualize the shareholders' wealth maximization so that the earnings are similar among every shareholder of the same firm (Alzoubi, 2014).

Board independence plays a critical role in corporate governance, particularly in driving sustainability reporting and creating long-term value. Independent directors bring objectivity to decision-making processes, ensuring that environmental, social, and governance (ESG) issues are integrated into the firm's strategy (Anyigbah et al, 2023).

2.5 Board Independence and Sustainability Reporting

Corporate governance plays an integral part in an overall wellbeing of organizations; therefore, its governance should impact its value. The positive relationship between board independence and sustainability reporting supports theoretical contentions that independent directors possess a responsibility for a broader variety of stakeholders which allows them to put more pressure on reporting firms' sustainability (Gharbi & Othmani, 2022). According to Lewa et al. (2024), the existence of more independent directors improves SR disclosure as well as safeguarding minority interests the TBL prominence is necessitated by independent directors being more than one-third of the board (Carvajal et al. 2023). Furthermore, board independence encourages efficient oversight, impartial decision making and adherence to rules and regulations (Quraishi et al. 2020), thereby improving social, environmental and economic disclosures. This support the idea that the boards should be independent and bureaucratic for it to be impartial in decisions making thereby subordinating the interests of all parties, hence sustainability reporting (Khairuddine et al. 2020).

Research reveals a link between board independence and sustainability reporting. For instance, Kwarteng et al., (2023) study the influence of board mechanisms on sustainability performance of listed firms in sub-Saharan Africa for the period 2010–2019. The study employed a two-step system generalized method of moments (GMM) estimation technique to test the hypothesised relationships among the variables. The results indicate that a positive and significant relationship exists between board independence and sustainability performance of firms in sub-Saharan Africa.

Similarly, Oba & Fodio (2012), examined how board characteristics interact with the quality of environmental reporting and concluded that all the investigated board independence shows insignificant impact on SR except for gender mix were ascertained to have significant impact on environmental reporting. Furthermore, Janggu et al, (2014) study revealed that composition of independent directors does not have significant influence on sustainability disclosure. This indicate that independent board is not significant motivator of sustainability reporting. In contrast, Alnabsha et al., (2018) found that independent directors had a negative effect on sustainability (environmental) performance since the independent directors were profoundly appointed based on social networks instead of people's capability. Also, Tamoi et al. (2014), examined CG and better SR in Malaysia. The study found that independent directors do not have a significant influence on sustainability disclosure. These studies shows that independent directors do not significantly influence sustainability disclosures implying that simply increasing board independence may not directly lead to better sustainability reporting. Similarly, Ferrell et al., (2016) findings shows that firms with strong governance structures (board independence) are more likely to engage in sustainable practices. Despite the mixed

results from the previous studies, Nguyen et al (2021), suggests that increasing the proportion of independent board members is considered a positive development that may enhance pressure on corporate entities to engage in sustainability-friendly initiative as well as sustainability reporting.

2.6 Board Independence and Corporate value

Board independence, measured by the proportion of non-executive to executive directors, is linked to corporate value. A higher percentage of independent directors allows for more effective monitoring of management which might lead to better decision-making and alignment of the firm's goals with shareholder interests. Board of directors play a significant role in enhancing corporate value. The board has the task to ensure that managers use the organisation's resources to maximize shareholders' value. In addition, the board of directors is also expected to facilitate and monitor the effectiveness of management to ensure compliance and to prevent unlawful and improper conduct.

However, the fact that more independent board members may limit disagreement in decision-making remain a subject for debate. The two schools of thought in CG research Agency theory and stewardship theory, hold opposing opinions on the issue of whether board independence affects business performance (Tariqul Islam & Aminul Islam, 2022). Ibrahim et al. (2023), study revealed that board independence had Positive and significant relationship with firm value measured by Tobin's Q among listed Nigerian industrial goods firms. Similarly, Naseem et al. (2021), study shows that independent board increases firm value through better earnings quality and reduced agency costs. Agency theory holds that; independent directors can exercise oversight function toward resolving management and shareholder agency disagreements.

Furthermore, Olayinka (2022), study document that board independence positively influences market-based performance. The study shows that independent directors could fosters stronger governance frameworks and provide better monitoring against managerial opportunism. Board independence positively influences market-based performance; independent directors provide better monitoring against managerial opportunism.

