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The Moderating Effect of Corporate Governance Mechanisms on the Nexus between Sustainability Reporting and the Value of Nigerian-Listed Manufacturing Companies

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ABSTRACT

The study investigates the Moderating Effect of Corporate Governance on the Nexus between Sustainability Reporting (SR) on the Value of listed Manufacturing Companies in Nigeria, specifically the effect of Board Size (BS) and Board Independence (BI) on the nexus subsisting between SR and FV. Secondary data for 36 sampled companies was obtained from the Nigerian Exchange Group (NGX) database for eleven (11) years, 2012–2022, which was analysed using descriptive statistics and a two-step GMM system. Findings therefrom revealed that SR exhibits a positive and significant impact on EVA while it was found not to influence Tobin's Q. Further revealed from the analysis was that none of the CG mechanisms introduced had a moderating effect on either of the FV proxies used. The study recommended that management provide clear and concise information on how sustainability initiatives align with the company's financial goals and contribute to value creation over time. These companies should invest in energy efficiency and resource management systems, develop sustainable products and services that meet market demand and align with sustainability goals to reduce their cost of capital. Also, the Financial Reporting Council of Nigeria (FRC) should make a provision requiring

1. INTRODUCTION

In the contemporary landscape of global business, Sustainability has emerged as a critical consideration, exerting a profound influence on corporate strategies, financial performance, and stakeholder expectations. Sustainability reporting (SR), encompassing the disclosure of environmental, social, and economic information, has become a key component of corporate transparency and accountability (KPMG, 2022). This evolution is rooted in an increasing acknowledgment of companies' multifaceted responsibilities in the present era, extending beyond profit maximisation to address environmental and social impacts while upholding robust governance structures (Tara, 2007).

SR serves as a medium for companies to commit to disclosing their activities' economic, social, and environmental impact to stakeholders, thereby enhancing transparency, trust, and stakeholder engagement (Bellantuono et al., 2016). Stakeholders, including investors, customers, employees, and regulators, leverage SR to evaluate a company's sustainability commitment and broader societal and environmental responsibilities.

The practice of SR goes beyond mere disclosure; it can enhance a company's reputation by showcasing its dedication to environmental and social responsibility. This positive reputation, in turn, fosters customer loyalty and trust, positively impacting the firm's overall value (Zimon et al., 2022). Integrating corporate governance (CG) with SR is recommended to effectively manage and integrate these practices, enhancing a company's reputation for responsible and ethical business conduct (Krechovská and Procházková, 2014).

A strong reputation in Sustainability and transparency attracts investors, customers, employees, and other stakeholders who value these principles, contributing to the

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company's long-term success and value creation. Moreover, effective SR practices assist companies in mitigating various risks, including regulatory risks, supply chain disruptions, and reputation damage, thereby enhancing financial stability and overall firm value (Hallikas et al., 2020). Corporate Governance mechanisms are crucial in identifying and managing these risks (Kalia & Gill, 2023), attracting responsible investors who consider environmental, social, and economic factors when making investment decisions (Keitsch, 2010).

Furthermore, integrating SR into CG enables companies to identify cost-saving opportunities, fostering long-term efficiency and Sustainability. For instance, energy-efficient manufacturing processes can reduce costs and waste, contributing to overall cost savings and enhancing the company's value (Apostolos et al., 2013). Companies actively reporting on Sustainability may find it easier to access capital and secure loans as financial institutions increasingly consider corporate sustainability actions in their assessments (Park & Kim, 2020).

While global adoption of SR has grown, there is a scarcity of empirical studies comprehensively assessing the role of CG in the nexus between SR and the value of listed companies, particularly within the Nigerian manufacturing sector. Existing studies primarily focus on the impact of SR on financial value (FV). They are often based on market-based value measurements, with mixed findings due to static analysis models. Recognising these gaps, this study investigates the moderating role of CG on the relationship between SR and proxies of firm value (Tobin's Q and EVA) among listed manufacturing companies in Nigeria, employing a robust estimator (System Generalized Method of Moments).

The research aims to contribute significantly by offering insights to manufacturing companies in Nigeria, helping them recognise the potential advantages of SR regarding responsible business conduct and financial perspective. Investors can benefit from a clearer understanding of how sustainability practices impact their investments, enabling more informed decision-making. Additionally, regulators and policymakers can draw upon the findings to develop policies encouraging sustainable manufacturing practices. Ultimately, the study contributes to the ongoing discourse on sustainability reporting, corporate governance, and their combined influence on firm value.

2. LITERATURE REVIEW

This section presents a definition of certain concepts relevant to the study, the extant literature on the effect of SR on FV, and the theoretical review that informed the conceptual framework that was developed.

2.1 Firm Value and its Measurements

Firm Value (FV), called business or corporate value, is pivotal in finance, economics, and business management. It represents a company's overall worth or economic value (Kurshev & Strebulaev, 2015). The essence of maximising firm value lies in optimising its financial worth, thereby augmenting investors' wealth through an increase in the market value of its stock. Effectively communicating a firm's dedication to sustainable and responsible business practices becomes instrumental in attracting investments, mitigating risks, and enhancing financial performance, ultimately maximising its market value.

The computation of Firm Value involves the summation of common stock's actual market value (MV) and the estimated market values of preferred stock and debt (Morck et al., 1988). The multifaceted nature of measuring Firm Value encompasses various methods and metrics, each offering unique insights into a company's worth. These measurements are critical for investors, financial analysts, and decision-makers seeking a comprehensive understanding of a company's value.

