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Corporate Governance and ESG Scores: An Empirical Analysis of Board Attributes in Indian Non-Financial Firms

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Abstract

Corporate sustainability and responsible business practices have gained prominence in recent years, with Environmental, Social, and Governance (ESG) performance emerging as a key metric to assess corporate commitment to sustainability and ethical governance. This study examines the relationship between corporate governance attributes and ESG performance in Indian non-financial firms. Specifically, it evaluates the impact of board gender diversity, board size, board background skills, and audit committee independence on ESG scores and its three components—environmental, social, and governance scores. Using panel data from 78 Indian firms spanning 2013—2024, the study employs fixed effect panel regression models to analyze these relationships. The findings shows that board gender diversity positively influences ESG performance, particularly governance scores, reinforcing the role of diverse leadership in ethical corporate decision-making. Audit committee independence significantly enhances governance transparency, while board size has mixed effects, improving social responsibility but reducing governance efficiency. Contrary to expectations, board background skills negatively impact ESG scores, suggesting a gap between traditional board expertise and sustainability integration. CEO duality and financial leverage negatively affect ESG scores, while firms with higher profitability tend to perform better in social initiatives. The study highlights the need for ESG-focused governance reforms and sustainability training for board members to improve corporate sustainability in emerging markets.

Keywords: Corporate Governance, ESG Performance, Board Gender Diversity, Board Size, Audit Committee Independence, Indian Firms

1.Introduction

In the past few years, there has been a growing focus on corporate sustainability and ethical business practices among various stakeholders, including investors, regulatory bodies, and the general public (Eccles, Ioannou, & Serafeim, 2014). The concept of Environmental, Social, and Governance (ESG) performance has become a crucial indicator for evaluating a company's dedication to sustainability and ethical management (Friede, Busch, & Bassen, 2015). ESG ratings indicate how organizations handle sustainability-related risks and opportunities, which can influence their long-term financial success and market standing (Fatemi, Glaum, & Kaiser, 2018). Although an increasing amount of research examines the factors that contribute to ESG performance, the impact of corporate governance characteristics on ESG outcomes remains a developing field of study (de Villiers, Naiker, & van Staden, 2011 ; Garcia-Sánchez et al., 2019).Corporate governance serves as a critical mechanism for aligning business objectives with stakeholder interests, promoting accountability, and ensuring transparency (Shamil, Shaikh, Ho, & Krishnan, 2014). Several governance attributes influence firms' ESG performance, including board gender diversity, board size, board background skills, and audit committee independence (Liao, Luo, & Tang, 2015; Ntim & Soobaroyen, 2013). Board gender diversity has been linked to improved ESG outcomes, as diverse boards foster inclusive decision-making and ethical governance (Williams, 2003; Adams & Ferreira, 2009). The composition and size of corporate boards also influence ESG reporting, as larger boards bring diverse expertise but may hinder decision-making efficiency (Jizi, Salama, Dixon, & Stratling, 2014; Ntim & Soobaroyen, 2013). Furthermore, board background skills play a crucial role in shaping corporate sustainability, as well-qualified directors contribute to better risk management and responsible business strategies (Garcia-Sánchez et al., 2019). Lastly, audit committee independence enhances governance quality by mitigating agency conflicts and improving transparency in ESG disclosures (Arayssi, Jizi, & Tabaja, 2020; Pozzoli, Pagani, & Paolone, 2022). The Indian context offers a distinctive landscape for exploring the interplay between corporate governance and ESG performance. Regulatory measures, including the Companies Act, 2013, have implemented requirements for board diversity, CSR obligations, and governance transparency (Yadav & Prashar, 2022). Furthermore, SEBI's Business Responsibility and Sustainability Reporting (BRSR) framework, launched in 2021, requires ESG disclosures from India's top 1000 listed companies. Despite these regulatory advancements, the adoption of ESG practices varies across industries, with some corporations actively embracing sustainability initiatives while others perceive it as a regulatory burden (Sharma & Aggarwal, 2022). The pressing socioeconomic and environmental issues facing India, such as climate change, pollution, workers' rights concerns, and corporate misconduct, underscore the need for effective governance systems to enhance sustainability performance. Research indicates that companies with robust corporate governance frameworks are more inclined to implement transparent ESG practices, thereby gaining an edge in both local and international markets (Shakil, Tasnia, &

Mostafiz, (2020). Nevertheless, there is a scarcity of empirical studies examining the relationship between governance and ESG practices in India's corporate landscape, calling for additional scholarly investigation.