2.7 Sustainability Reporting and Corporate value

Empirical studies show mixed results on the relationship between sustainability reporting and corporate value. However, studies such Illiemen et al. (2023) and Dincer et al. (2023) demonstrate that sustainability reporting has a positive impact on corporate value, especially when measured by market performance proxies like Tobin's Q and Return on Assets (ROA). These studies argue that firms engaged in sustainability practices are better at gaining market recognition, which in turn enhances their corporate value. Other studies suggest long-term benefits for firms engaging in sustainability activities, including cost and risk reduction, and the development of competitive advantage. However, while sustainability disclosures may have a positive influence on share price, impliedly, non-disclosures or poor sustainability reporting can negatively affect it.

In contrast, Emeka-Nwokeji and Osioma (2019), states that both environmental and governance disclosures were able to explain variation in firm value measured using the Tobin's q, but the relationship between social disclosure and firm value was negative but insignificant. This indicates that adding sustainability disclosures in the stock price model increased the explanatory power of the model. On the other hand, the explanatory model with market return as dependent variable increases when the non-financial variables were added, this variable include the sustainability report. This study shows that non-financial factors are to be considered in determining corporate value.

Furthermore, Ogochukwu and Ofoegbu, (2022), revealed that environmental performance disclosure has a negative but insignificant effect on shareholder's wealth maximization. This shows that increase in environmental disclosure brings about a decrease in economic value of firms, while less environmental disclosure brings about an increase in economic value firm. Also, Garcia et al (2017), analyze whether financial performance of Brazilian listed companies is associated with environmental, social and corporate governance performance, however the study revealed that financial performance is negative and significantly related to environmental performance of the companies. The negative sign of the association also indicated that companies with the best environmental performance tend to be less profitable. The study of Zraqat (2019), demonstrates positive impact of SR on corporate value. The study used two different measures of firm value, namely share price and market returns. Additionally, Emeka-Nwokeji and Osisoma (2019) examined whether environmental, social and governance disclosures impact firm value, the study shows that the relationship between social disclosure and firm value was negative but insignificant. Similarly, Oyindamola and Seini (2022), posit that social disclosures will lead to a corresponding increase in corporate value (share price) while non-disclosure will negatively impact corporate value. Similarly, Swarnapali and Le (2018), posit that sustainability information disclosure may prove costly to a firm in the short-run but it provides many benefits over the long-run. By engaging in sustainability activities, a firm enjoys a set of direct and indirect benefits. A firm benefit directly in the shape of cost and risk reduction, while indirectly in the way of competitive advantages, subsequently corporate value. Studies on sustainability reporting and corporate value were conducted globally. A lot has been documented by different researchers and the result conflicts. Dincer et al. (2023) study the Nexus between Sustainability Reporting and Firm Performance: Considering Industry Groups, Accounting, and Market Measures relationship between Sustainability Reporting and corporate financial performance. The impact of sustainability reporting is investigated using pooled ordinary least square (OLS) method for panel data regression through two models based on Tobin's Q and ROA. A total of 920 observations for 46 companies with 3 different impact levels based on their environmental effect and 5-year quarterly panel data, 2016–2020. The research used data from Bursa Istanbul (Istanbul Stock Exchange) and also independent variables such as leverage, risk, size, current ratio, growth, sustainability reporting, and the environmental impact level of companies.

The study by Dincer et al (2023), is based on Turkish companies listed on the Istanbul Stock Exchange, whereas the current study focused on Nigerian industrial goods firms. The regulatory frameworks, economic conditions, and corporate governance structures in Nigeria and Turkey differ significantly. Therefore, applying findings from a Turkish context to Nigerian firms might not directly align with the reality in Nigeria. Also, Alsayegh et al. (2020) examined the environmental, social, and governance (ESG) disclosure on corporate sustainability performance (economic, environmental and social; EES) framework among Asian firms from 2005 to 2017. The results also showed that environmental performance and social performance are significantly positively related to economic sustainable performance, indicating that the corporation's economic value and creating value for society are interdependent.

Alsayegh et al. (2020) study focuses on Asian firms, which may have different governance structures, regulatory frameworks, and market dynamics compared to Nigeria. While their findings are relevant for understanding general trends in corporate sustainability, their conclusions might not fully apply to the Nigerian context, where corporate governance challenges, especially in terms of board independence, differ due to varying economic, political, and institutional environments.