Diverse metrics have been employed to measure Firm Value, reflecting its complexity. These metrics include firm size, as in Hassan and Musa (2022); Tobin's Q (Marvadi, 2015; Emeka-Nwokeji & Osisioma, 2019; Onoh et al., 2023); share price, as in Echobu et al. (2022), and Economic Value Added (EVA), as explored by Wijesinghe et al. (2019). These various metrics collectively contribute to a nuanced understanding of a company's Firm Value, enabling stakeholders to make informed decisions based on a comprehensive assessment of its economic worth.

2.2 Concept of Sustainability Reporting

Sustainability reporting is a comprehensive tool that provides a holistic overview of a company's operations and their potential impact on society and the environment. It delves into diverse subjects such as carbon emissions, energy consumption, social responsibility initiatives, diversity and inclusion practices, and supply chain ethics. Through this reporting, companies articulate their dedication to sustainable development and responsible business practices. In doing so, sustainability reporting becomes a tangible demonstration of a company's commitment to transparency and ethical conduct, fostering trust among investors, customers, employees, and other stakeholders Fombrun and Shanley (1990).

The act of sustainability disclosure goes beyond mere transparency; it actively attracts responsible investors who seek out companies with strong sustainability performance. This heightened interest from investors translates into tangible benefits for companies, providing them with easier access to capital and the ability to secure investments on favourable terms, as Edmans et al. (2011) highlighted. In essence, sustainability reporting communicates a commitment to sustainable practices and aligns businesses with the preferences of responsible investors, contributing to a positive cycle of trust and financial support.

2.3 Corporate Governance and Governance Mechanisms

Organisations are organised according to specific governance systems determined by laws, traditions, shareholders, and the expectations of those who gain from their activities (Salvioni & Asori, 2013). The framework that guides how these organisations are directed and controlled is called Corporate Governance (CG). These arrangements differ globally because a corporation's governance structure typically depends on its home nation's historical background, cultural influences, regulations, and institutions (Mbu-Ogar et al., 2017). Abu-Tapanjeh (2009) posits that CG has diverse meanings for real-world organisations. It is a multidimensional concept lacking a standard definition; therefore, CG varies from industry to industry and country to country (Solomon, 2007). Ching et al. (2006) defined CG as a

collection of structures and processes put in place to control and direct the activities of an organisation.

Corporate Governance (CG) mechanisms have been classified into internal and external (Denis & McConnell, 2003). Internal CG mechanisms are those internal factors that include the Board size, Board independence, Audit committee, CEO duality, Board diversity, and ownership structure. In contrast, external CG mechanisms are those outside factors that mitigate the bad governance in an organisation to meet the interests of shareholders and other interest groups. These mechanisms include the country's legal system and takeover rules, applicable only in research comparing various CG across countries for studies in a multi-country setting (Denis & McConnell, 2003). This study focuses on internal governance mechanisms because it is conducted in a specific country, Nigeria.

2.4 Empirical Review

This section reviews empirical studies on the impact of SR on the proxies of FV (Tobin's Q and EVA) viz-a-viz studies on the moderating role of CG mechanisms on the nexus between SR and FV proxies.

- *Sustainability Reporting and Tobin's Q*

SR has become vital to a firm's overall strategy, influencing its value and market performance. Studies have shown a strong and positive association between SR and Tobin's Q, a company's market value (Ioannou & Serafeim, 2012). Thus, Firms that engage in robust SR practices often exhibit higher Tobin's Q, reflecting that investors perceive them as more attractive and less risky investments (Orlitzky et al., 2003). SR signals to investors that the firm is well-managed, ethical, and responsive to societal concerns. These attributes enhance the firm's perceived quality and long-term prospects, leading to higher Tobin's Q (Flammer, 2015).

Empirical evidence on the impact of SR on Tobin's established contrasting views. Emeka-Nwokeji and Osisioma (2019) examine the effect of disaggregate indicators of SR (environmental, social, and governance) on the market value (Tobin's Q) of 93 listed non-financial companies in Nigeria for a period of ten (10) years (2006 to 2015). Secondary data was analysed using pooled OLS. The findings therefrom revealed that SR exerts a positive and significant impact on the value of the sampled non-financial companies in Nigeria. At the same time, the disaggregated components show that environmental and governance indicators exert a positive and significant impact as against the social metrics. The study, therefore, recommended fostering greater sustainability practice and long-term value creation by integrating sustainability metrics into their reporting model and strategy. In a similar study, Atanda et al., 2021 examined the effect of disclosing sustainable information on the value creation of listed Deposit Money Banks (DMBs) in Nigeria, which was proxied using Tobin's Q over a period of five (5) years (2014 to 2018). Data was obtained from the audited financial statements of listed DMBs, which was analysed using OLS (fixed-effect) regression, and the result from the analysis revealed that SR exerts a negative and significant impact on the value of listed DMBs in Nigeria.

More recently, Mohamed and Younis (2023) explored the impact of SR on the FV (Tobin's Q) of 60 listed Saudi Stock Market for a period of five (5) years (2017 to 2021). Multiple regression was used for analysis, and the analysis revealed that SR exerts a significant impact on the value of companies listed on the Saudi Stock Market and, therefore, recommended issuing an accounting standard for the disclosure of SR. Extending the study period, Onoh et al., 2023 examined the effect of practising sustainability disclosure on FV (Tobin's Q) of ten (10) listed Oil and Gas Companies in Nigeria whose data was collected for a period of eleven (11) years (2010 to 2020) and analysed using panel regression (random effect). The analysis shows that environmental and economic disclosures lead to value creation while social disclosure distorts value creation for Oil and Gas companies in Nigeria. The study recommended full compliance with SR laws and regulations to increase value in the long run.

