



The Effect of ESG (Environmental, Social, Governance) Disclosure on Audit Quality with Firm Size and Industry Complexity as Moderating Variables (An Empirical Study on Manufacturing Companies Listed On the IDX in 2020–2024)

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ABSTRACT

Weak or non-transparent ESG reports regarding governance structure and internal control policies can signal to auditors a high inherent risk of control failure, which in turn increases the risk of material misstatement due to fraud. This study aims to examine the effect of Environmental, Social, and Governance (ESG) disclosure on audit quality, as well as the effect of company size and industry complexity as moderating variables in manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the period 2020 to 2024. The research sample was determined using purposive sampling. The study uses a causal associative method with a quantitative approach and panel data regression analysis. The statistical data processing and analysis were carried out using STATA statistical software. The results showed that disclosure of environmental aspects had no effect on audit quality. In contrast, social and governance aspects have a negative effect on audit quality. This finding indicates that the higher the social and governance score of a company, the auditor tends to consider the audit risk lower, thus reducing the need for additional independent audits. Simultaneously, social and governance are also proven to reduce audit quality. Firm size is not shown to moderate the relationship between ESG and audit quality, as both large and small firms may experience an exaggerated perception of high ESG reputation. However, industry complexity is shown to positively moderate the relationship between social and governance aspects and audit quality. In complex industries, despite high ESG scores, the demand for rigorous audit oversight still increases due to the high potential reporting risks. This study provides an empirical contribution in understanding the dynamics of ESG influence on audit in Indonesia's manufacturing sector, and suggests the importance of considering operational complexity factors in designing an effective audit oversight system.

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INTRODUCTION

Sustainability issues have become a central focus in global development, as reflected in the Sustainable Development Goals (SDGs) set by the United Nations (UN), which are targeted to be achieved by 2030. The SDGs consist of 17 goals that encompass social, environmental, and economic dimensions as the foundation for creating a more just and sustainable world (United Nations, 2023). These seventeen goals include: (1) no poverty, (2) zero hunger, (3) good health and well-being, (4) quality education, (5) gender equality, (6) clean water and sanitation, (7) affordable and clean energy, (8) decent work and economic growth, (9) industry, innovation, and infrastructure, (10) reduced inequalities, (11) sustainable cities and communities, (12) responsible consumption and production, (13) climate action, (14) life below water, (15) life on land, (16) peace, justice, and strong institutions, and (17) partnerships for the goals.

In this context, business practices have also evolved with the adoption of ESG principles as a key indicator in investment decision-making and corporate accountability (Wang & Yang, 2024). In efforts to promote sustainable development, various countries, including Indonesia, have committed to achieving the SDGs (Mulyadi et al 2024). One important aspect of the SDGs is corporate transparency and accountability in environmental, social, and governance (ESG) matters (Chopra, et al 2024). As explained by Mukorrobah (2025), ESG serves as an essential indicator in assessing the impact and contribution of companies to sustainable development, particularly in terms of social justice, environmental preservation, and sound governance.

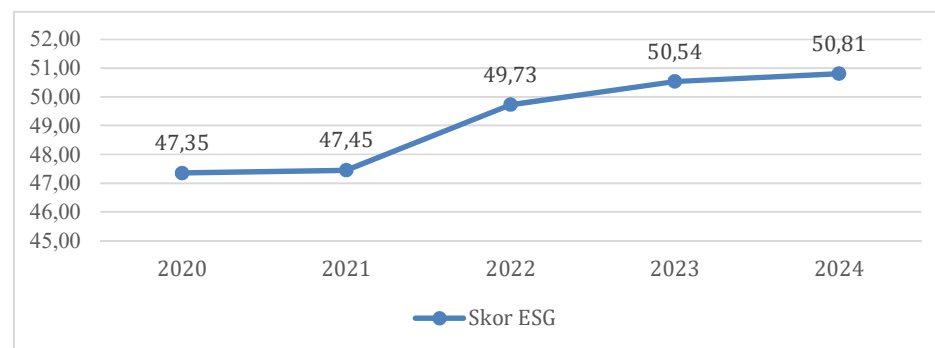


Figure 1.1 Average ESG Score for Companies in Indonesia

Source: Refinitiv Eikon, 2025

However, although ESG principles are increasingly being mainstreamed into corporate agendas, data on ESG score trends among companies in Indonesia show a relatively slow and gradual increase. As illustrated in Figure 1.1, the average ESG score of Indonesian companies only rose from 47.35 in 2020 to 50.81 in 2024. This increase of around 3.5 points over five years reflects that ESG implementation remains formalistic and has yet to bring about substantive improvements in governance, as well as in corporate social and environmental responsibility.

