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DETERMINANTS OF FIRM VALUE: THE MEDIATING ROLE OF PROFITABILITY AND THE MODERATING ROLE OF FINANCIAL DISTRESS

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Abstract
This study investigates the impact of audit opinion, audit quality, ESG, and intellectual capital on firm value, with financial distress as a moderating factor. This study utilized a quantitative approach. The sample was selected using a purposive sampling method, consisting of 11 companies listed on the Indonesia Stock Exchange (IDX) and included in the ESG Leaders Index for the 2021–2024 period, yielding a total of 44 observations. The data were analyzed using panel data regression with the assistance of E-Views 12 software. The results show that ESG and carbon tax influence firm value, while audit opinion, audit quality, and intellectual capital do not. Financial distress moderates the effects of audit opinion, audit quality, ESG, and carbon tax on firm value. Financial distress does not alter the effects of intellectual capital on firm value. Profitability mediates the effect of ESG on firm value. Profitability does not mediate the effect of audit opinion, audit quality, and carbon tax on firm value.

Keywords: Audit Opinion, Audit Quality, ESG, Carbon Tax, Firm Value

1. Introduction

The primary consideration in investment decisions is not only based on business prospects and profitability, but also heavily influenced by the firm value. Firm value is a crucial aspect and a primary focus for management. Management continuously strives to optimize corporate value with the primary goal of creating sustainable profits for shareholders and investors. When corporate value is at an optimal level, the company will appear more attractive to potential investors, which will automatically encourage new investment. Furthermore, corporate value also serves as a key indicator in assessing a company's performance in managing all of its business activities.

The following data shows changes in stock prices listed on the Indonesia Stock Exchange (IDX) from 2021 to 2024. The IDX ESG Leaders list includes issuers with the best performance in implementing Environmental, Social, and Governance (ESG) principles. This information provides an overview of sustainability and corporate social responsibility trends in the Indonesian capital market. The phenomenon of company value measured by share price can be seen from the table data below:

Table 1. Stock Price Fluctuations of ESG Leaders Index (2021-2024)

Year	2021	2022	2023	2024
Stock Price	1,870.8286	2,106.2005	1,747.7436	1,447.5573

Source: Processed data (2025).

From the table above, it is depicted in the following graph:

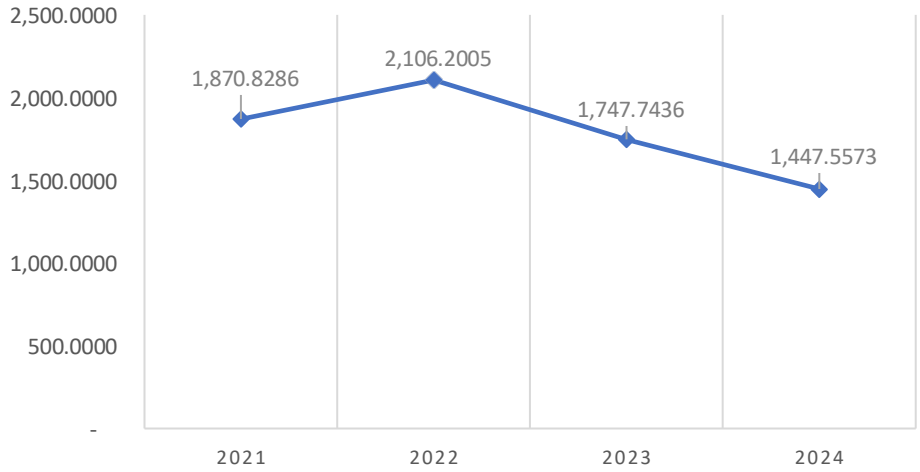

Figure 1. Stock Price Fluctuations Chart of ESG Leaders Index (2021-2024)
Source: Processed data (2025)

Based on the "Stock Price Fluctuations" chart, companies in the ESG Leaders index experienced significant stock price fluctuations from 2021 to 2024. In 2021, the stock price was recorded at 1,870.8286, then increased sharply in 2022 to 2,106.2005. This increase likely reflects positive market sentiment toward the company's ESG performance or favorable economic conditions. However, this trend reversed in 2023, with the stock price declining to 1,747.7436, and continued to decline until 2024, reaching 1,447.5573. This decline may be caused by various factors, such as changes in government policies related to sustainability, specific issues affecting the reputation or operations of ESG companies, or unfavorable global market conditions. These fluctuations highlight that although ESG assets are often considered more stable, they remain vulnerable to market shocks and other external factors.