Similarly, Tri and Ismawati (2018) examined the effect of three disclosure dimensions of Sustainability Reporting (SR) to firm performance in India using ROA and Tobin's Q. The three dimensions of SR consist of economic dimension, environment dimension, and social dimension. The sample of the study comprised of 60 listed companies in IDX in 2014-2017, in mining and metal and food processing industries. The sampling method is purposive sampling. The results show two dimensions of SR (economic dimension and social dimension) has positive and significant impact on market value (Tobin's Q) but not on book value (ROA).

The studies by Tri and Ismawati (2018), focus on companies from India. This region and industries (mining, metal and food processing) may differ significantly from industrial goods firms in Nigeria. Differences in economic environments, governance structures, and market characteristics might limit the applicability of their findings to Nigeria. This study provides more context-specific insights for Nigeria, which could offer more relevant policy recommendations.

Dzugwahi and Hilda (2024), examined the effect of sustainability reporting on financial performance of listed non-financial firms in Nigeria. The study examined the effect of economic sustainability reporting, social sustainability reporting, and governance sustainability reporting on financial performance of 82 listed non-financial firms in Nigeria for the period 2012 to 2021. Financial performance was proxied by ROA and is measured as a ratio of net profit (after interest, taxes and preference dividend) to Shareholders' assets. The study underpinned legitimacy and stakeholder theories. Multiple regression was used for the analysis. The study found that SR has positive and significant effect on ROA. Dzugwahi and Hilda (2024) examines non-financial firms while this research focuses on industrial goods firms. Industrial goods firms may exhibit different dynamics in terms of sustainability efforts and their impact on corporate value, given the sector's capital-intensive nature and environmental impact.

Three theories are found relevant to this study these include; Agency theory, Resource dependency theory and Stakeholders theory. Agency theory was initially propounded by economist Jensen et al (1976) in their seminal paper titled "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," published in 1976. Agency theory can relate to sustainability in several ways which include; Alignment of Interests: In the context of sustainability, agency theory suggests that when the interests of principals and agents are aligned, there's a greater likelihood of pursuing sustainable practices. Managers might prioritize long-term sustainability goals if they are incentives to do so by shareholders who value sustainability. Also, when there's a misalignment of interests, such as when managers prioritize short-term profits over long-term sustainability, agency costs can arise.

Secondly, Resource dependency theory was primarily developed by Jeffrey Pfeffer and Gerald R. Salancik in the late 1970s. Their book "The External Control of Organizations: A Resource Dependence Perspective" published in 1978 laid out the foundational concepts of the theory. Resource dependency theory is relevant in sustainability in various ways such as Sustainability initiatives which often aim to mitigate resource scarcity by promoting more efficient use of resources. Also, the theory helps organizations understand the risks associated with relying on scarce resources and encourages them to diversify their resource base to ensure continuity in operations. Similarly, Barnett, (2008), posit that Sustainability is fundamentally about ensuring the long-term viability of organizations, ecosystems, and society as a whole. Resource dependency theory provides insights into how organizations can strategically manage their dependencies on external resources to enhance their resilience and longevity in the face of environmental and social challenges.

Lastly, The Stakeholders' theory pioneered by Freeman in 1984. Freeman (1984) defined stakeholders as any group or individual who can affect or is affected by the achievement of the organization's objectives. Unlike the agency theory, where managers are working for the shareholders, Stakeholders theory suggest that managers in organization have a network of relationship to serve which include suppliers, employees, host community, legislatures, financial analyst, press etc. The stakeholders' theory plays a crucial role in sustainability and corporate value. By engaging stakeholders, organizations can gather valuable insight into the environmental, social and economic issues that matters most to them. This input helps in shaping sustainability strategies, initiatives and reporting frameworks, which in turn can improve corporate reputation and enhance corporate value. This can attract investors and foster long-term relationship with customers and communities. According to the stakeholder theory, companies need to fulfill the expectations of diverse stakeholders, not only by disclosing financial, but also non-financial information (Dincer, et al. 2023).

