

# CEO Characteristics, Board Gender Diversity, and ESG Performance: Evidence from Indonesia

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## Abstract

This study examines the impact of CEO characteristics and gender diversity on corporate ESG performance, focusing on Indonesian companies. The independent variables include CEO age, CEO tenure, CEO's technical or scientific expertise, female leadership in the board of directors, and female leadership in the board of commissioners. ESG performance measured by the ESG Risk Rating provided by Sustainalytics. A total of 262 samples were analyzed using a random effects panel data model (REM) with STATA 15. The results indicate that CEO age, CEO tenure, CEO's technical or scientific expertise, and female leadership in the board of directors do not significantly affect ESG performance. However, female leadership in the board of commissioners is found to have a significant impact. The findings suggest that increasing female representation on the board of commissioners can play a crucial role in reducing ESG risks, offering practical insights for policymakers and businesses aiming to enhance sustainability practices.

**Keywords:** Board Gender Diversity, Chief Executive Officer (CEO) Characteristics, Corporate Governance; Environment, Social, and Governance (ESG); Gender Diversity; ESG Risk Rating

## 1. Introduction

In recent years, there has been a growing emphasis on the importance of environmental, social, and governance (ESG) performance in corporate strategy and reputation management. Strong ESG performance not only enhances a company's public image but also attracts investors who prioritize sustainable business practices (De Lucia et al., 2020; Fatemi et al., 2018). Despite the growing global emphasis on ESG, challenges remain in its adoption, particularly in developing countries like Indonesia, where regulatory environments and corporate governance frameworks differ significantly from those in developed economies. Moreover, companies in developing economies, face unique challenges as they operate within distinct regulatory, economic, and cultural contexts.

Research suggests that top management characteristics, particularly those of the CEO, play a significant role in shaping corporate ESG (Hambrick & Mason, 1984). According to the Upper Echelons Theory, a CEO's personal attributes—such as age, expertise, and tenure—can significantly influence their decision-making approach and, consequently, the firm's strategic direction. For example, Huang (2013) found that CEOs with technical expertise tend

to implement environmentally focused initiatives, as their skills make them more attuned to the operational benefits of sustainable practices. Similarly, a study by Lewis et al. (2014) demonstrated that educational background and expertise influence the extent of a firm's environmental disclosure, suggesting that certain CEO attributes can directly affect ESG transparency and performance. In Indonesia, where ESG adoption is still evolving, examining these dynamics can offer unique insights into the role of leadership in fostering sustainability.

In addition to CEO characteristics, gender diversity within corporate boards has emerged as an influential factor in promoting responsible governance. Women leaders often employ transformational leadership styles that emphasize collaboration, empathy, and inclusive decision-making, creating a conducive environment for ESG initiatives (Eagly et al., 2003). Research by Campbell & Mínguez-Vera (2008) further suggests that gender diversity on boards enhances corporate governance quality and social responsibility, making female directors and female commissioners are valuable contributors to ESG strategies. Furthermore, studies have shown that boards with a higher representation of women tend to be more responsive to stakeholder concerns, thereby driving improvements in corporate social responsibility practices (Adams & Ferreira, 2009;

Bear et al., 2010). This is consistent with findings by Abdelkader et al. (2024) who highlight the mediating role of temporal orientation in enhancing ESG performance in firms with gender-diverse boards in South Africa. Their research demonstrates that women's leadership is associated with a longer-term strategic vision, which positively influences the company's ESG outcomes.

In the Indonesian context, Nasih et al. (2023) have demonstrated that female leaders in governance roles drive enhanced corporate social responsibility (CSR) disclosures. By ensuring better transparency and accountability, female commissioners contribute to the advancement of CSR and, by extension, ESG practices within the company. Their role in overseeing the alignment of business operations with ESG goals not only boosts corporate reputation but also ensures long-term sustainability, making gender-diverse boards a strategic asset in enhancing ESG performance across various sectors.