This study contributes to the literature by examining the impact of board gender diversity, board size, board background skills, and audit committee independence on ESG performance, measured through overall ESG scores and its three components—environmental, social, and governance scores. The findings will provide valuable insights for regulators, corporate leaders, and investors seeking to enhance sustainability governance in emerging markets like India. The study is stmctured as follows: Section 2 presents the literature review and theoretical framework; Section 3 outlines the research design and methodology; Section 4 discusses the empirical findings, and Section 5 talks about the theoretical and practical implications. Section 6 concludes with limitations and future research directions.

2. Literature review

One essential tool for ensurmg responsibility, openness, and moral behavior in businesses is corporate governance. It has a significant impact on business policies and decision-making, which shapes a company's ESG performance. A company's dedication to sustainability, stakeholder welfare, and responsible governance is reflected in its ESG performance. Board independence, gender diversity, board size, and board competencies are important aspects of company governance that affect ESG performance.

2.1 Theoretical Framework

Agency Theory

Agency theory suggests that corporate governance mechanisms, such as independent audit committees and diverse board structures, mitigate agency conflicts by ensurmg managerial accountability. Non-executive directors oversee managerial actions, reducing agency costs and aligning decisions with shareholder interests. However, ESG initiatives may sometimes serve managerial self-interests rather than shareholder value (Jensen & Meckling, 1976). Corporate managers may adopt ESG practices for personal gain, like bonuses and reputation, which can harm shareholders, and excessive corporate philanthropy may be seen as misusing company resources, reducing firm value (Broadstock, Managi, Matousek, & Tzeremes, 2019). Firms with stronger governance mechanisms experience lower agency costs, leading to enhanced ESG transparency and financial efficiency Cheng, Ioannou, & Serafeim, (2014). Legitimacy Theory

Legitimacy theory posits that firms engage in sustainability disclosures to gain societal approval. Organizations with diverse and skilled boards are more likely to disclose ESG-related information to enhance legitimacy (Newson & Deegan, 2002). Large firms, due to public scrutiny, face higher pressure to adopt sustainable practices and increase transparency. Firms disclose sustainability information to meet societal expectations and gain approval (Islam & Deegan, 2008; Reverte, 2009). Legitimacy theory explains this by stating that companies, especially large ones, increase disclosures to maintain public tmst. While agency theory focuses on financial stakeholders, legitimacy theory provides a broader view, though societal expectations constantly change, making accountability challenging (Aguilera, 2005). By integrating agency and legitimacy theories, this study examines how governance attributes influence ESG disclosures in Indian firms (Shamil et al., 2014).

2.2 Board size and ESG Performance

Board size refers to the number of directors on a company's board. It can have both positive and negative effects (Cheng, 2008). Larger boards offer diverse perspectives, improving oversight and reducing performance fluctuations, but may slow decision-making and reduce efficiency (JENSEN, 1993). Research shows mixed results regarding board size and ESG performance. Studies in Brazil, Italy, and Malaysia found a positive link between larger boards and voluntary disclosures (Allegrini & Greco, 2013; Esa& Ghazali, 2012; Schiehll et al., 2013). However, in the U.S. and Bangladesh, board size had no significant effect (Giannarakis, 2014; Rouf & Hossan, 2021). In Sri Lanka, board size and dual leadership improved sustainability reporting, while female directors had a negative association (Shamil et al., 2014). The debate about board size continues. Some argue large boards enhance transparency (Lim, et al., 2007; Jizi, et al., 2014; Ntim & Soobaroyen, 2013; Shamil et al., 2014), while others believe they weaken control and increase costs (Said, Zainuddin, & Haron, 2009), whereas Amran, Lee, & Devi, (2014) suggests no significant link. Therefore, finding an optimal board size is essential to balancing governance effectiveness and ESG performance (Larmou & Vafeas, 2010; Sun, Salama, Hussainey, & Habbash, 2010). Small boards are often considered more efficient but may lack diverse perspectives needed for strong governance (Laksmana, 2008). Based on the above discussion we framed the following hypotheses:

HI : There is a significant relationship between the board size and the level of ESG performance

HI a: There is a significant relationship between the board size and the level of Environmental performance

HI b: There is a significant relationship between the board size and the level of Social performance

HI c: There is a significant relationship between the board size and the level of Governance performance

2.3 Board background skills and ESG Performance

For a board to function effectively, it requires not only an adequate number of members but also individuals with the right qualifications (Gaur, Bathula, & Singh, 2015). Directors who possess valuable resources and expertise in their respective fields bring extensive knowledge, experience, and skills, enabling them to offer superior guidance, insights, and critical support to organizations (Bogacki & Letmathe, 2021 ; Hillman & Dalziel, 2003). According to Kor & Sundaramurthy,