The following hypotheses were formulated to guide the study; H₀₁: Sustainability reporting (environmental {a}, social {b} and economic {c} disclosures) does not have any significant relationship with price to book value ratio of listed industrial goods firms in Nigeria; H₀₂: Board independence does not have any significant relationship with the price to book value ratio of listed industrial goods firms in Nigeria; H₀₃: Board independence does not have any significant effect on moderating the relationship between sustainability reporting (environmental {a}, social {b} and economic {c} disclosure) and price to book value ratio of listed industrial goods firms in Nigeria.

3. Methodology

This study employed Expo facto quantitative research design. Ex post facto research design is suitable because the relied on historical data. The study population comprises the thirteen listed industrial goods firms in Nigeria. The sample comprises industrial goods firms that have complete data for 12 years. Using secondary data from the annual reports of thirteen (13) sampled listed industrial goods firms for the period of twelve years (2013–2024). Corporate value was proxied by Price-to-Book Value (PBV), while sustainability reporting was disaggregated into environmental, social, and economic disclosure. Board independence served as the moderating variable, with firm leverage, size, and age as control variables. Data were analyzed using regression model.

4. Results and discussion

Table 1: Descriptive Statistics (Obs=156)

Variables	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
PBV	0.7621	0.0725	0.56	0.93	-0.3858	3.3984
EVD	0.5549	0.1015	0.325	0.756	-0.0951	2.2824
SOD	0.6636	0.1321	0.368	0.947	0.2076	2.3381
ECD	0.0967	0.0293	0.03	0.17	0.3651	3.0431
BIND	0.6717	0.0643	0.528	0.814	-0.2075	2.2639
FLV	0.3881	0.1086	0.12	0.63	-0.3725	2.7683
FSZ	22.4749	2.9320	17.13	26.58	-0.4608	1.9746
FAG	30.9359	12.5244	1	50	-0.8365	2.6508

CHAPTER 1 Source: Researcher's computation (2025).

Note: PBV= Price to Book Value; EVD=Environmental Disclosure; SOD=Social Disclosure; ECD=Economic Disclosure; BIND=Board Independence; FLV=Firm Leverage; FSZ=Firm Size, FAG=Firm Age.

Based on the descriptive statistics presented in Table 1, the mean value of Price to Book Value (PBV) among the listed industrial goods firms in Nigeria is 0.7621. The PBV variable ranges from a minimum of 0.56 to a maximum of 0.93, with a standard deviation of 0.0725, indicating a relatively narrow variation in price to book value across the sampled firms.

Moreover, the descriptive statistics reveal that the mean Environmental Disclosure (EVD) is 0.5549, with a minimum of 0.324, a maximum of 0.756, and a standard deviation of 0.1015. For Social Disclosure (SOD), the mean value is 0.6636, ranging from 0.368 to 0.947, with a standard deviation of 0.1321. The mean value for Economic Disclosure (ECD) is 0.0967, with minimum and maximum values of 0.03 and 0.17 respectively, and a standard deviation of 0.0293. Lastly, Board Independence (BIND) has an average of 0.6717, a minimum of 0.528, a maximum of 0.814, and a standard deviation of 0.0643.

Regarding the control variables, the descriptive statistics indicate that Firm Leverage (FLV) has a mean value of 0.3881, with a minimum of 0.12, a maximum of 0.63, and a standard deviation of 0.1083. Firm Size (FSZ) shows a mean of 22.4749, ranging from 17.13 to 26.58, with a standard deviation of 2.9320. Firm Age (FAG) shows a mean of 30.9359, ranging from 1 to 50, with a standard deviation of 12.5244.

Table 2: Result of Pearson Correlation (N = 156)

Variable	PBV	EVD	SOD	ECD	BIND	FLV	FSZ	FAG
PBV	1							
EVD	-0.2998*	1						
SOD	0.0878	0.5149*	1					
ECD	0.1013	-0.0124	-0.0345	1				
BIND	0.7207*	-0.0860	0.1409	-0.0319	1			
FLV	0.0529	-0.0704	0.1780*	0.1216	-0.1207	1		
FSZ	-0.0896	0.2229*	0.3286*	-0.0393	0.0041	0.0937	1	
FAG	-0.1974*	0.3413*	0.0908	-0.0170	-0.0745	-0.1244	0.0979	1

Source: Researcher's computation (2025).