This study is novel as there is limited research on the combined effects of CEO characteristics and board gender diversity on ESG performance within Indonesia. By integrating CEO attributes—such as age, tenure, and technical expertise—and female representation on board of directors and board of commissioners as proxy of board gender diversity with ESG risk ratings from Morningstar Sustainability, this research aims to provide new insights into the role of leadership in driving ESG performance in Indonesian firms listed on the Indonesia Stock Exchange. This research contributes to both theory and practice, offering guidance for corporate governance policies and regulatory considerations regarding board diversity and executive selection in Indonesia.

## 2. Literature Review

### Theoretical Background

The theoretical foundation of this study is grounded in two key theories: Stakeholder Theory and Upper Echelons Theory. Stakeholder Theory, as introduced by Freeman (1984), argues that organizations must address the interests of all stakeholders—employees, customers, suppliers, and the broader community—in their decision-making processes. This approach emphasizes that companies should go beyond just maximizing shareholder value, focusing instead on balancing and fulfilling the needs of various groups to ensure long-term sustainability and ethical business practices. In the context of this research, this theory provides insight into how CEO leadership decisions can influence not only the financial outcomes of a company but also its social and environmental responsibilities, which are important for stakeholder satisfaction and company growth.

Upper Echelons Theory, proposed by Hambrick & Mason (1984) offers a complementary perspective by suggesting that the personal characteristics of top executives significantly shape the strategic decisions and performance outcomes of organizations. Hewa Heenipellage et al. (2022) categorized studies applying the Upper Echelons Theory over the past decade into three distinct approaches based on the characteristics examined. The first approach focused exclusively on observable upper echelon traits such as age, tenure, experience, and educational background. The second approach concentrated solely on unobservable characteristics, such as cognitive styles, values, and motivations. Meanwhile, the third approach combined both observable and unobservable traits to assess upper echelon performance.

This study aligns with the first approach by exclusively investigating observable characteristics. By focusing on tangible and measurable traits, such as age, tenure, technical expertise, and gender diversity, the research aims to provide a clear and empirical analysis of their influence on organizational outcomes, particularly ESG Risk Ratings. This approach facilitates objective assessment and enhances replicability, aligning with the methodological rigor required for quantitative research.

### Hypothesis Development

#### The Influence of CEO Age on ESG Risk Rating

A younger CEO is often seen as more dynamic and capable of optimizing their role, despite still requiring diverse expertise (Fatemi et al., 2018). As noted by Atan et al. (2018), existing evidence suggests a positive relationship between managerial youth and company growth. According to De Lucia et al., 2020, younger CEOs tend to be highly motivated and innovative, allowing them to drive company development, including by understanding the environmental demands surrounding the firm. Moreover, older executives are generally more conservative and, therefore, less willing to take risks (Huang, 2013). Based on this theoretical framework and supported by prior research, the first hypothesis is formulated as follows:

**H1:** CEO age has a positive influence on ESG Risk Rating.

#### The Influence of CEO Tenure on ESG Risk Rating

Shen (2003) argues that as CEO tenure increases, the executive tends to disclose fewer corporate governance practices compared to a newly appointed CEO. Prolonged tenure may create a "comfort zone," leading to reduced oversight. In contrast, a CEO with a shorter tenure is typically under closer scrutiny by shareholders, and thus, CEOs with shorter tenures tend to demonstrate leadership capabilities by disclosing more practices related to environmental, social, and governance (ESG) aspects (Lewis et al.,

2014).

**H2:** CEO tenure has a negative influence on ESG Risk Rating.

### The Influence of CEO Educational Background on ESG Risk Rating

Wan et al. (2023) explain that a CEO's educational background positively influences ESG performance, as education impacts cognitive abilities and CEO behavior. Education also affects a CEO's ability to create and implement strategies related to sustainability and environmental management. A background in engineering or science is considered highly relevant to the environmental component of ESG. Research by Garcia-Blandon et al. (2019) finds that CEOs with an engineering background tend to have better ESG performance compared to those with other educational backgrounds. Based on this theoretical framework and prior studies, the third hypothesis is formulated as follows: **H3:** CEO expertise in engineering and science has a negative influence on ESG Risk Rating.