(2009), a director's experience in specific industries significantly contributes to business grmMh. Well-qualified board members also promote environmental sustainability by adopting responsible strategies (de Villiers et al., 2011). Despite these potential benefits, there is a lack of extensive empirical research analyzing the direct influence of board skills on corporate environmental performance, highlighting the need for further exploration in this area. It is suggested that boards comprising directors with strong expertise, industry experience, and financial acumen can enhance a company's environmental performance by ensuring better strategic decision-making and governance. Several studies have examined the relationship between board characteristics, governance quality, and corporate sustainability. Orazalin & Mahmood, (2021) showed skilled and diverse boards enhance environmental performance. Whereas Dorfleitner & Kreuzer (2024) investigated that well-qualified boards reduce corporate scandals. Kreuzer & Priberny, (2022) found that skilled and gender-diverse boards contribute to lower emissions, though high CSR efforts paradoxically increased emissions. Kunkel, Wigge, & Lueg, (2024) highlight board expertise as a key CSR driver. Collectively, these studies reinforce the role of board skills and expertise in shaping corporate sustainability, governance, and ethical practices across global markets.
The following hypotheses is formulated on the basis of the above studies:

H2: There is a significant relationship between the board background skills and the level of ESG performance

H2a: There is a significant relationship between the board background skills and the level of Environmental performance

H2b: There is a significant relationship between the board background skills and the level of Social performance H2c: There is a significant relationship between the board background skills and the level of Governance performance

2.4 Board gender diversity and ESG Performance

Gender plays a crucial role in corporate decision-making, with CEO gender and female board representation significantly shaping firm policies (Adams & Ferreira, 2009). Board gender diversity enhances oversight and ESG disclosure (Husted & Sousa-Filho, 2019). Board gender diversity has been extensively explored for its influence on corporate sustainability, particularly in the context of Environmental, Social, and Governance (ESG) disclosure. Prior studies link greater female board representation to improved financial performance, higher market valuation, and increased profitability (Campbell & Minguez-Vera, 2008; Liu, 2018). Beyond financial benefits, gender diversity also influences corporate environmental responsibility. Firms with more female directors face fewer environmental lawsuits (Liu, 2018). Romano et al., (2020) observed a positive relationship between board gender diversity and ESG performance, while CEO duality weakened this effect. Husted & Sousa-Filho, (2019) analyzed the role of board composition in ESG disclosure across Latin American firms, revealing that larger boards and independent directors positively influence disclosure, while female board presence and CEO duality negatively impact transparency. Studies show gender-diverse boards improve corporate philanthropy (Williams, 2003) and sustainability (Abed et al., 2025). In Malaysia, diversity enhances governance and environmental disclosure but has insignificant effect on social disclosure (Wasiuzzaman & Wan Mohammad, 2020). Gender-diverse boards improve ESG in US banks (Shakil et al., 2020), GCC firms (Arayssi, Jizi, & Tabaja, (2020), and Arab Gulf states (Issa & Fang, 2019). However, Yadav & Prashar, (2022) found no significant impact in India. This aligns with findings from Manita, Bmna, Dang, & Houanti, (2018), who found no significant impact in S&P 500 firms but supported the critical mass theory.

These findings suggest that the effectiveness of board gender diversity in enhancing sustainability performance may be shaped by regional regulatory frameworks and cultural norms. The following hypothesis is formulated: H3: There is a significant relationship between the board gender diversity and the level ofESG performance

H3a: There is a significant relationship between the board gender diversity and the level of Environmental performance

H3b: There is a significant relationship between the board gender diversity and the level of Social performance H3c: There is a significant relationship between the board gender diversity and the level of Governance performance

2.5 Audit committee independence and ESG Performance

The audit committee (AC) plays a crucial role in ensuring effective corporate governance by balancing managerial interests with stakeholder expectations regarding ESG disclosures. AC independence and activism enhance reporting quality (Cohen et al., 2002). According to Bédard, Coulombe, & Courteau, (2008), AC characteristics influence both financial and non-financial reporting, making them instrumental in maintaining transparency and credibility. Arif et al., (2020) found that frequent AC meetings and independent directors improve ESG disclosure compliance in the Australian energy sector.) However, Kalbuana et al., (2022) observed a negative AC impact on sustainability in the Jakarta Islamic Index, suggesting rigid structures may hinder ESG goals. In Iranian firms, AC financial expertise and independence enhance CSR reporting (Mohammadi et al., 2021). Pozzoli et al., (2022) found that AC independence and expertise improve ESG scores, while long AC tenure negatively affects disclosures. In GCC banks, AC independence and meetings improved sustainability reporting, but financial expertise had an unexpected negative effect (Buallay & Al-Ajmi, 2020).