This fact highlights a gap between strategic commitments to ESG and the realization of practices at the operational level. Although statistical improvements are evident, the figures still fall within the moderate range and do not indicate significant strengthening of corporate sustainability systems. This may suggest that ESG is still viewed as a reporting obligation rather than as an integral part of corporate risk management and governance systems. In this context, the effectiveness of ESG in supporting audit quality is questionable, since higher ESG scores do

not necessarily reflect actual conditions of oversight and corporate integrity. Consequently, a high ESG score does not always align with lower fraud risk or higher audit quality.

This raises concerns that ESG disclosure is used more as an instrument of external legitimacy than as a genuine tool for strengthening governance (Baldini et al., 2018; Wong et al., 2023). In other words, audit quality is not solely determined by the existence of an ESG report but also by the extent to which the information disclosed truly reflects the company's internal practices. Auditors require substantive evidence regarding the effectiveness of internal controls, management integrity, and compliance with governance principles in order to provide a reliable audit assessment. If ESG reports are merely symbolic or normative, their role in improving audit quality becomes limited and may even mislead stakeholders.



Figure 1.2 Fraud-Free Control

Source: (ACFE, 2024)

The high incidence of fraud in the manufacturing sector is not a random phenomenon but rather a symptom of fundamental failures in corporate governance structures and internal control systems. Empirical data in Figure 1.2 clearly shows that more than half of fraud cases occur due to fragile internal environments. Specifically, 32% of cases are caused by a lack of internal controls, while another 19% result from the override of existing controls. These statistics provide quantitative evidence that fraud is often not only driven by clever perpetrators but also facilitated by weak systems. This directly links fraud risk to the quality of governance pillars.

Weak or non-transparent ESG reports regarding governance structures and internal control policies may serve as warning signals for auditors about the high inherent risk of control failures, which in turn increases the risk of material misstatement due to fraud. Good corporate governance is a process and structure used to enhance corporate success and accountability in order to realize or increase long-term corporate value while considering stakeholder interests, grounded in law, morals, and ethics. This governance crisis becomes even more apparent when analyzing who causes the most significant losses. There is a sharp disparity between the impact of fraud committed at different management levels, illustrating the importance of “tone at the top.”

As shown in Figure 1.3, fraud committed by company owners or executives results in a median loss of \$459,000—more than seven times greater than the median loss caused by ordinary employees (\$60,000). This indicates that integrity at the executive level is not merely an ethical issue but one with very high financial materiality. When conflicts of interest occur at the top level, as explained in Agency Theory, and manifest as fraud, the consequences can be devastating (Jensen & Meckling, 1976). Therefore, for auditors, the assessment of governance

aspects such as board independence, audit committee effectiveness, and executive incentive structures becomes crucial in evaluating the risk of catastrophic financial statement fraud. Much of the information required for this evaluation comes from non-financial disclosures, particularly those contained in ESG reports.

In a business environment marked by high fraud risks, systemic weaknesses in internal controls, and governance crises at the executive level, high-quality external audits serve as the most critical defense mechanism for investors and stakeholders. Quality audits act as the frontline in detecting fraud, assessing non-financial risks, and ultimately enhancing the integrity and reliability of financial statements. However, the effectiveness of the audit function heavily depends on the availability of transparent and relevant information from the audited companies.



Figure 1.3 Median Loss

Source: (ACFE, 2024)

This is where the core problem lies—there exists a significant information gap. On the one hand, auditors require comprehensive non-financial data to assess governance and sustainability risks. On the other hand, many companies in Indonesia appear not to have prioritized this transparency. A survey by the Indonesia Business Council for Sustainable Development noted that Indonesia's ESG index ranked only 36th out of 47 global capital markets (IBCS, 2021). This low ranking indicates a general weakness in awareness and disclosure practices of ESG at the domestic corporate level, creating an asymmetrical information environment in which auditors struggle to obtain the data they need.