### The Influence of Female Leadership on ESG Risk Rating

Previous research indicates that female leaders tend to be more innovative (Terjesen et al., 2016) and show various ethical and social behaviors than men (Mahmood et al., 2018). Unlike their male counterparts, female leaders are more likely to pursue innovative initiatives and tend to deviate from traditional practices. As leaders, women are often more focused on stakeholder interests and long-term goals, sometimes sacrificing short-term profits. From an environmental perspective, many studies have shown that increasing female representation in the board of directors and the board of commissioners can positively impact the company's environmental responsibilities. Female directors, for example, tend to support renewable energy, which can drive environmentally friendly innovation within the company (Dempere & Abdalla, 2023; Nielsen, 2010; Romano et al., 2020).

**H4:** Female leadership in the board of directors has a negative influence on ESG Risk Rating.

**H5:** Female leadership in the board of commissioners has a negative influence on ESG Risk Rating.

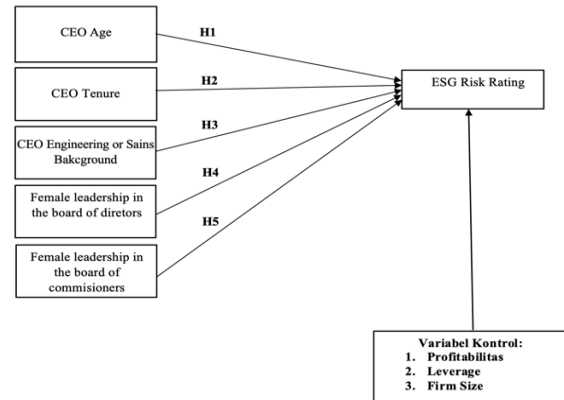


Figure 1: The proposed model for this study

## 3. Methods

This study collects data from annual reports and financial statements of companies obtained from company websites, [www.idx.co.id](http://www.idx.co.id), and Morningstar Sustainalytics. The data spans from 2022 to 2023, covering the entire population of companies listed on the Indonesia Stock Exchange (IDX). Unlike previous studies that focused on a single industry sector, this research includes multiple industries to capture diverse leadership forms and their impact on corporate ESG values. The sampling technique employed is purposive sampling, with the criteria being companies that publish annual reports and financial statements within the study period, are listed on the IDX, and have available ESG Risk Ratings from Sustainalytics.

TABLE 1

POPULATION AND SAMPLE

No.	Sampel Criterion	Number of Firms	
		2022	2023
1.	Companies listed in Indonesia Stock Exchange	825	901
2.	Companies whose ESG Risk Rating scores are unavailable in the Morningstar Sustainalytics database and those without annual reports.	685	770
<b>Total</b>		140	131

Based on the purposive sampling process, the study includes 140 companies for 2022 and 131 companies for 2023. Since this research uses panel data, comprising both cross-sectional and time-series data, companies without data for both years are excluded. As a result, a total sample of 269 companies was analyzed in this study.

Control Variables:  
Profitability, Leverage, Firm Size

The dependent variable in this study is the company performance measured by ESG Risk Rating of the company, as issued by Morningstar Sustainalytics. The ESG Risk Rating measures the extent to which a

company's economic value is affected by ESG factors. The ESG Risk Rating from Sustainalytics ranges from 0 to 100, with 100 indicating a high level of risk and 0 indicating no risk. Companies are classified into five categories: negligible (scores 0–10), low (scores 11–20), medium (scores 21–30), high (scores 31–40), and severe (scores above 40).

The independent variables in this study include the CEO's age (CEO\_Age), CEO tenure (CEO\_Tenure), CEO's technical or scientific expertise (CEO\_Expert), female leadership within the board of directors (WL\_Dir), and female leadership within the board of commissioners (WL\_Kom).