- *Sustainability Reporting and Economic Value Added*

Effective SR provides insights into environmental, social, and economic activities, which are becoming crucial to long-term value creation and overall corporate success. Empirical evidence established a positive association between SR and EVA (Ikechukwu & Blessing, 2020), demonstrating that companies committed to sustainable practices tend to generate higher EVA. This could be due to enhanced brand reputation, better stakeholder relationships, or improved risk management. In contrast, other research has failed to establish a significant direct correlation between SR practices and EVA. Ikechukwu and Blessing (2020) explore the effect of SR on the EVA of 21 listed manufacturing companies in Nigeria between 2008 and 2019. The data collected was analysed using Panel Least Square (PLS) regression. The results show that all SR components positively and significantly impact the EVA of the sampled companies. Therefore, the study recommended investment in sustainability activities to boost the company's reputation and increase its economic value. Contrary to this finding, Schiessl et al. (2022) evaluate the impact of CSR on the EVA of 4,287 of the largest companies worldwide. Data for the study was collected from Eikon, a Thomson Reuters platform, which was analysed. The finding shows that CSR exerts a negative and significant impact on the EVA of these companies.

More recently, Iliemena et al. (2023) evaluated the effect of SR components on the EVA of 37 listed manufacturing companies in Nigeria using secondary data from 2012 to 2020, which was analysed using static regression (Random effect). The findings revealed that all SR components positively impact the EVA of the sampled companies except the environmental component, which does not significantly impact EVA. Similarly, Gonçalves et al. (2023) explore the nexus between SR and the economic performance (EVA) of 600 listed companies in STOXX Europe for a period of nine (9) years (2012 to 2020). Data was analysed using OLS, fixed and random effects regressions, and a two-step system GMM estimator. All the analyses revealed that SR positively and significantly impacted EVA and recommended a shift from the conventional reporting system to incorporating core sustainability initiatives to drive economic performance.

- *Moderating role of CG mechanisms on the nexus between SR and Firm Value*

Limited empirical evidence exists on the moderating role of CG mechanisms on the impact of SR on FV, and these studies were conducted in order countries of the world (Qureshi et al., 2019; Kurniawati et al., 2022; Zimon et al.,

2022; Iskandar et al. 2023; Khunkaew et al., 2023), and no study was conducted in Nigeria in this regard. Kurniawati et al. (2022) used profitability to moderate the nexus between SR and FV of eleven (11) listed manufacturing companies in Indonesia for a period of five (5) years (2016 to 2020). Secondary data collected was analysed with the aid of multiple regression. The findings from the analysis show that the disclosure of SR exerts a significant impact on FV (Tobin's Q) and that profitability strengthened the positive effect of SR on firm value. Reaffirming the earlier findings of Kurniawati et al. (2022), Iskandar et al. (2023) explore the moderating impact of good CG on the nexus between the quality and quantity of SR on FV (Tobin's Q) of listed Indonesian Companies for a period of five (5) years. CG was proxied by the number of the board of commissioners (board size), the proportion of independent commissioners (Board independence), and the number of audit committee meetings. Multiple linear regression was utilised for analysis, revealing that SR quality and quantity significantly impact Tobin's Q and that only Board Independence significantly moderates the nexus between SR and FV.

Novitasari and Puspawati (2022) explore the moderating effect of financial performance (ROA) on the impact of CG and CSR on the FV of eighty-two (82) listed Indonesian companies in 2020. Using multiple linear regression for analysis, the study discovered that the audit committee as CG proxy significantly influences FV and that ROA moderates the influence of CG on FV. Similarly, the Independent board of commissioners and CSR do not affect FV, ROA cannot moderate the audit committee's effect, and FP cannot moderate the effect of CSR on FV. Using Chief Executive Officer Power (CEOP) as a moderator, Na et al. (2022) examine the nexus between the quality of Corporate Social Responsibility (CSR) disclosure on financial performance (FP) and, at the same time, investigate the moderating role of CEOP on the nexus between CSR and Firm Value (FV) of 3,248 Chinese listed Companies for a period of seven (7) years (2014 to 2020). Data was analysed with the aid of OLS regression. The result revealed that SR exerts a positive and significant impact on FP and that CEO power negatively influences the impact of CSR on FP and FV. More recently, Khunkaew et al. (2023) explored the influence of SR and gender diversity on corporate outcomes (profitability and value) of listed ASEAN region consisting of Thailand, Malaysia, Indonesia, and the Philippines for a period of ten (10) years (2010 to 2019) Profitability was proxied with ROA while firm value was proxied with Tobin's Q. Using logit regression for analysis, the results shows that SR exerts a positive and significant impact on both profitability and firm value and that, gender diversity moderate these relationships.