In Figure 1.4 below, it can be seen that asset misappropriation is the most common form of misconduct, accounting for 51% of cases involving only this type of fraud. Asset misappropriation includes actions such as inventory theft, cash embezzlement, and the use of company resources for personal gain. This high percentage indicates that many organizations still face weaknesses in both physical and administrative controls.

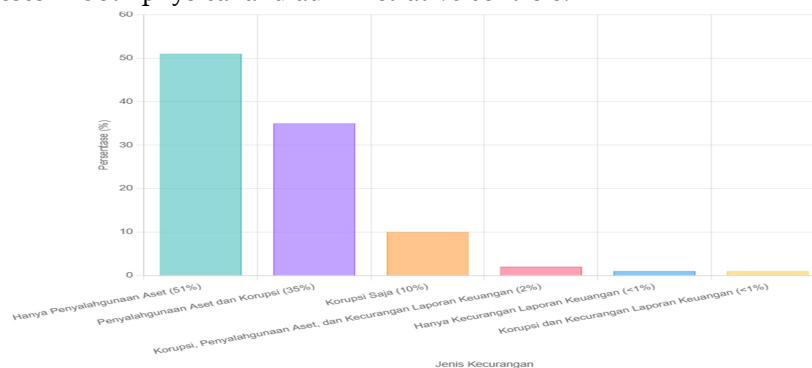


Figure 1.4 Financial Graph 2024

Source: (Association of Certified Fraud Examiners Indonesia, 2019)

Meanwhile, 35% of cases involve a combination of asset misappropriation and corruption. This indicates that it is not uncommon for perpetrators to commit more than one type of fraud simultaneously in order to maximize personal gain. Common forms of corruption include bribery, illegal gratuities, and conflicts of interest in the procurement process. This fact underlines the importance of monitoring systems capable of identifying fraud patterns.

Pure corruption, without other forms of asset misappropriation, accounts for 10% of cases. Although the proportion is smaller, the financial impact of corruption can be highly significant, as it often involves large transaction values and strategic decision-making processes. Furthermore, cases involving financial statement fraud, whether occurring independently or in combination with corruption and asset misappropriation, represent less than 3% of total cases. Despite their low frequency, this type of fraud carries high risks because it can mislead stakeholders and systemically damage the company's reputation.

This study aims to examine the effect of ESG disclosure on audit quality by considering firm size and industry complexity as moderating variables. Although ESG issues are becoming increasingly relevant in the global business environment, there is a research gap in the context of Indonesian manufacturing firms, particularly those listed on the IDX during the 2020–2024 period. Previous studies have been mostly conducted abroad or with broader industry coverage, while empirical research specifically investigating the relationship between ESG and audit quality in Indonesia's manufacturing setting remains limited. Moreover, few studies have tested the moderating role of firm size and industry complexity in strengthening or weakening this relationship.

Several prior studies show that ESG disclosure has a positive influence on audit quality. For instance, a study by Weiyu et al. (2024) in China found that companies with strong ESG disclosure tend to have higher audit quality due to reduced financial reporting manipulation. Similarly, El-Deeb et al. (2023) in Egypt found that audit quality can strengthen the positive relationship between ESG and firm value. Another study by Giudice & Rigamonti (2020) also showed that third-party assurance of ESG reporting contributes to increased confidence in the quality of information, including in the audit context. These findings suggest that ESG is not only an indicator of sustainability reputation but also serves as a positive signal for auditors in assessing audit risk. Companies that consistently disclose ESG information are perceived to have higher transparency and stronger internal control systems, prompting auditors to provide greater assurance over their financial statements. In addition, third-party involvement in the ESG reporting process enhances corporate accountability, which in turn improves perceptions of audit quality.

Nevertheless, not all studies find a significant relationship between ESG and audit quality. Wu et al. (2025) noted that in some cases, ESG disclosure does not correlate with improved audit quality and, under certain conditions, may even negatively affect financial performance and audit effectiveness. Similarly, Zahid et al. (2023) reported that audit quality does not significantly moderate the relationship between ESG and financing decisions.

On the other hand, firm size has been shown in several studies to affect audit quality. Larger firms are generally audited by reputable public accounting firms such as the Big 4 and maintain stronger internal control systems, leading to more reliable audits. Lestari et al. (2022) demonstrated that firm size significantly improves audit quality among Indonesian companies.