Overall, AC independence and engagement enhance ESG reporting quality, yet their role in sustainability outcomes remains complex, requiring ftrther investigation across different industries and regulatory environments. The following hypothesis is formulated:

H4: There is a significant relationship between the independent auditors in the board and the level ofESG performance

H4a: There is a significant relationship between the independent auditors in the board and the level of Environmental performance

H4b: There is a significant relationship between the independent auditors in the board and the level of Social performance
H4c: There is a significant relationship between the independent auditors in the board and the level of Governance performance

3. Research design

3.1 Data source

This study is based on the non-financial firms in India. This study collected environment, social and governance score data from 2013 to 2024 from the Refinitiv Eikon database. Refinitiv Eikon database collects the ESG data based on 61 environmental, 51 social and 54 governance indicators. Previous studies have also used this database as a proxy for ESG data. We have used the ESG data of 78 Indian firms. Corporate governance data and financial data are also collected from the Refinitiv Eikon database. Since both the CSR mandate and the selection of women directors were established in India in 2013, the study's time frame spans 12 years, from 2013 to 2024. There were 936 firm-year observations in the recovered dataset.

3.2 Measures

3.2.1 Dependent variable

According to previous research, the ESG score and its constituent parts are the main anticipated variable for the current investigation. It evaluates how well businesses do in terms of their reporting on the three ESG pillars. Refinitiv assigns companies a score between 0 and 100 on environmental, social, and governance (ESG) aspects using its own ESG scores, which are based on publicly available data. A weighted sum of the three separate pillar ratings is the overall ESG score that businesses are given. Individual pillar ratings have been employed as secondary dependent variables in studies to improve analysis.

3.2.2 Independent variable

Four corporate governance measures have been used in order to better understand how corporate governance might impact sustainability performance within a business. Board gender diversity (BGD), board size (Bsize), board background skills (BBskills), and audit committee independence (ACI) are the independent variables.

3.2.3 Control variable

As control variables, our study includes firm-level economic metrics like return on assets (ROA) and financial leverage (LEV), as well as board-level attributes like CEO duality (CEODUAL), board independence (BIND), and CSR sustainability committee (CSRSUS).

All of the factors considered in this investigation are listed in Table I :Definitions and measurements of research variables.

Table 1:Definitions and measurements of research variables

Variable	Acron m	Definition	Source
De endent variable			
ESG score	ESGS	Comprehensive score of three dimensions such as environmental social and governance (Abed et al., 2025; Ara siet al., 2020	Refinitive Eikon Database
Environmental score	ES	A company's environmental performance is assessed by its Environmental Score, which takes into account thin s like emissions, resource usa e, and innovation.	Refinitive Eikon Database
Social Score		The Social Score evaluates a business's social performance by looking at things like product responsibility, community effect, human rights, and workforce.	Refinitive Eikon Database
Governance Score	GS	Governance Score evaluates a company's corporate governance performance based on factors like board structure, shareholder ri ts, and co orate ethics.	Refinitive Eikon Database
Inde endent variable			
Board Size	BSIZE	Number of directors on the board as a whole (Arayssi, Jizi, & Tabaja, 2020)	Refinitive Eikon Database

Board Background Skills Score	BBSKILLS	The proportion of board members possessing either specialized industry expertise or substantial financial acumen Ara si, Jizi, & Taba•a, 2020	Refinitive Eikon Database
Board Gender Diversity Score	BGDIV	Representation of both male and female directors on a company's board,	Refinitive Eikon Database
Audit Committee Independence Score	ACI	More independent directors on audit committees improve the transparency and dependability of financial and non-financial disclosures (Arif et al., 2020)	Refinitive Eikon Database
Control variables			
CSR Sustainability Committee Score	CSRSUS	The "CSR Sustainability Committee Score" signifies a firm's dedication to corporate social responsibility by evaluating the existence of a high-level governance body focused on CSR initiatives(Yadav & Prashar, 2022	Refinitive Eikon Database
Independent board members	BIND	Percentage of independent directors on the company's board as reported by the company (Wasiuzzaman & Wan Mohammad, 2020; & Fan 2019)	Refinitive Eikon Database
CEO Chairman duality	CEODUAL	CEO duality is when the Chief Executive Officer (CEO) holds the role of chair within the board of directors as well usted & Sousa-Filho, 2019 .	Refinitive Eikon Database
Financial leverage	LEV	Ratio of total liabilities to total assets (Issa & Fang, 2019; Yadav & Prashar, 2022)	Refinitive Eikon Database
Return on Assets	ROA	The return on assets of a business shows how profitable it is in relation to its total assets (Shakil, Tasnia, & Mostafiz, 2020	Refinitive Eikon Database