2.3 Theoretical Framework

Explaining the moderating role of CG on the nexus between SR and firm value is rooted in three theories, the Agency, Stakeholder, and Resource-based theories, which the study adopted. These theories collectively suggest that effective CG can enhance the relationship by ensuring transparency, accountability, and the alignment of stakeholder interests with shareholder wealth, ultimately leading to increased FV. The Agency theory suggests that the separation of ownership (shareholders) and control (management) creates agency conflicts (Panda & Leepsa, 2017). When used in SR, the theory posits that managers might prioritise their interests over shareholders. Effective CG mechanisms, such as independent boards and strong audit committees, mitigate agency problems by monitoring managerial actions, ensuring transparency, and aligning management's interests with shareholders (Eklemet et al., 2023), thereby moderating the relationship between SR and FV.

Similarly, the stakeholder theory emphasises the importance of considering various stakeholder interests, including customers, employees, communities, and environmental groups (Fyall et al., 2012). SR reflects a company's engagement with these stakeholders. Therefore, effective CG ensures that stakeholder concerns are appropriately addressed and sustainability practices are integrated into the firm's strategy. As a result, the moderating effect of CG mechanisms can strengthen the link between SR and FV by signalling a company's commitment to managing stakeholder relationships. Moreover, the Resource-Based Theory posits that a firm's resources and capabilities, including those related to Sustainability, can be a source of competitive advantage (Madhani, 2010). SR may signal the presence of unique, valuable, and non-substitutable resources that contribute to a company's competitive advantage. Conversely, CG plays a role in efficiently allocating and protecting these resources, influencing how they impact FV. Effective governance can enhance the potential for sustainable resources to positively moderate the relationship between sustainability reporting and firm value.

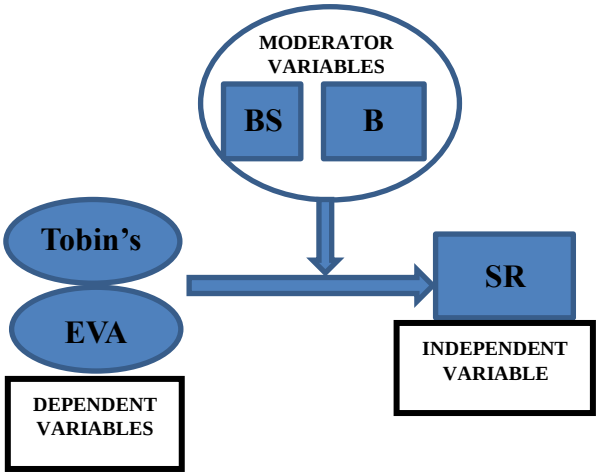

Fig. 1. Conceptual Framework

Figure 1 is a conceptual framework that provides a theoretical foundation for understanding the moderating effect of CG mechanisms on the nexus between SR and FV within the context of manufacturing companies in Nigeria. It consists of several variables and the relationship between them. Board Size (BS) and Board Independence (BI) were used as moderators, while Tobin's and Economic Value Added (EVA) were used as proxies for FV. Lastly, Sustainability Reporting (SR) encompasses the disclosure of environmental, social, and economic practices by these companies, which is the independent variable.

3. METHODOLOGY

The study adopted an ex-post facto research design using secondary panel data from the financial report and standalone

SR of 36 sampled manufacturing companies listed on the Nigerian Exchange Group (NGX) from 2012 to 2022. The sample size was arrived at using Census sampling after applying criteria to filter companies listed after 31st December 2011 and those that did not disclose all the elements of Sustainability in either their standalone SR, on their company's corporate website, and or in their annual financial report during the study period to avoid the problem of unbalanced data.

The data was analysed using a two-step system GMM to determine the effect of SR on FV and the moderating effect of CG mechanisms on the nexus between SR and CP. The two-step system GMM (SGMM), as proposed by Arellano and Bover (1995) and Blundell and Bond (1998), is used to overcome the problem of endogeneity and produce unbiased results. Panel GMM is appropriate where the number of observations (N) is smaller than the number of cross-sections (T) (Roodman, 2006) as in this study. This is consistent with the work of Karim et al. (2022) and Babangida (2023). For the reliability of the SGMM, Roodman (2006) requires diagnostic tests for autocorrelation, Hansen test for over-identification of instruments, and instrument count to be performed.

Arellano and Bond (1991) posit that SGMM does not require the presence of second-order autocorrelation AR (2). The null hypothesis is that there is no autocorrelation. Baum (2006) argues that the Hansen J. Test is robust in the case of SGMM to test for over-identification of the instrument, and the null hypothesis is that over-identifying restrictions are true. Lastly, Roodman (2006) stated that the rule of thumb is that the number of instruments should always be less than the number of observations. The models are specified below:

The study adopted an ex-post facto research design using secondary panel data from the financial report and standalone SR of 36 sampled manufacturing companies listed on the Nigerian Exchange Group (NGX) from 2012 to 2022. The sample size was arrived at using Census sampling after applying criteria to filter companies listed after 2012 and those that did not disclose all the elements of Sustainability in either their standalone SR, on their company's corporate website, and or in their annual financial report during the study period to avoid the problem of unbalanced data.