**CEO\_Age** is measured as the CEO's age at the time of the study, expressed in years. **CEO\_Tenure** refers to the duration of the CEO's tenure up to the year of the study, also expressed in years. **CEO\_Expert** captures the CEO's educational background in engineering or science, and is measured using a dummy variable, where a value of 1 indicates the CEO holds a degree in engineering or science, and 0 otherwise. **WL\_Dir** is measured by the proportion of female directors relative to the total number of directors on the board. Finally, **WL\_Kom** is measured by the proportion of female commissioners relative to the total number of commissioners on the board.

The control variables in this study, as identified in previous research by Romano, Cirillo, Favino, and Netti (2020), include the company's profitability, firm size, and leverage. Profitability is measured by Return on Assets (ROA), which is calculated as net income divided by total assets. Leverage (LEV) is assessed using the debt-to-asset ratio, which is computed as total liabilities divided by total assets at the end of the period. Firm size (Firm\_Size) is measured by the natural logarithm of total assets.

Based on the measurements of the variables outlined above, panel data analysis is appropriate for this study. Panel data analysis is utilized when data is collected over time (time series) for a group of individuals or entities (cross-section). In this study, the data includes CEO\_Age, CEO\_Expert, CEO\_Tenure, WL\_Dir, WL\_Kom, ROA, Lev, and Firm\_Size for a sample of companies from 2022 to 2023.

The panel data model in econometric analysis comprises fixed effects and random effects models, each with distinct assumptions and applications. The fixed effects model assumes that the influence of time-invariant variables is constant across entities within the sample. Therefore, the variation in the dependent variable can only be explained by time-varying factors. This model controls for unobserved heterogeneity that remains constant over time, such as differences in company culture or undisclosed business strategies. In contrast, the random effects model assumes that the influence of time-invariant factors can vary across entities, and

that the variation in the dependent variable can also be attributed to time-varying factors. The random effects model is particularly useful for estimating the average effect of time-invariant factors on the dependent variable.

The Hausman statistical test is used to determine which model is more suitable for a particular dataset by comparing the coefficient estimates of the fixed effects and random effects models. If the test results show a significant difference between the coefficients, the fixed effects model is preferred, as it accommodates unobserved variability that remains constant over time. If no significant difference is found, the random effects model may be more appropriate due to its higher efficiency. Based on the redundant fixed effect test, the analysis results indicate that the fixed effects model is more appropriate for assessing the panel data, as the Hausman test revealed that this model is more suitable compared to other models. Therefore, this study uses the following model:

$$ESG\_Rating = \alpha + \beta_1 CEO\_Age_{it} + \beta_2 CEO\_Expert_{it} + \beta_3 CEO\_Tenure_{it} + \beta_4 WL\_Dir_{it} + \beta_5 WL\_Kom_{it} + \beta_6 ROA_{it} + \beta_7 Lev_{it} + \beta_8 Firm\_Size_{it} + \epsilon_{it} + u_i \quad (1)$$

## 4. Results

TABLE 2

### DESCRIPTIVE ANALYSIS

Variable	Obs	Mean	Std. Dev.	Min	Max
ceo_age	262	57.31298	9.900334	33	84
ceo_tenure	262	6.256603	8.506933	.08	52
ceo_expert	262	.3549618	.4794175	0	1
wl_dir	262	.1680916	.1821671	0	.75
wl_kom	262	.1374809	.1831937	0	1
roa	262	.0680534	.1454562	-1.67	.58
lev	262	.4632443	.2352804	.03	.99
firm_size	262	20.14561	4.652268	12.53	31.83
esg_rating	262	29.65573	9.809591	8.4	54.8

Based on the results of the descriptive analysis, the average ESG Risk Rating of Indonesian companies is 29.656, with a standard deviation of 9.809. The range of values in the sample spans from 8.4 to 54.8, indicating that companies in Indonesia exhibit varying levels of ESG risk, from negligible to severe, according to the classification by Morningstar Sustainalytics. With an average of 29.656, the majority of companies fall within the medium-risk category (21–30). This category suggests that companies face material risks related to environmental, social, and governance (ESG) factors, which could significantly impact their operations and sustainability. However, these risks are still more controlled compared to the "high" or "severe" categories.