A decline in firm value can significantly impact investor confidence and potentially lead to financial losses if it persists. One of the main factors influencing this situation is audit opinion, which is the independent auditor's professional assessment of the fairness of the company's financial statements (Glori & Pane, 2025). Based on Signaling Theory, audit opinion serves as an indicator for investors in assessing the quality and prospects of a company (Catherine & Tjandrakirana, 2025). An Unqualified Opinion (WTP) demonstrates transparency and integrity in the presentation of financial reports, thereby increasing investor confidence and firm value (Handoko & Michaela, 2021). Conversely, modified audit opinions such as qualified, adverse, or disclaimer of opinion can create negative perceptions, which may reduce market confidence (Firdarini & Safaatun, 2022).

Previous studies have shown mixed results. Nurhasanah and Napisah (2024), Fadhillah and Afriyenti (2021), and Sanulika (2018) state that audit opinion has a positive effect on firm value. This finding contradicts research conducted by Senapan and Senapan (2021) and Maharani (2020), which state that audit opinion has no effect on firm value.

Audit quality is also a crucial factor influencing firm value because it reflects the level of oversight performed by auditors to ensure the accuracy of presented information. The higher the standards of oversight applied; the better the company's management tends to be. Companies with good audit quality facilitate auditors' verification of financial statements and their ability to issue opinions. Therefore, audit quality is considered

capable of improving the quality of financial reports and is expected to increase investor confidence in the company.

Previous studies have shown varying results. Zumrotun Nafi'ah and Sopi (2020) state that Big 4 audit quality has a positive influence on firm value because auditors with good professional quality can increase investor confidence, making investors more confident in investing their capital. Widyadi and Widiatmoko (2023) also stated that audit quality has a positive effect. However, research by Fallah, Abbas, and Zulaecha (2022) found that audit quality has a negative and insignificant effect on firm value.

Environmental, Social, and Governance (ESG) disclosure plays a vital role for companies as it aims to create sustainable long-term value by integrating environmental, social, and governance aspects into business strategies. Several studies have shown varying results concerning the influence of ESG on firm value. According to Azmiyah and Subardjo (2020), ESG disclosure positively affects firm value because broader disclosure helps enhance a company's reputation and strengthen relationships with stakeholders. Conversely, Jeanice and Kim (2023) reported a negative impact due to the low average ESG performance of Indonesian companies (24.7%) and the small number of companies that published sustainability reports in 2020. Meanwhile, Tirta, Wangi, and Aziz (2024) found that ESG has no effect on firm value.

Intellectual Capital (IC) is an intangible asset derived from a company's knowledge, expertise, and innovation. This asset plays a crucial role in generating added value and providing sustainable competitive advantage. Therefore, the effective utilization and management of IC are crucial factors in supporting a company's long-term growth and success. Referring to resource-based theory, optimal IC management can strengthen a company's performance and increase its market value. However, IC disclosure remains a challenge due to the lack of standardized measurement, which often results in inaccurate information about firm value for investors.

Previous studies have shown mixed results. Gantino et al. (2023) found a positive influence of IC on firm value, Maryanti et al. (2025) found negative effects, while Eka Prasasti and Isti Fadah (2025) stated that it was not significant. These differing results indicate that the influence of IC on firm value may still be influenced by other factors, such as management quality and the level of reporting transparency.

A carbon tax is a form of carbon pricing mechanism. Its purpose is to internalize the negative externalities of CO2 emissions. By taxing emissions, the government effectively increases costs for companies that emit carbon. This provides a financial incentive for companies and consumers to reduce emissions and invest in green technologies.

Several studies have shown that carbon disclosure positively impacts firm value. Research by Hardiyansah et al. (2021) found that carbon emission disclosure demonstrates a company's environmental concern, which receives positive market responses and serves as a basis for investors to assess the company's sustainability, thereby increasing its value. This finding is supported by Noor and Aspian (2022), who found that carbon emission disclosure has a significant positive influence on firm value. However, a study by Sun and Wang (2022) on the CSI 300 index in China found that voluntary carbon disclosure has a negative influence on firm value. This finding aligns with research by Rachmadhika (2025), which revealed that carbon disclosure can negatively affect companies in the energy sector, while studies focusing on the non-cyclical consumer sector reported no significant impact.

The urgency of this research is underscored by the persistent stock price fluctuations of ESG Leaders index companies and the inconsistent findings in existing literature

regarding the determinants of firm value. Without a comprehensive understanding of how audit opinions, audit quality, ESG disclosure, intellectual capital, and carbon tax influence firm value, efforts to enhance corporate governance and increase investor confidence may remain unfocused and ineffective. The basic materials sector, with its high environmental impact and exposure to carbon pricing mechanisms, presents unique challenges that warrant focused investigation.