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The models below test the effect of SR on FV using Tobin's Q and EVA as the proxies for FV.

$$Tobin'sQ_{it} = \beta 0 + \beta 1 Tobin's\ Q_{it-1} + \beta 2 SRD_{it} + \beta 3 FL_{it} + \beta 4 FSize_{it} + Yeardummy + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$VA_{it} = \beta 0 + \beta 1 EVA_{it-1} + \beta 2 SRD_{it} + \beta 3 FL_{it} + \beta 4 FSize_{it} + Yeardummy + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

The next Model checks the moderating effect of CG mechanisms (BS and BI) on the nexus between SR and FV proxies (Tobin's Q and EVA).

$$TQ_{it} = \beta 0 + \beta 1 TQ_{it-1} + \beta 2 SRD_{it} + +\beta 3 B_{it} + \beta 4 (SRI_{it} * BS_{it}) + \beta 5 FL_{it} + \beta 6 FSize_{it} + Yeardummy + \mu_i + \lambda_t + \varepsilon_{it} \quad (3)$$

$$TQ_{it} = \beta 0 + \beta 1 TQ_{it-1} + \beta 2 SRD_{it} + +\beta 3 BS_{it} + \beta 4 (SRI_{it} * BI_{it}) + \beta 5 FL_{it} + \beta 6 FSize_{it} + Yeardummy + \mu_i + \lambda_t + \varepsilon_{it} \quad (4)$$

$$EVA_{it} = \beta 0 + \beta 1 EVA_{it-1} + \beta 2 SRD_{it} + +\beta 3 BS_{it} + \beta 4 (SRI_{it} * BS_{it}) + \beta 5 FL_{it} + \beta 6 FSize_{it} + Yeardummy + \mu_i + \lambda_t + \varepsilon_{it} \quad (5)$$

$$EVA_{it} = \beta 0 + \beta 1 EVA_{it-1} + \beta 2 SRD_{it} + +\beta 3 BS_{it} + \beta 4 (SRI_{it} * BI_{it}) + \beta 5 FL_{it} + \beta 46 Size_{it} + Yeardummy + \mu_i + \lambda_t + \varepsilon_{it} \quad (6)$$

Table 1 below presents the study variables and their measurement.

Table 1. Variables and their measurement.

	Variables Measurement		
	Acronym	***Measurement***	***Sources***
Sustainability Reporting	SR.	Average aggregate disclosure level using 1 and 0 for disclosure and non-disclosure, respectively.	Khan et al. (2021), Farisyi et al. (2022) and Babangida (2023).
Tobin's Q	TQ	Market capitalization plus total debt divided by total asset	Emeka-Nwokeji & Osisioma, 2019; Onoh et al., 2023
Economic Value Added	EVA	EVA=NOPAT–Capital Charges	Sukmadilaga et al. (2023)
Financial Leverage	FL	Total Debt/ Total Equity	Indah et al. (2020), and Mohammad and Wasiuzzaman (2021).
Firm Size	FS	Natural Log of Total Assets	Ucheagwu et al., 2019; Fuadah et al.,

Variables Measurement		
Acronym	*Measurement*	*Sources*
		2019

Source: *Author's Compilation, (2023)*

4. EMPIRICAL RESULTS

This section presents results from the analysis of the two-step System Generalised Method of Moments using STATA software version 14.2. Table 2 presents the descriptive statistics

Table 2. Descriptive statistics

Descriptive Statistics							
	IV	*DV*		*MV*		*CV*	
	SR	**TQ**	**EVA**	**BS**	**BI**	**Lev**	**TAsset (₦m)**
Obs.	396	396	396	396	396	396	396
Mean	9.58	1.626	-0.01	8.68	35.15	1.231	87077
S.Dev	3.42	1.556	0.23	2.77	19.60	14.34	143325
Min.	1	-0.44	-2.89	4	5.56	-253.8	170
Max.	19	12.69	1.09	17	92.86	70.06	1000000

Source: *Author's compilation using STATA 14.2 Output 14.2.*

Table 2 shows 396 observations across all the study variables. The Table shows that SR has a mean of 9.583, implying that, on average, listed manufacturing companies disclose about ten elements out of 20 elements. This is regarded as low sustainability disclosure practices, as in AbdulRahim (2016) and Babangida (2023). The maximum and minimum values of 19 and 1 imply that some companies disclose as high as nineteen and as low as one SR construct.

The mean value of 1.626 against Tobin's Q implies that, on average, the manufacturing companies have a market value higher than their replacement cost. This could imply that investors perceive these companies to have growth prospects or assets valued above their book values. The maximum value of Tobin's Q (12.69) indicates that at least one company has a market value significantly higher than its replacement cost. This could be due to high investor confidence, strong growth expectations, or unique assets. The minimum value of -0.44 suggests that at least one company has a market value lower than its replacement cost. This situation might arise when a company's financial performance is poor, or its assets are valued below their book values in the market. EVA exhibits a mean value of -0.013, standard deviation of 0.23, minimum value of -2.89, and a maximum of 1.09. The mean value of -0.013 suggests that, on average, manufacturing companies are not generating sufficient returns to cover their cost of capital, which may raise concerns about their profitability and overall financial health. The standard deviation of 0.23 suggests some dispersion or fluctuation around the mean EVA value of -0.013. This variability could be due to differences in company performance, risk levels, or industry-specific factors. The minimum and maximum values of -2.89 and 1.09 imply that some of these companies are significantly underperforming in generating value compared to their cost of capital, while others are generating a positive EVA.

4.2 Two-Step System GMM Results

This section presents the result of the two-step GMM system of equations (1 to 6), as presented in Table 3.