3.3 Research model

Below is an empirical panel model of regression that links the ESG score (model l) to a number of firm-level economic metrics and corporate governance characteristics. Different models for the environment (model 2), social (model 3), and governance (model 4) pillars are being created in addition to the overall ESG score.

$$ESGSit = a + ß1Bsizeit + ß2BBSKILLSit + ß3BGDIVit + ß4AC1it + ß5CSRSUSit + ß6BINDit + ß7CEODUALit + ß8LEVit + ß9ROAit + Eit$$

where ESGSit is the combined ESG score for every firm i, at time t. Board attributes and firm 's key financial metrics are represented as follows: BSIZE is Board Size; BBSKILLS is the Board Background Skills Score; BGDIV is Board Gender Diversity Score; ACI is the audit committee independence score; CSRSUS is the presence of CSR sustainability committee; BIND is independent board members; CEODUAL is CEO Chairman duality; ROA, and LEV. ßl to ß9 are the established regression coefficients for the variables listed above. The intercept is denoted by a. The disturbance error is represented by Eit.

$$ESit = a + ß1Bsizeit + ß2BBSKILLSit + ß3BGDIVit + ß4AC1it + ß5CSRSUSit + ß6BINDit + ß7CEODUALit + ß8LEVit + ß9ROAit + Eit$$

In addition to the aggregate ESG disclosure, hypotheses are made regarding the individual pillar ratings. This is being done in order to determine which aspect of ESG is given deeper consideration by corporate boards in Indian companies. Thus, ESit in model 2 is a company's environmental score based on how well it manages pollution, carbon emissions, waste management, natural resource conservation, etc. The firm (cross-section) and time are denoted by the subscripts i and t, respectively. The variables on the equation's right side are identical to those in model l.

$$SSit = a + ß1Bsizeit + ß2BBSKILLSit + ß3BGDIVit + ß4AC1it + ß5CSRSUSit + ß6BINDit + ß7CEODUALit + ß8LEVit + ß9ROAit + Eit$$

In model 3, SSit evaluates a company's social score based on its efforts to provide society with high-quality goods and services, pay fair wages to workers, promote inclusive diversity, implement equitable working practices, etc.

$$GSit = a + ß1Bsizeit + ß2BBSKILLSit + ß3BGDIVit + ß4AC1it + ß5CSRSUSit + ß6BINDit + ß7CEODUALit + ß8LEVit + ß9ROAit + Eit$$

In model 4, the dependent variable GSit calculates a company's governance score based on how hard it works to implement corporate governance. For example, how well management considers the needs of all parties involved or whether fair and open policies are adopted when financial accounts are being reported.

4. Findings and discussion

4.1 Descriptive statistics

Table 2 : Descriptive statistics on study variables reports the descriptive statistics of all the study variables. The mean ESG score is 53.25, indicating moderateESGperformance among Indian firms. Environmental score(ES)(Mean 49.60) is lower than the Social (SS) (Mean 57.91) and Governance (GS)(Mean 52.73) scores. This suggests that Indian firms focus more on social responsibility and governance rather than environmental concerns. Board Gender Diversity (BGDIV) shows a mean of 51.67%, indicating that half of the board members are female in many firms, likely influenced by regulatory mandates in India.CEO Duality (CEODUAL) has a mean of 0.33, indicating that about 33% of firms have CEOs who also serve as chairpersons, which can raise concerns about excessive executive power.

Table 2 : Descriptive statistics on study variables

Variables	Mean	SD		Max
ESGS	53.25	18.26	9.36	92.75
ES	49.60	23.18	0.75	98.06
	57.91	21.17	3.73	96.23
GS	52.73	23.90	0.46	97.71
BSIZE	10.98	2.77	1	23
BBSKILLS	58.93	7.15	50	71.25
BGDIV	51.67	29.62	0.64	99.93
ACI	50.32	28.79	0.31	85.74
CSRSUS	54.07	5.89	50.55	78.12
BIND	51.05	29.71	0.28	99.50
CEODUAL	0.33	0.47		1
	0.63	0.29	0.12	3.25
ROA	0.60	0.08	-0.19	0.48