Likewise, industry complexity also influences audit quality, as the more complex a company's operations and organizational structure are, the greater the challenges faced by auditors in performing their duties comprehensively and objectively (Ayu et al., 2019).

Considering these findings, this study addresses an important research gap by empirically investigating how ESG influences audit quality in the Indonesian manufacturing industry, as well as whether firm size and industry complexity strengthen or weaken this effect. This research is expected to contribute both theoretically and practically to the development of audit and sustainability reporting literature in emerging markets.

The manufacturing industry is selected as the research object because it plays a vital role in Indonesia's economy. In 2020, manufacturing contributed around 19.3% of total GDP, with the figure projected to remain within the range of 18–19% through 2024 (Santoso, 2025). This strategic significance is reinforced by Indonesia's position as the world's 10th-largest manufacturing nation, meaning that measurement errors in areas such as audit quality and ESG reporting could have significant implications for economic stability (Market Research Indonesia, 2022).

Nevertheless, ESG awareness in this sector remains relatively low. Bloomberg data (2018–2022) show that only 120 out of 440 manufacturing companies listed on the IDX disclosed ESG activities (Widya & Marsono, 2024). This low level of disclosure reflects potentially suboptimal oversight by stakeholders and opens opportunities for further research into the relationship between ESG and audit quality.

In addition, most empirical studies in Indonesia have focused on the service or financial sectors, with research in manufacturing still limited. For example, Fernanda & Wahyuningsih (2025) found that ESG significantly affects financial performance among IDX-listed manufacturing firms (2018–2023). However, this study did not examine whether firm size or industry complexity moderates the effect of ESG on audit quality in reviewing financial statements.

Therefore, this study seeks to fill the gap by providing the latest empirical analysis (2020–2024) of IDX-listed manufacturing firms, testing the simultaneous impact of ESG on audit quality, and exploring the moderating role of firm size and industry complexity. The findings are expected not only to enrich the academic literature but also to provide relevant policy recommendations for capital market stakeholders.

METHOD

This study employs a causal-associative method with a quantitative approach to examine the effect of Environmental, Social, and Governance (ESG) disclosure on audit quality, with firm size and industry complexity as moderating variables. The data used are secondary data obtained from annual reports, sustainability reports, and the Refinitiv Eikon database. The population of this research consists of all manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the period 2020–2024. The research sample was determined using purposive sampling, based on criteria such as the availability of ESG disclosure data, audited financial statements, and complete observation periods.

The independent variable in this study is ESG disclosure, while the dependent variable is audit quality, measured using the proxy of independent audit indicators. The moderating variables are firm size, measured by the natural logarithm of total assets, and industry complexity, measured by the number of business segments and product diversification. Data

analysis was conducted using panel data regression to test the direct effect of ESG on audit quality and to examine the moderating roles of firm size and industry complexity.

Prior to regression analysis, classical assumption tests were performed, including normality, multicollinearity, heteroskedasticity, and autocorrelation tests, in order to ensure the validity of the regression model. The appropriate panel regression model was determined through the Hausman test, which in this study indicated that the Fixed Effect Model (FEM) was more suitable. Furthermore, moderation analysis was conducted using the Moderated Regression Analysis (MRA) approach to assess whether firm size and industry complexity strengthen or weaken the effect of ESG disclosure on audit quality. All data processing and statistical analyses were carried out using STATA 17 software.

Time and Location

This research was conducted on manufacturing companies listed on the Indonesia Stock Exchange (IDX). The manufacturing sector was selected due to its significant role in the national economy, contributing substantially to Indonesia's Gross Domestic Product (GDP). Furthermore, this sector is characterized by a high level of operational complexity, making it particularly relevant for analyzing the relationship between ESG disclosure and audit quality. Therefore, this study is expected to provide deeper empirical insights into the link between ESG and audit quality in an industry that is strategically important for Indonesia's economic stability.

The study was carried out between January and July 2025, covering all stages from data collection, processing, statistical analysis, to the preparation of the final report. The observation period utilizes secondary data from 2020 to 2024, providing a comprehensive overview of ESG disclosure trends and audit quality in the manufacturing sector over the last five years.