Table 3. Results of the two-step GMM system

	Two-Step Robust System GMM Results					
	Panel without interaction		*Panel with interaction*			
Variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Lag values	0.702 (0.00)	-0.015 (0.85)	0.665 (0.00)	0.710 (0.00)	0.077 (0.70)	-0.028 (0.50)
SR	-0.20 (0.46)	0.185 (0.07)***	-5.636 (0.32)	3.927 (0.46)	-0.628 (0.86)	-0.067 (0.88)
FS	-0.06 (0.39)	0.025 (0.19)	0.100 (0.75)	-0.273 (0.10)	0.083 (0.39)	0.034 (0.15)
LEV	-0.017 (0.00)*	0.00 (0.36)	-0.019 (0.00)*	-0.023 (0.00)*	-0.001 (0.29)	-0.000 (0.55)
BS			-0.559 (0.34)		-0.112 (0.67)	
BI				0.131 (0.18)		-0.006 (0.62)
SR*BS			0.752 (0.33)		0.137 (0.74)	
SR*BI				-0.062 (0.66)		0.006 (0.54)
Constant	0.671 (0.26)	-0.357 (0.02)	4.046 (0.22)	-0.620 (0.11)	-0.115 (0.99)	-0.179 (0.51)
AR(2) p-value	0.124.	0.555.	0.102	0.315	0.869	0.366
Group/Inst	36/21	36/21	36/21	36/21	36/21	36/21
Han. Prob	0.65	0.293	0.580	0.587	0.548	0.185
Fsta. P-value	0.000	0.006.	0.000	0.000	0.002	0.000

Source: *Author's Compilation from STATA Output Version 14.2*
Note: *, **, and *** represent significance levels at 1%, 5%, and 10% respectively

The Table revealed the absence of second-order serial correlation in all six (6) models, as evidenced by p-values of 0.124, 0.555, 0.102, 0.315, 0.869, and 0.366 against AR (2). As such, the null hypothesis of no autocorrelation in the second-order AR (2) cannot be rejected. Also, the Hansen p-values of 0.65, 0.293, 0.580, 0.587, 0.548, and 0.185 for models (i) to (vi) confirmed the validity of the instruments used for both models. The Table further revealed that the number of instruments (21) is less than that of the group (36) in all the six models, as Roodman (2006) recommended in all the models.

The result from Model (i) in the Table is an analysis of the effect of SR on Tobin's Q; the result shows that SR has a negative and insignificant impact on Tobin's Q, as evidenced by a coefficient (-0.20) and a p-value (0.464). This implies that, as the level of SR increases, Tobin's Q (a measure of a firm's market value) tends to decrease by N0.2, holding other factors constant, and that the extent of SR does not appear to have a substantial influence on a firm's market value as measured by Tobin's Q in this particular context.

Theoretically, the findings contradict the assertion of Stakeholder Theory and also the empirical findings of Emeka-

Nwokeji and Osisioma (2019), Mohamed and Younis (2023) and supported that of Atanda et al. (2021) and Friske et al. (2023) that a company investment in Sustainability will increase the cost of operations thus having a negative effect on the market value of firms. This suggests that investors are not giving much weight to Sustainability in their decision-making process or that SR is not effectively communicating the value of the companies' sustainability performance; as such, investors consider them less credible or informative. The results for Model (ii) show that SR exerts a positive and significant impact on the EVA of listed manufacturing companies in Nigeria, as evidenced by the coefficient (0.185) and a p-value (0.067). This implies that an increase in SR will lead to a rise in these companies' EVA by N0.185 due to decreased operational costs. Also, Sustainability initiatives, when communicated effectively through reporting, can contribute to increased shareholder value. As share prices rise, the company's cost of equity may decrease, reducing the overall cost of capital, which will invariably improve EVA. None of the control variables (firm size and leverage) significantly influence the FV of these companies.

Models (3) and (5) are the result of the moderating effect of Board Size (BS) on the nexus between SR and FV proxies of Tobin's Q and EVA. The result shows that BS insignificantly moderates the nexus between SR and FV proxies (Tobin's Q and EVA), as evidenced by coefficients and p-values (0.752 and 0.137) and (0.330 and (0.740) for the two models. This implies that BS as an interaction term does not significantly strengthen the impact of SR on FV proxies of Tobin's Q and EVA. It indicates that the effect of SR on a company's FV, as reflected in Tobin's Q and EVA, is not significantly affected by the number of directors on the board.

Theoretically, this is in contrast to the assertion of Agency theory, which postulated that effective CG mechanisms mitigate agency problems by monitoring managerial actions, ensuring transparency, and aligning management's interests with shareholders (Eklemet et al., 2023), thus strengthening the relationship between SR and FV. The findings align with Buallay's (2020) and Iskandar et al. (2023) findings that BS does not significantly moderate the nexus between SR quality and FV and contradict that of Lu (2020) Pekovic and Vogt (2020) and Pasko et al. (2022) for establishing that BS has a significant moderating effect on Tobin's Q.

Equally, Models (4) and (6) presented in the Table are the result of the moderating effect of Board Independence (BI) on the nexus between SR and FV proxies of Tobin's Q and EVA. The result shows that BI insignificantly moderates the nexus between SR and FV proxies (Tobin's Q and EVA), as evidenced by coefficients and p-values (-0.062 and 0.006) and (0.659 and (0.544) for the two models. This implies that BI as an interaction term does not significantly strengthen the impact of SR on FV proxies of Tobin's Q and EVA. It indicates that the number of outside directors does not significantly strengthen the effect of SR on a company's FV, as reflected in Tobin's Q and EVA. The findings diverge from the findings of Iskandar et al. (2023) and Eklemet et al. (2023) and the theoretical assertion of Agency theory, which postulated that effective CG mechanisms mitigate agency problems by monitoring managerial actions, ensuring transparency, and aligning management's interests with shareholders (Eklemet et al., 2023), thus strengthening the relationship between SR and FV. Furthermore, the findings align with Siddiqui et al. (2023) and Hashem et al. (2023), who asserted that more independent directors effectively align stakeholders' interests for voluntary disclosure, thereby increasing FV as reflected in Tobin's Q.