4.2 Correlation

Table 3 : Pearson correlations presents the Pearson's correlations among the study variables. ESG Score (ESGS) shows a strong correlation with all three ESG components (ES, SS, and GS), confirming that each pillar contributes significantly to the overall ESG performance.Board Size (BSIZE) is positively correlated with ES and SS but negatively with GS. This suggests that larger boards may improve environmental and social practices but may struggle with governance effectiveness.Board Background Skills (BBSKILLS) is negatively correlated with ESG performance, which is counterintuitive. This may indicate that merely having skilled board members is insufficient unless they are actively engaged in ESG decision-making.Board Gender Diversity (BGDIV) positively correlates with ESGS and governance scores (GS), supporting the argument that diverse boards improve governance.Audit Committee Independence (ACI) strongly correlates with governance score (GS), suggesting that independent audit committees enhance governance transparency. Due to financial restrictions, highly leveraged enterprises may be less focused on ESG initiatives, as seen by the considerable negative association between leverage (LEV) and all ESG scores.Financially successful companies typically have superior ESG policies, as seen by the positive correlation between return on assets (ROA) and ESG performance.

Table 3 : Pearson correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) ESGS	1.000												
(2) ES	0.806***	1.000											
(3) SS	0.870***	0.732***	1.000										
(4) GS	0.618***	0.243***	0.233***	1.000									
(5) BSIZE	0.078**	0.144***	0.148***	-0.139***	1.000								
(6) BBSKILLS	-0.203***	-0.317***	-0.204***	0.006	0.051	1.000							
(7) BGDIV	0.157***	0.026	0.085***	0.255***	-0.103***	-0.017	1.000						
(8) ACI	0.296***	0.047	0.071**	0.519***	0.008	0.064**	0.071**	1.000					
(9) CSRSUS	-0.069**	-0.114***	-0.108***	0.017	0.138***	0.471***	-0.045	0.000	1.000				
(10) BIND	0.180***	-0.035	-0.033	0.473***	-0.178***	0.049	0.196***	0.326***	0.020	1.000			
(11) CEODUAL	0.070**	0.144***	0.207***	-0.257***	0.142***	0.046	-0.078**	-0.077**	0.071**	-0.103***	1.000		
(12) LEV	-0.296***	-0.114***	-0.224***	-0.230***	-0.137***	-0.098***	0.012	-0.184***	-0.072**	-0.195***	-0.094***	1.000	
(13) ROA	0.389***	0.252***	0.385***	0.220***	0.057*	0.088***	0.079**	0.141***	0.065**	0.060*	0.224***	-0.368***	1.000
VIF					1.10	1.30	1.06	1.16	1.31	1.25	1.10	1.25	1.24

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Source: Author's own work

4.3 Regression

The regression ai performance through independent moe precise evaluation of governance practices and their distinct effects on sustainability. A panel data structure is employed, incorporating fixed and random effects models to enhance result reliability. Consistent with prior research (Almaqtari et al., 2024), the Hausman test determines that fixed effects models are most suitable for models I , 2, and 4, while model 3 is best explained by a random effects model. These estimations, presented in Table 4: Regression analysis ensure a rigorous methodological framework, strengthening the study's empirical validity and its contribution to governance and sustainability research.

Model 1: ESG Score as the Dependent Variable

This study examines ESG performance in relation to board characteristics and control variables. The findings indicate that Board Size has an insignificant effect on ESG scores, suggesting that increasing board size does not necessarily enhance sustainability performance in Indian firms, aligning with (Giannarakis 2014). Board Background Skills (BBSKILLS) exhibit a significant negative relationship, implying that highly skilled boards may prioritize financial performance over ESG goals. Conversely, Board Gender Diversity (BGDIV) positively impacts ESG, reinforcing global evidence that diverse boards foster sustainable decision-making (Romano, Cirillo, Favino, & Netti, 2020). Additionally, Audit Committee Independence (ACI) positively influences ESG scores, indicating that independent audit committees enhance oversight and risk management (Arif et al., 2020). Among control variables, the CSR Sustainability Committee negatively impacts ESG, while Board Independence and ROA show insignificant relationships. CEO Duality has a strong negative effect, suggesting that CEOs holding dual roles weaken governance oversight. Leverage negatively affects ESG scores, indicating that financial constraints hinder sustainability efforts. Based on these results, hypotheses 2, 3, and 4 are accepted, while hypothesis I is rejected.