Results and Discussion

a) Normality Test

Table 4.2 Normality Test

Variable	W	V	z	Prob>z
Residual	0.918	3.873	2.888	0.192

Source: STATA 17 (data processed by the author)

b) Multicollinearity Test

Table 4.3 Multicollinearity Test

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Kualitas Audit	1.00								
(2) Environment	-0.27	1.00							
(3) Social	-0.19	0.77	1.00						
(4) Governance	-0.34	0.69	0.77	1.00					
(5) Uk	-0.10	0.35	0.26	0.02	1.00				
(6) Kompleksitas	0.08	0.35	0.30	0.28	0.41	1.00			
(7) ROA	0.17	0.15	0.07	0.17	-0.34	0.32	1.00		
(8) DAR	-0.09	0.08	0.03	-0.01	0.29	0.16	-0.08	1.00	
(9) CR	0.40	-0.18	0.03	-0.04	-0.09	-0.08	-0.13	-0.38	1.00

Source: STATA 17 (data processed by the author)

c) Hasuman Test

Table 4.4 Hausman Test

	Coef.
Chi-square test value	24.954
P-value	0

Source: STATA 17 (data processed by the author)

Based on the Hausman test, the chi-square value is 24.954 with a probability (p-value) of 0.000. Since the p-value < 0.05, the appropriate panel regression model is the Fixed Effect Model (FEM). This indicates that each entity (company) has unique specific effects that must be controlled to avoid biased estimates. The FEM better captures time-invariant individual heterogeneity, which is relevant in the context of manufacturing companies with varying ESG practices, financial structures, and audit quality.

d) Heteroscedasticity Test

Table 4.5 Heteroskedasticity Test
Breusch-Pagan / Cook-Weisberg

Breusch-Pagan / Cook-Weisberg	
Description	Value
Chi-square (χ^2)	4.74
Derajat kebebasan (df)	1
Probabilitas (p-value)	0.294

Source: STATA 17 (data processed by the author)

Based on the results, the chi-square value is 4.74 with 1 degree of freedom and a p-value of 0.294. Since the p-value is greater than 0.05, the model is free from heteroskedasticity problems.

e) Autocorrelation Test

Table 4.6 Autocorrelation Test
Wooldridge Test for Autocorrelation

Wooldridge Test for Autocorrelation	
Description	Value
F-statistic	6.136
Derajat kebebasan (df)	(1, 15)
Probabilitas (p-value)	0.256

Source: STATA 17 (data processed by the author)

Based on the results, the F-statistic is 6.136 with df = (1, 15) and a p-value of 0.256. Since the p-value > 0.05, the model is free from autocorrelation.

f) Regression Test

Regression Test: ESG on Audit Quality

The regression results in Table 4.7 show that Environment, Social, and Governance (ESG) variables jointly have a significant effect on audit quality. This is evidenced by an F-statistic of 4.996 with Prob > F = 0.000, indicating that the model is valid and ESG variables together explain variations in audit quality. The R-squared value of 0.526 suggests that 52.6% of the variation in audit quality is explained by ESG and control variables, while the remaining 47.4% is influenced by other factors outside the model.

Table 4.7 Regression: ESG on Audit Quality

Kualitas Audit	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
<i>Environment</i>	.608	.543	1.12	.273	-.506	1.721	
<i>Social</i>	-1.176	.444	-2.65	.013	-2.087	-.265	**
<i>Governance</i>	-.804	.395	-2.04	.052	-1.615	.007	*
ROA	-.093	.816	-0.11	.91	-1.768	1.581	
CR	.009	.024	0.37	.717	-.041	.059	
DAR	-.837	.659	-1.27	.214	-2.189	.514	
Constant	195.38	36.987	5.28	0	119.493	271.276	***
Mean dependent var		84.667	SD dependent var			23.592	
R-squared		0.526	Number of obs			50	
F-test		4.996	Prob > F			0.000	
Akaike crit. (AIC)		341.868	Bayesian crit. (BIC)			355.253	

*** $p < .01$, ** $p < .05$, * $p < .1$

Source: STATA 17 (data processed by the author)

Regression: Environment on Audit Quality

The first model shows that the Environment coefficient is -0.697 ($p = 0.197$), indicating it is not significant at the 5% or 10% level. This suggests no sufficient statistical evidence that environmental disclosure directly affects audit quality. Control variables also show no significant impact: ROA (coef = -0.386, $p = 0.708$), CR (coef = 0.006, $p = 0.849$), and DAR (coef = -1.216, $p = 0.146$). The intercept is 182.9 and significant at $p < 0.01$, implying the average audit quality when all independent variables equal zero.