5. DISCUSSIONS

This section presents and discusses findings from the analysis presented in Table 3. SR exerts a negative and insignificant impact on Tobin's Q of listed manufacturing companies in Nigeria, as evidenced by the negative coefficient and insignificant p-values of -0.2 and 0.464 shown in Table 3 (Model 1). This implies that an increase in the level of sustainability reporting will lead to falls in the market value of these companies by N0.2, holding other factors constant. This is in tandem with the findings of Ariyani and Hartomo (2018), Tri and Yuni (2018), Emeka-Nwokeji and Osisioma (2019), Touati and Hult (2022) and Oware and Worae (2023) that a company investment in sustainability disclosure will only lower its revenue, thus reducing its profitability, increasing the cost of operations thus having an economic effect on the market value of firms. The findings refuted the earlier findings of Atan et al. (2018), Kaya and Akbulut (2019), and Alhawaj et al. (2023), who found that SR has an insignificant impact on Tobin's Q. This suggests that investors are not giving much weight to sustainability factors in their decision-making process or that sustainability reporting is not effectively communicating the value of the companies' sustainability performance, as such investors may consider them less credible or informative. In such cases, the market may not perceive SR as a reliable indicator of firms' long-term value or prospects.

Also, the analysis in Table 3 (Model 2) shows that SR exerts a positive and significant impact on economic value added at a 10% significance level. This is evident from the coefficient and a p-value of 0.185 and 0.067, respectively. This infers that a 1% increase in SR practices will cause a proportionate increase in the economic value by N0.185. The findings buttressed the findings of Amahalu (2018), Ikechukwu and Blessing (2020), Iliemena et al. (2023), and Gonçalves et al. (2023), whose findings revealed that SR practices increase EVA. The findings opposed the findings of Mittal et al. (2008), Purwanti (2020), and Schiessl et al. (2022), whose findings revealed an insignificant impact of SR on EVA. This portends that companies prioritising SR are more likely to create economic value for their stakeholders. By considering and integrating sustainability factors into their business practices, these companies demonstrate a commitment to long-term success and responsible business practices. This can lead to increased profitability, improved reputation, and enhanced competitiveness.

Model 3, presented in Table 3, shows a coefficient and a p-value of 0.7521 and 0.330 against the interaction term (SR*BS). This infers that the higher the board size, the higher the impact of SR on Tobin's Q, though the relationship is not significant. This substantiated the findings of scholars like Buallay (2020) and Marpaung and Augustine (2021) that BS did not significantly influence the nexus between SR and Tobin's Q and refuted the earlier findings of Ntim and Soobaroyen (2013); Lu (2020); Pekovic and Vogt (2020); Pasko et al. (2022) who established that BS moderates the nexus between SR and performance significantly (measured

using Tobin's Q). Theoretically, we can infer that the outcome is contrary to the assertions of stakeholder theory as the analysis revealed that the disclosure of sustainability information does not significantly add value to the organization. The lack of significance in moderating the impact of BS can be attributed to the heterogeneous nature of the board. That is to say that a large board might still lack members with the relevant knowledge or experience in sustainability issues, which can limit their ability to effectively moderate the impact of SR on Tobin's Q. Theoretically, the finding is in contrast with the assertion of Agency theory which suggests that the board acts as an intermediary between shareholders and management, aligning the interests of both parties. As reflected in Tobin's Q, a larger board may be better positioned to exert control and ensure that SR efforts are symbolic and effectively translated into shareholder value creation.

Model 4, presented in Table 3, shows the moderating effect of BI on the nexus between SR and TQ (SR*BI). The analysis shows that BI has a negative and insignificant moderating effect on the nexus between these variables, as evidenced by a coefficient (-0.0621) and a p-value (0.659) against the interaction term (SR*BI). The findings imply that the higher the proportion of outside directors, the likely decrease in the impact of SR on Tobin's Q of listed manufacturing companies in Nigeria. The result aligns with the assertion of agency theory that an increased presence of independent directors could potentially lead to conflicts of interest between shareholders and management. Nonetheless, this finding implies that an excessive level of engagement by independent directors in a company's day-to-day operations might constrain managerial autonomy and, consequently, have a detrimental moderating effect on the relationship. Empirically, this contradicts the findings of Lu (2020), Siddiqui et al. (2023), and Hashem et al. (2023), who asserted that more independent directors are an effective mechanism for aligning stakeholders' interests for voluntary disclosure, thereby increasing Tobin's Q. Furthermore, the outcome supported the empirical findings of Hamid and Ibrahim (2020), Marpaung and Augustine (2021), and Pasko et al. (2022), who asserted that BI does not moderate the nexus between SR and Tobin's Q. BI's lack of a significant moderating effect on the nexus between SR and Tobin's Q may be attributed to factors like limited board expertise and lack of board engagement in SR issues. Although important for governance, BI may not necessarily translate into expertise and may lack the specific knowledge and experience required to assess the impact of SR on firm value accurately. Also, a lack of engagement may lead to negative perceptions among socially responsible investors who prioritize sustainability factors in their investment decisions. This may lead to a lower market valuation than companies perceived as more committed to sustainability, potentially affecting their stock price and Tobin's Q.