The age of CEOs in Indonesian companies within the sample ranges from 33 to 84 years, with an average of 57.31 years and a standard deviation of 9.900. This

indicates that the average CEO in Indonesian companies is relatively older. CEO tenure varies between 0.08 and 52 years, with an average tenure of 6.2567 years and a standard deviation of 8.50688. Longer tenures typically indicate leadership stability, which may contribute to long-term decision-making.

The independent variable for female leadership on the board of directors (WL\_Dir) shows an average proportion of female leadership in the board of directors at 16.8058%, with a standard deviation of 18.2147%. The proportion of female leadership on the board of directors ranges from 0% (no women on the board) to 75%. This data indicates considerable variation in female involvement in board leadership, yet overall, female representation remains low in Indonesian companies, suggesting that female leadership in boards is not yet widespread.

The proportion of female leadership in the board of commissioners (WL\_Kom) has an average of 13.7467% with a standard deviation of 18.3361%. The proportion of female leadership on the board of commissioners ranges from 0% to 100%, meaning some companies have boards entirely composed of women. The high standard deviation suggests significant variation in the proportion of female leadership on the board of commissioners across companies, and as with the board of directors, female representation remains relatively low overall.

The control variable of company profitability, measured by ROA, has an average of 0.0682, or 6.82%, with a standard deviation of 0.1456. ROA values range from -1.67 to 0.58, indicating performance differences in profitability among the companies. The positive average ROA suggests that companies, on the whole, are profitable, although some show negative values, indicating losses. The leverage variable (Lev) has an average of 0.4636 with a standard deviation of 0.23527, indicating that, on average, companies finance approximately 46.36% of their total assets through debt. Leverage values range from 0.03 to 0.99, showing that some companies are almost entirely equity-financed, while others rely heavily on debt. The relatively high standard deviation indicates significant variation in capital structure policies across companies. Finally, firm size (Firm\_Size) has an average of 20.1459 with a standard deviation of 4.65224. Firm size varies from 12.53 to 31.83, reflecting significant variation in the size of companies within the sample.

The results of the model testing using the random effects panel data method (REM) are presented in the table below.

TABLE 3  
RANDOM EFFECT (REM) TEST RESULT

esg_rating	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
ceo_age	.0390326	.0563678	0.69	0.489	-.0714462 .1495115
ceo_tenure	-.0545278	.0889236	-0.61	0.540	-.2288149 .1197593
ceo_expert	-.4564282	1.038958	-0.44	0.660	-2.492749 1.579893
wl_dir	-3.721907	2.471185	-1.51	0.132	-8.565341 1.121527
wl_kom	-5.312027	1.784828	-2.98	0.003	-8.810226 -1.813828
roa	-1.574268	1.322711	-1.19	0.234	-4.166735 1.018198
lev	1.736105	.7446956	2.33	0.020	.2765283 3.195681
firm_size	-.0402253	.0434003	-0.93	0.354	-.1252883 .0448377
_cons	29.37461	3.278559	8.96	0.000	22.94876 35.80047
sigma_u	9.2407924				
sigma_e	2.1538372				
rho	.94847329				(fraction of variance due to u_i)

Thus, the equation for this research model is as follows:

$$ESG\_Rating = 29,375 + 0,039CEO\_Age - 0,054CEO\_Tenure - 0,456CEO\_Expert - 3,722WL\_Dir - 5,312WL\_Kom - 1,574ROA + 1,736Lev - 0,040Firm\_Size \quad (2)$$

Based on the equation, the following conclusions can be drawn:

- The constant value of 29.375 indicates that if all independent variables (CEO\_Age, CEO\_Tenure, CEO\_Expert, WL\_Dir, WL\_Kom) are zero (0), the ESG\_Rating will be 29.375 units, ceteris paribus.
- The coefficient of the CEO\_Age variable is 0.039, meaning that if CEO\_Age increases (or decreases) by one unit, the ESG\_Rating will also increase (or decrease) by 0.039 units, ceteris paribus.
- The coefficient of the CEO\_Tenure variable is -0.054, meaning that if CEO\_Tenure increases (or decreases) by one unit, the ESG\_Rating will decrease (or increase) by -0.054 units, ceteris paribus.
- The coefficient of the CEO\_Expert variable is -0.456, meaning that if CEO\_Expert increases (or decreases) by one unit, the ESG\_Rating will decrease (or increase) by -0.456 units, ceteris paribus.
- The coefficient of the WL\_Dir variable is -3.722, meaning that if WL\_Dir increases (or decreases) by one unit, the ESG\_Rating will decrease (or increase) by -3.722 units, ceteris paribus.
- The coefficient of the WL\_Kom variable is -5.312, meaning that if WL\_Kom increases (or decreases) by one unit, the ESG\_Rating will decrease (or increase) by -5.312 units, ceteris paribus.
- The coefficient of the ROA variable is -1.574, meaning that if ROA increases (or decreases) by one unit, the ESG\_Rating will decrease (or increase) by -1.574 units, ceteris paribus.
- The coefficient of the Lev variable is 1.736, meaning that if Lev increases (or decreases) by one unit, the ESG\_Rating will also increase (or decrease) by 1.736 units, ceteris paribus.
- The coefficient of the Firm\_Size variable is -0.040, meaning that if Firm\_Size increases (or decreases) by one unit, the ESG\_Rating will decrease (or increase) by -0.040 units, ceteris paribus.

A Hausman test was conducted to compare the models and determine which should be selected between the

fixed effects model (FEM) and the random effects model (REM). Based on the Hausman test, the significance value ( $\text{Prob} > \chi^2 = 0.0768$ ) is greater than 5% ( $\alpha = 0.05$ ), which indicates that the null hypothesis (difference in coefficients not systematic) is accepted. Therefore, the preferred model is the random effects model (REM).

TABLE 4

HAUSMAN TEST

	---- Coefficients ----		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B)		
ceo_age	.0654215	.0390326	.0263888	.0464125
ceo_tenure	-.0737506	-.0545278	-.0192228	.1094276
ceo_expert	-.9177623	-.4564282	-.4613341	.8143455
wl_dir	-.2201395	-3.721907	3.501767	1.483666
wl_kom	-4.507253	-5.312027	-.8047746	.6919371
roa	-1.652142	-1.574268	-.0778739	.2443283
lev	1.715067	1.736105	-.0210383	.0798722
firm_size	-.0185395	-.0402253	.0216859	.0087209

b = consistent under Ho and Ha; obtained from xtreg  
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$\chi^2(8) = (b-B)' [(V_b-V_B)^{-1}] (b-B)$   
 = 14.20  
 Prob>chi2 = 0.0768

The results of the study discussed as follow:

**Effect of CEO Age on ESG Performance**

Based on Table 4.3, it is evident that the CEO Age (CEO\_Age) variable does not have a significant effect on the ESG Risk Rating (ESG\_Rating) because its significance value ( $P > |z|$ ) is 0.489, which is greater than 0.05 ( $\alpha = 5\%$ ). This means that changes in CEO\_Age will not significantly impact the changes in the company's ESG rating. Therefore, H1 is rejected.

**Effect of CEO Tenure on ESG Performance**

The CEO Tenure (CEO\_Tenure) variable does not have a significant effect on ESG\_Rating, as it has a significance value of 0.540, which is far above the threshold of 0.05 ( $\alpha = 5\%$ ). This suggests that an increase or decrease in CEO\_Tenure will not significantly affect the change in the company's ESG rating. Thus, H2 is rejected.