Table 3: Random effect (RE) Regression

Variable	Coef.	T	p>t
Constant	0.2166	3.13	0.002***
Independent:			
EVD	-0.1407	-2.82	0.005***
SOD	-0.0053	-0.11	0.915
ECD	0.2083	1.73	0.083*
Moderator			
BIND	0.7777	13.63	0.000***
Control:			
FLV	-0.0381	-0.73	0.465
FSZ	-0.0013	-0.87	0.384
FAG	-0.0004	-0.94	0.349
Observations		156	
No. of groups		13	
R ²		0.6622	
Wald chi2 (10)		267.75	
Prob>chi2		0.0000	

Source: Researcher's computation (2025).

The result of random effect from Table 3 shows that Environmental Disclosure (EVD) has a significant negative effect on Price to Book value (PBV) at a 1% statistical significance level ($\beta=-2.82$; $p<0.01$). This portrays that any increase in the environmental disclosure of listed industrial goods companies in Nigeria may result in decrease in their Price to Book value (PBV). Studies that concurred with these findings includes; Emeka-Nwokeji and Osisima (2019), Ogochukwu and Ofoegbu, (2022); Zraqat (2019). The negative relationship is also explained by the fact that environmental reporting does not always increase corporate value, sometimes reverse is the case. This finding is contrary to the studies such as Loh, et al. (2017); Fuadah et al. (2019); Alicia, et al. (2021).

On the other hand, Table 3 show that Social Disclosure (SOD) has an insignificant negative effect on Price to Book value (PBV) ($\beta=-0.11$; $p>0.1$). This indicates that when social disclosure increase, it will not result in any significant increase or decrease in the price to book value of listed industrial goods companies in Nigeria. This finding align with the studies of; Illiemenet et al. (2023); Wesley et al. (2022) while in contrast with the study of Onoh, et al. (2022); Alsayegh et al. (2020); Tri and Ismawati (2018); Thomas and Yu (2017); Yuanuan et al. (2018).

Moreover, Table 3 shows that Economic Disclosure (ECD) has a significant positive effect on Price to Book value (PBV) at a 10% statistical significance level ($\beta=1.73$; $p<0.1$). This portrays that any increase in the economics disclosure of listed industrial goods companies in Nigeria may result in an increase in their Price to Book value (PBV). This finding supports the study of Log et al. (2017); Fuadah et al. (2019); Alicia, et al. (2021); Swarnapali and Le (2019); Hendra, et al. (2022); while contradict the studies of Wesley et al. (2022); John et al. (2022).

In addition, Table 3 shows that Board Independence (BIND) has a significant positive effect on Price to Book value (PBV) at a 1% statistical significance level ($\beta=13.63$; $p<0.01$). This indicate that any increase in the board independence of listed industrial goods companies in Nigeria may result in an increase in their price to book value (PBV). Studies that concurred with these findings by reporting positive and significant relationship between board independence and corporate value include; Anyigbah et al, (2023); Othuon et al., (2023); Naciti, (2019); alternatively, Khan et al. (2017); Bhagat et al, (2002); Rashid (2018); and Malik (2017) studies show negative relationship between board independence and sustainability reporting.

Table 4: Random effect Moderation test

Variable	Coef.	T	p>t
Constant	0.2166	3.13	0.002***
Independent:			
EVD_BIND	0.8803	2.14	0.032**
SOD_BIND	0.0044	0.10	0.921
FAG_BIND	0.0057	2.59	0.010**
Observations		156	
No. of groups		13	
R ²		0.6622	
Wald chi2 (10)		267.75	
Prob>chi2		0.0000	

Source: Researcher's computation (2025).

For testing hypotheses 1a, the result of random effect regression from Table 4 is utilized. As found from the regression result, environmental sustainability reporting has a significant

negative relationship with price to book value of listed industrial goods firms in Nigeria. This finding does not support the null hypothesis 1a. Regarding hypotheses 1b, the regression result shows that social sustainability reporting has an insignificant negative relationship with price to book value of listed industrial goods firms in Nigeria. This finding supports the null hypothesis 1b. Considering hypotheses 1c, Table 4 shows that economics sustainability reporting has a significant positive relationship with price to book value of listed industrial goods firms in Nigeria. This finding does not support the null hypothesis 1c which states that economics sustainability reporting does not have significant relationship with price to book value of listed industrial goods firms in Nigeria.

The result of hypotheses 2 from Table 4 revealed that board independence has a significant positive relationship with price to book value of listed industrial goods firms in Nigeria. This finding does not support the null hypothesis 2 which states that board independence does not have a significant relationship with price to book value of listed industrial goods firms in Nigeria.