Model 5 shows the result of the moderating effect of BS on the nexus between SR and EVA, as presented in Table 3. The analysis shows that BS does not significantly moderate the nexus between SR and EVA. This is evident from the positive coefficient (0.137) and an insignificant p-value (0.740). This implies that the higher the number of directors on the board, the higher the SR practices among listed manufacturing companies, which invariably will lead to economic value creation, though the relationship is insignificant. This contradicted the assertion of the Agency theory, which postulates that a larger board may bring diverse perspectives, expertise, and oversight to sustainability matters, leading to better-informed decisions that align with the company's long-term sustainability goals. This contradicted the recent findings of Taebi Noghondari et al. (2017) and Lu et al. (2021), who asserted that CG influences the nexus between SR and EVA. The insignificant moderating effect of BS on the nexus between SR and EVA may be ascribed to factors like market and investor behaviour and the roles of other CG mechanisms. Investor behaviour and market sentiment may influence the extent to which BS impacts the nexus between SR and EVA. If investors do not significantly reward sustainability practices or do not factor BS into their investment decisions, then board size may not play a significant moderating role. Similarly, the influence of BS may be overshadowed by the presence of other governance mechanisms, such as dedicated sustainability committees, shareholder activism, or regulatory oversight. These mechanisms can play a more direct role in shaping SR practices and their impact on EVA.

The outcome from the analysis presented in Table 3 (Model 6) showed that BI exerts a positive but insignificant moderating effect on the nexus subsisting between SR and EVA as evidenced by the interaction term (ceff= -0.006, p-value=0.544). This implies that an increase in the proportion of outside directors does not significantly influence the nexus between SR and EVA of listed manufacturing companies in Nigeria. This is against the postulations of Agency theory; the theory asserts that the board of directors, particularly independent directors, plays a critical role as an intermediary between shareholders and management. Independent directors are expected to represent the interests of shareholders and monitor managerial decisions to ensure they align with shareholder wealth maximization. If SR practices positively contribute to EVA through risk mitigation, cost savings, and revenue generation, independent directors are expected to support and advocate for such practices. The lack of significant moderating effect of BI may be attributed but not limited to factors like underinvestment, limited stakeholder engagement, and cost savings. Independent directors may hesitate to allocate financial resources to sustainability initiatives, perceiving them as discretionary rather than essential. This underinvestment can limit the company's ability to leverage SR for long-term EVA enhancement.

Similarly, the directors prioritize the interests of shareholders above other stakeholders. While this aligns with directors' fiduciary duty, it may lead to less comprehensive stakeholder engagement in sustainability efforts, potentially missing valuable insights and opportunities. Independent directors may emphasize stringent cost control to demonstrate responsible financial management. While cost savings are important, an excessive focus on cost-cutting may discourage investments in sustainability projects that require upfront expenditures but can yield significant cost savings and revenue growth over time.

6. CONCLUSION AND RECOMMENDATIONS

Firm Value is a critical measure that reflects the expectations and confidence of shareholders, investors, and the broader market in its ability to generate profits, manage

risks, and sustain its competitive position. CG mechanisms, such as independent boards, board size, audit committees, and effective stakeholder engagement, play a pivotal role in ensuring that sustainability practices are transparent, accountable, and aligned with the interests of shareholders and stakeholders, which invariably affect the firm's value. This study explores the moderating role of CG mechanisms, specifically Board Size and Board Independence, on the impact of SR on FV proxies of Tobin's Q and EVA. The study concluded that the extent of SR by these companies does not substantially impact their market valuation, as measured by Tobin's Q. This could be that investors or the market perceive that focusing on SR implies higher costs for a company and that Sustainability initiatives often require investments. The market may believe these expenditures erode profits and, consequently, the firm's value. In view of this, the study recommended that these companies' management should provide clear and concise information on how sustainability initiatives align with the company's financial goals and contribute to value creation over time. When investors grasp the financial benefits of Sustainability, they will assign a higher value to the company's stock, increasing Tobin's Q. The Table shows that SR practice leads to the attraction of investment, reduction of risks, and performance improvement, eventually maximising its economic value. Therefore, The study recommended that these companies invest in energy efficiency and resource management systems and develop sustainable products or services that meet market demand and align with sustainability goals to reduce their cost of capital.

Furthermore, the study established that the number of directors that constitute the board and the number of outside directors does not lead to an increase in the sustainability disclosure believed to create value eventually. The study, therefore, recommended that the Financial Reporting Council of Nigeria (FRC) should make a provision requiring companies to appoint a significant number of the board with relevant knowledge or experience in sustainability issues as board members well-versed in Sustainability can oversee the quality of SR, ensuring that it adheres to recognised frameworks and best practices. The board of these companies should also engage with investors through regular meetings, webinars, or presentations to communicate the board's commitment to Sustainability and educate them on the potential benefits of sustainability initiatives as companies with strong sustainability practices and transparent communication with investors may have improved access to sustainable finance options, reducing the cost of capital and positively impacting EVA. Finally, there is the need for FRC to review the Nigerian Code of Corporate Governance, specifically board composition, to include sustainability committees. The committee encourages innovation in sustainability practices, seeking opportunities to enhance efficiency, generate revenue, and reduce costs, thereby increasing EVA.

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