**Effect of CEO Expertise on ESG Performance**

The CEO Expertise (CEO\_Expert) variable does not have a significant effect on ESG\_Rating, as it has a significance value of 0.660, which is well above 0.05 ( $\alpha = 5\%$ ). This indicates that fluctuations in CEO\_Expert will not significantly impact the company's ESG rating. Therefore, H3 is rejected.

**Effect of Female Leadership on the Board of Directors on ESG Performance**

The WL\_Dir variable does not have a significant effect on ESG\_Rating, with a significance value of 0.132, which is greater than 0.05 ( $\alpha = 5\%$ ). This means that changes in the proportion of female leadership in the board of directors (WL\_Dir) will not significantly impact the company's ESG rating. Therefore, H4 is rejected.

**Effect of Female Leadership on the Board of Commissioners on ESG Performance**

The WL\_Kom variable has a significant effect on ESG\_Rating, with a significance value of 0.003, which is less than 0.05 ( $\alpha = 5\%$ ), and a negative relationship (coefficient value of -5.312). This means that every one-unit increase in WL\_Kom will significantly reduce the ESG Risk Rating of the company by one unit. Based on these findings, H5 is accepted. Therefore, a higher proportion of female leadership in the board of commissioners significantly reduces the company's ESG Risk Rating, and vice versa.

This finding aligns with upper echelon theory, which posits that diversity within the board provides a broader range of perspectives and values, ultimately enriching the decision-making process and contributing to more sustainability-oriented outcomes, as suggested by (Byron & Post, 2016). In the context of a two-tier system, commonly implemented in developing countries, including Indonesia, the board of commissioners plays a more independent role in overseeing and advising the board of directors. This role enables commissioners, including female commissioners, to monitor management more effectively and support the implementation of corporate strategies that are more aligned with Environmental, Social, and Governance (ESG) principles. Additionally, stakeholder theory emphasizes the importance of companies meeting the expectations of various stakeholders, not only to achieve financial profit but also to fulfill social and environmental responsibilities. By having women on the board of commissioners, companies demonstrate their commitment to diversity and inclusion, which is viewed positively by external stakeholders, including investors who are concerned with ESG issues. Previous research by (Joecks et al., 2013) has shown that the presence of women on boards not only positively impacts financial performance but also influences public perceptions of the company, which ultimately contributes to improved ESG performance, as noted by Velte (2016) and Pramono & Nasih (2022).

**5. Conclusions**

This study aims to examine the effect of CEO characteristics, measured by CEO age, CEO tenure, CEO's technical or scientific expertise, and female leadership within the board of directors and board of commissioners, on the company's ESG performance, measured by the ESG Risk Rating issued by Morningstar Sustainability. The results indicate that CEO age, CEO tenure, CEO's technical or scientific expertise, and female leadership within the board of directors do not have a significant effect on the ESG Risk Rating. Furthermore, female leadership in the board of commissioners has a negative and significant effect on the ESG Risk Rating, meaning that a higher proportion of women on the board of commissioners

can reduce the company's ESG risk level and lower the ESG Risk Rating. These findings align with previous studies by Velte (2016) and Putri and Nasih (2022), and also support the theoretical framework, namely the upper echelons theory and stakeholder theory.

Future research is recommended to consider sector-specific analysis to gain a more accurate understanding of how board characteristics affect ESG performance across different industry sectors in Indonesia. This is important as industry characteristics may influence the implementation and impact of ESG practices.

This study has several limitations that should be considered. First, while using panel data analysis with a random effects model (REM) to address cross-sectional and time-series data, this study does not differentiate companies by industry sector. ESG Risk Ratings may vary across sectors due to differences in regulations, stakeholder expectations, and the operational characteristics of each industry. Second, this study relies solely on ESG scores issued by Sustainalytics, while ESG scores from other providers, such as Bloomberg and Refinitiv, could also be used. Finally, the use of ESG Risk Rating as the sole proxy for ESG performance may limit the scope of the analysis. A multi-indicator approach that incorporates other aspects of ESG would provide a more comprehensive picture of a company's sustainability performance.

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