Model 2: Environmental Score as the Dependent Variable

This model examines how board characteristics influence a firm's environmental score. Board Size has an insignificant effect, implying that merely having a larger board does not necessarily lead to better environmental practices. Indian firms might focus on regulatory compliance rather than proactive environmental strategies, rendering board size irrelevant. Moreover, Board Skills has a significant negative effect, suggesting that skilled board members might prioritize shortterm financial gains over environmental sustainability. Indian firms, particularly in high-growth sectors, often emphasize profitability, which may come at the expense of environmental initiatives. BGDIV displayed an Insignificant effect, indicating that gender diversity alone does not significantly drive environmental performance. This could be due to the limited authority of female board members in influencing sustainability policies in India. Finally, independent audit committee also showed an insignificant impact, suggesting that audit committees may not play a strong role in shaping environmental strategies, possibly due to limited enforcement of environmental disclosures in India. The control variable, CSR Sustainability Committee has a negative impact, which is surprising. This could imply that merely having a CSR committee does not guarantee effective environmental actions. CEO Duality has a significant negative effect, reinforcing the concern that excessive executive power may hinder environmental responsibility. Leverage negatively affects environmental performance. Debt-ridden firms reduce sustainability investments, prioritizing short-term financial stability. From the analysis, it is evident that hypotheses HI a, H3a, and H4a are rejected, and only H2a is accepted.

Model 3: Social Performance as the Dependent Variable

This model analyzes the impact of board characteristics on a firm's social performance. BSIZE has a strong positive effect, indicating that larger boards contribute to better social performance. Larger boards may bring diverse perspectives that support corporate social responsibility (CSR) initiatives, particularly in India, where CSR spending is mandated for large firms. BBSKILLS negatively impact social performance, reinforcing the earlier trend that skilled boards may focus on financial returns rather than social responsibilities. In India, social performance may not be a pnmary concern for financially driven board members. Furthermore, BGDIV is positively associated, suggesting that gender-diverse boards positively influence social performance, likely due to increased sensitivity toward social issues such as employee welfare and community development. Lastly, ACI, insignificantly related with social score, implying that independent audit committees may not actively contribute to social responsibility initiatives. ROA has a large positive effect, confirming that financially successful firms invest more in social initiatives. In terms of social performance, the hypotheses HI b, H2b, and H3b are accepted, while H4b is rejected.

Model 4: Governance Performance as the Dependent Variable

This model examines the role of board characteristics in shaping governance performance. BSIZE negatively affects governance, suggesting that larger boards may hinder governance performance. This aligns with research indicating that large boards can be inefficient in decision-making and corporate governance enforcement. BBSKILLS negatively affect governance. In India, governance reforms often emerge from regulatory pressure rather than board-driven initiatives. BGDIV significantly improves governance scores, indicating that diverse boards enhance governance performance, possibly due to greater transparency and ethical decision-making. ACI has a strong positive effect, highlighting its role in ensuring transparency. Furthermore, control variables, Board Independence, improves governance. Independent directors enhance corporate governance transparency, and ROA negatively affects governance. All the independent variables have a significant impact on the governance score, leading to the acceptance of all hypotheses (HIC, H2c, H3c, and H4c).

Table 4: Regression ana sis

VARIABLES	Model I	Model 2	Model 3	Model 4
BSIZE	.086 .174	.18 .238	.537 * * * .204	 .203
BBSKILLS	—.662 * * .051	 .069	—.637 * * * .061	 .059
BGDIV	.03 5 ** .014	.019 .019	 .016	.062 * * * .016
ACI	.058 .018	.015 .025	-.007 .021	 .021
CSRSUS	 .06	 .082	—.451 .073	 0.07
BIND	.024 (.018)	.008 (.024)	-.017 (.021)	.084* * * (.021)
CEODUAL	—5.25 * * (1.155)	 (1.578)	-2.027 (1.326)	-5.881 (1.352)
LEV	-5.303 *** (1.964)	 (2.684)	-7.568*** (2.237)	.438 (2.299)
ROA	-6.884 (9.075)	_9.447	31.583 (9.776)	-18.586* (10.622)
Constant	 (4.061)	 (5.548)	 (5.115)	56.747 (4.753)
Observations	936	936	936	936
R-squared	0.308	0.323	0.153	0.206
F-stat/Chi-square	42.030	45.019	299.767	24.476
Prob>F/Chi-square	0.000	0.000	0.000	0.000
Panel model	Fixed effect	Fixed effect	Random Effect	Fixed effect
Source: Author's own work ***p<.01, **p<.05, *p<.l				

5. Theoretical and Practical Implications

This study contributes to corporate governance and sustainability literature by providing empirical evidence on the governance determinants of ESG performance in the Indian context. The findings support Agency Theory, which argues that strong governance mechanisms mitigate managerial self-interest and enhance sustainability accountability (Broadstock et al., 2019; Jensen & Meckling, 1976). Furthermore, the results align with Legitimacy Theory, suggesting that firms adopt ESG disclosures to gain societal approval and regulatory legitimacy (Islam & Deegan, 2008; Newson & Deegan, 2002).