Table 4.8. Environment on Audit Quality

Kualitas Audit	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
<i>Environment</i>	-.697	.527	-1.32	.197	-1.776	.382	
ROA	-.386	1.019	-0.38	.708	-2.471	1.699	
CR	.006	.029	0.19	.849	-.055	.066	
DAR	-1.216	.814	-1.49	.146	-2.88	.448	
Constant	182.9	44.657	4.10	0	91.567	274.234	***
Mean dependent var		84.667	SD dependent var			23.592	
R-squared		0.180	Number of obs			50	
F-test		1.596	Prob > F			0.123	
Akaike crit. (AIC)		365.264	Bayesian crit. (BIC)			374.824	

*** $p < .01$, ** $p < .05$, * $p < .1$

Source: STATA 17 (data processed by the author)

Discussion

The study finds that environmental disclosure has a negative but insignificant effect on audit quality, indicating that higher environmental disclosure does not automatically improve audit quality. This aligns with prior research showing that ESG disclosure can be symbolic or reflect higher ESG risks, requiring stricter audits without guaranteeing better quality (Hua & Alam, 2021; Weiyu et al., 2024). In contrast, social and governance disclosures have significant negative effects on audit quality. Firms with extensive social disclosure often have fewer independent audit committee members, while higher governance scores do not necessarily enhance committee independence, suggesting that CSR and formal governance can be symbolic and may reduce auditor independence (He et al., 2017; Ariyanto & Fanani, 2020; Hammami & Zadeh, 2020). These results are consistent with Agency Theory, which highlights conflicts between legitimacy pressures and audit objectivity, and Signaling Theory, where disclosure may signal “greenwashing” and increase auditor skepticism.

The moderating role of firm size is insignificant for all ESG dimensions, implying that larger firms do not strengthen or weaken the effects of ESG disclosure on audit quality. This may be because symbolic or non-material disclosures receive limited auditor attention and are not always supported by robust internal audit mechanisms (Drempetic et al., 2020; Suranta et al., 2024; Zahid et al., 2022).

Industry complexity, however, moderates the effects of social and governance disclosures. While environmental disclosure remains unaffected, social and governance disclosures show weaker negative effects in complex firms due to stronger audit committee independence and enhanced monitoring to maintain legitimacy (Wang et al., 2023; Zahid et al., 2022). This indicates that organizational complexity can help mitigate the risks of symbolic ESG disclosure by supporting more credible internal audit mechanisms, while simpler firms may rely on symbolic disclosure without strengthening audit oversight.

CONCLUSION

Based on the findings of this study, several conclusions can be drawn as follows; the study shows that the Environmental dimension does not have a significant effect on audit quality in manufacturing companies listed on the IDX during 2020–2024. This indicates that the environmental information presented in ESG reports is not yet a determinant of audit effectiveness. The Social dimension has a significant negative effect on audit quality. This implies that social disclosure without strengthening internal audit mechanisms may reduce the effectiveness of auditor oversight.

The Governance dimension significantly negatively affects audit quality. This suggests that even if a company discloses governance aspects, it does not automatically enhance audit effectiveness and may even reduce it if the governance practices are purely formalistic. Firm size does not moderate the relationship between Environmental disclosure and audit quality. In other words, the size of a company does not strengthen or weaken the impact of environmental disclosure on audit quality. Firm size does not have a significant moderating effect on the relationship between Social disclosure and audit

quality. Thus, the negative effect of social disclosure on audit quality remains consistent across both large and small firms. The study also finds that firm size does not moderate the relationship between Governance and audit quality, confirming that the negative impact of governance on audit quality applies regardless of company scale.

Industry complexity does not moderate the relationship between Environmental disclosure and audit quality. In other words, the structural complexity of the industry does not affect the relevance of environmental disclosure in improving audit quality. Industry complexity positively moderates the relationship between Social disclosure and audit quality. This indicates that in companies with higher industry complexity, social disclosure more strongly drives the need to enhance audit quality compared to firms with lower complexity. The analysis also shows that industry complexity positively moderates the relationship between Governance and audit quality. This implies that the more complex a company's industry structure, the greater the need to maintain governance legitimacy through improved audit quality.

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