As found from the regression result, board independence moderates the relationship between environmental sustainability reporting and price to book value of listed industrial goods firms in Nigeria. Because the direct relationship shows a significant negative effect on price to book value, while the indirect relationship shows a significant positive effect on price to book value. This finding fails to support the null hypothesis 3a which states that board independence does not moderate the relationship between environmental disclosure and sustainability reporting of listed industrial goods companies in Nigeria. Hence, hypothesis 3a is rejected. Regarding hypothesis 3b, the result from Table 4 revealed that board independence moderates the relationship between social sustainability reporting and price to book value of listed industrial goods firms in Nigeria. Because the direct relationship shows an insignificant negative effect on price to book value, while the indirect relationship also shows an insignificant negative effect on price to book value. This finding fails to support the null hypothesis 3b which states that board independence does not moderate the relationship between social sustainability reporting and price to book value of listed industrial goods firms in Nigeria. Hence, hypothesis 3b is rejected.

Considering hypotheses 3c, the result from Table 4 revealed that board independence moderates the relationship between economics sustainability reporting and price to book value of listed industrial goods firms in Nigeria. Because the direct relationship shows a significant positive effect on price to book value while the indirect relationship shows a significant positive effect on price to book value at 1% significant level. This finding fails to support the null hypothesis 3c which states that board independence does not moderate the relationship between economic sustainability reporting of listed industrial goods firms in Nigeria. Hence, hypothesis 3c is rejected.

5. Conclusion

This study examined board independence as a moderator between sustainability reporting and corporate value of listed industrial goods firms in Nigeria from 2013. Based on the empirical results, the study concludes that;

Environmental sustainability reporting has a significant negative relationship with corporate value. This indicates that higher levels of environmental sustainability reporting are associated with lower market valuation among listed industrial goods firms in Nigeria. Social sustainability reporting has an insignificant negative effect on corporate value. This suggests that information related to social sustainability, such as community engagement or employee welfare, does not significantly influence investors' valuation decisions. Economic sustainability reporting exhibits a significant positive effect on corporate value. This means

that firms that provide more transparent economic sustainability information tend to attract higher market valuation.

Board independence has a significant positive effect on corporate value. This demonstrates that firms with more independent directors achieve higher market valuation, as independent boards strengthen oversight, reduce agency conflicts, and promote transparency in corporate governance within the Nigeria industrial goods firms.

Board independence also moderates the relationship between social sustainability reporting and corporate value, but both the direct and indirect effects remain insignificant and negative. This indicates that, even with board oversight, social sustainability reporting does not meaningfully influence corporate value, possibly due to weak market recognition of social sustainability initiatives. Board independence significantly strengthens the positive relationship between economic disclosure and corporate value. Both the direct and moderated relationships are positive and significant, with the moderated effect being stronger. This suggests that independent boards enhance the transparency and credibility of economic sustainability reporting, which in turn boost investor trust and market valuation. While environmental sustainability reporting alone negatively relates to corporate value, its interaction with board independence produces a positive and significant relationship. This implies that independent boards enhance the credibility, monitoring and value relevance of environmental sustainability reporting.

5.1 Recommendations

Regulatory bodies such as the Financial Reporting Council of Nigeria (FRCN) and the Securities and Exchange Commission (SEC) should strengthen requirements for board independence. Industrial goods companies in Nigeria should improve the accuracy and transparency of environmental reporting by adopting recognized sustainability frameworks such as the Global Reporting Initiative (GRI) Standards. Independent boards should ensure that environmental sustainability reporting reflect genuine sustainability performance rather than symbolic compliance.

Capital market regulators and professional associations should organize awareness campaigns and training to educate investors about the financial relevance of sustainability reporting. Companies should embed social initiatives such as employee welfare, community development, and stakeholder engagement into their core business strategies. Independent directors should oversee the preparation of these disclosures to ensure accuracy and alignment with investors' informational needs.

Lastly, as boards enhance the transparency and credibility of economic sustainability reporting, which in turn boost investor trust and market valuation, boards should establish sustainability committee comprising independent directors to oversee the integration of environmental, social, and economic sustainability reporting into annual reports. Such committee would enhance accountability and reporting quality.

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