From a practical perspective, the findings offer important insights for policymakers, investors, and corporate leaders: 1. Regulatory bodies such as SEBI and the Ministry of Corporate Affairs should enhance ESG disclosure requirements by making sustainability governance a core component of corporate governance frameworks.

2. Firms should prioritize ESG training for board members to ensure that corporate leaders possess the necessary skills to integrate sustainability into strategic decision-making.

3. Organizations should separate the roles of CEO and board chairperson to strengthen governance oversight and mitigate risks associated with executive dominance.

4. Policymakers should incentivize financially constrained firms to invest in ESG initiatives through sustainabilitylinked financial instruments such as green bonds and ESG-based credit facilities.

6. Conclusion, Limitations, and Future Research Directions

This research investigated the connection between corporate governance characteristics and ESG (Environmental, Social, and Governance) performance in non-financial companies based in India. The study focused on evaluating how factors such as gender diversity on the board, the number of board members, the professional backgrounds and skills of board members, and the independence of the audit committee influenced overall ESG scores and their individual components. The research utilized data from 78 Indian corporations over a 12-year period (2013-2024), offering empirical evidence on the ways in which governance structures affect sustainability practices in developing economies.The research suggests that having a gender-diverse board of directors positively and significantly influences a company's overall Environmental,

Social, and Governance (ESG) performance, with a notable impact on governance ratings. This supports the idea that boards with gender diversity contribute to improved ethical decision-making processes and increased corporate transparency (Adams & Ferreira, 2009; Arayssi et al., 2020). This suggests that regulatory mandates, such as the Companies Act, 2013 , which require female board representation, are contributing positively to sustainability governance in India. However, the study found an insignificant relationship between board gender diversity and environmental performance, highlighting the need for additional regulatory and voluntary initiatives to strengthen female leadership in sustainability-focused roles. Board size exhibited mixed effects on ESG performance. While larger boards were associated with higher social scores, indicating their effectiveness in stakeholder engagement and CSR initiatives, they were negatively associated with governance performance, suggesting that excessively large boards may lead to decisionmaking inefficiencies and weakened oversight (Jizi et al., 2014; Ntim & Soobaroyen, 2013). These findings align with prior research, which argues that while a diverse and experienced board enhances sustainability efforts, overly large boards can introduce coordination challenges and reduce strategic effectiveness. Board background skills, surprisingly, had a negative impact on ESG scores, contradicting the assumption that highly skilled boards contribute positively to sustainability governance. One possible explanation is that traditional board expertise is primarily focused on financial and operational efficiency rather than sustainability integration (Garcia-Sånchez et al., 2019). This highlights the need for ESG-specific training and sustainability literacy among board members to bridge the gap between financial expertise and sustainability leadership. Audit committee independence emerged as a significant driver of governance performance, supporting the role of independent oversight in ensuring transparency, mitigating managerial opportunism, and enhancing ESG disclosures (Pozzoli et al., 2022). However, its impact on environmental and social scores was less pronounced, suggesting that while independent audit committees strengthen governance structures, they may not directly influence environmental and social policies. This underscores the importance of integrating ESG considerations into audit committee responsibilities to ensure holistic sustainability governance.

Although this study has provided contributions, it also has limitations. It has several limitations: First, it focuses on Indian non-financial firms, which limits its generalizability to financial firms and firms from other emerging markets. In future research, the analysis can be extended to the various sectors of financial firms and multinational corporations functioning in India to understand sector-specific ESG dynamics. In addition, as the study uses secondary data extracted from the Refinitiv Eikon database, some qualitative features of ESG implementation, including corporate culture and leadership buy-in toward sustainability, may not be reflected. Future research could complement quantitative findings with qualitative case studies and interviews to gain deeper insights into corporate sustainability practices.

Moreover, the study identified a negative correlation between background skills of board members and ESG performance, which deserves further investigation. Future research could explore board members' ESG-specific expertise and whether firms with sustainability-trained directors outperform in ESG performance. Additionally, there is still a lack of studies exploring the role prominent across the board regarding how audit committee independence impacts environmental/social performance and how to improve corporate sustainability policies through the work of audit committees.

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Availability of data and materials

Not Applicable

Disclosure of Conflicting Interests

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