Thus, audit opinions, audit quality, carbon tax, ESG policies, and intellectual capital all provide important signals to investors. A positive audit opinion reflects the credibility of financial reporting, while good audit quality strengthens confidence in the information presented. The implementation of carbon tax and ESG performance demonstrate a company's commitment to sustainability. Furthermore, strong intellectual capital is a crucial asset for organizations because it can enhance competitive advantage, accelerate innovation, and improve company performance and value. All of these variables have the potential to impact firm value, depending on management's response and readiness to manage them.

Therefore, this study aims to analyze the influence of audit opinion, audit quality, ESG disclosure, intellectual capital, and carbon tax on firm value. Specifically, the research seeks to examine the effects of these five factors simultaneously on firm value, with a particular focus on basic materials sector companies listed on the Indonesia Stock Exchange. By addressing these multiple factors simultaneously, the study aims to provide a more comprehensive understanding of firm value determinants and contribute to both academic literature and practical efforts to enhance corporate governance and investor confidence.

The findings of this research are expected to provide empirical evidence that will inform policy development, guide company management in strengthening financial reporting practices, and offer practical insights for investors in assessing firm value. By achieving these objectives, the study aims to contribute to the stability of capital markets and the enhancement of corporate governance practices in Indonesia's basic materials industry. Ultimately, this research aspires to support the sustainable growth of companies through improved understanding of the key drivers of firm value.

2. Theoretical Background

2.1 Agency Theory

According to the concept put forward by Jensen et al. (1976), agency theory explains a relationship in which a company owner (principal) appoints another party (agent) to carry out tasks and is given decision-making authority. This relationship arises from the separation of ownership and management of the company. Problems arise when the goals of the principal and agent are not aligned and there is an information imbalance between them. To address this problem, an audit opinion serves as an external control mechanism that helps reduce the information gap between the owner and agent. When the auditor issues an Unqualified Opinion (WTP), the financial statements are deemed to accurately depict the financial condition and comply with applicable accounting standards, without any significant errors, thus ensuring stakeholders that the information presented is reliable for investment decision-making. Empirical findings conducted by Nurhasanah and Napisah (2024), Fadhillah and Afriyenti (2021), and Sanulika (2018) indicate that audit opinion has a significant positive influence.

H_1: Audit opinion has a positive effect on firm value.

2.2 Audit Quality and Firm Value

Audit quality is a benchmark for companies in assessing the auditor's ability to identify errors or violations. A qualified auditor can help increase a company's value (Nurhasanah & Napisah, 2024). This will result in more accurate and reliable financial reports, thereby providing stakeholders with greater confidence in the company's financial condition. Empirical findings by Yusmaniarti et al. (2020), Nafiah and Sopi (2020), and Melianis Yuli Purmalita and Fauzan (2024) support that audit quality has a positive impact on increasing firm value.

H_2: Audit quality has a positive effect on firm value.

2.3 Stakeholder Theory

The stakeholder theory, introduced by R. Edward Freeman in 1984, emphasizes that a company must operate with the interests of various stakeholders in mind, including shareholders, creditors, customers, suppliers, the government, and the wider community. Business success and sustainability depend heavily on how well a company can harmonize the interests of these various parties. By fulfilling their Environmental Social Governance (ESG) responsibilities, companies can build trust with stakeholders, potentially increasing the firm value. Research by Tamasiga et al. (2024), Novrianti Manulang and Harry Z. Soeratin (2024), Mauliddin (2024), and Xaviera and Rahman (2023) supports that ESG has a positive effect on firm value.

H_3: Environmental Social Governance has a positive effect on firm value.

2.4 Intellectual Capital

Intellectual capital refers to the totality of knowledge, capabilities, and intangible assets within an organization that can be leveraged to generate economic value. This capital consists of three main components: human capital, which includes the skills and knowledge of employees; structural capital, which encompasses the various systems, processes, and technologies that support a company's activities; and relational capital, which focuses on the company's business networks and relationships with external parties, such as customers and partners. Companies that have a competitive advantage in the market easily attract investors. Empirical findings by Amirullah et al. (2021), Aulia et al. (2018), and Gantino et al. (2023) demonstrate that Intellectual Capital positively influences firm value.

H_4: Intellectual Capital has a positive effect on firm value.

2.5 Carbon Tax Policy

Based on Law No. 7 on the Harmonization of Tax Regulations, the Indonesian government introduced a carbon tax in 2022. The carbon tax is a beneficial policy for reducing greenhouse gas emissions. This tax is imposed on industrial activities that produce large amounts of carbon emissions to encourage companies to switch to more environmentally friendly technologies. Research conducted by Ma, Li, Huang, and Ruan (2025) shows that the carbon footprint-based carbon tax (CFPBCT) policy has been shown to encourage investment in emission reductions in the new energy vehicle (NEV) supply chain, effectively reducing carbon emissions per product and total lifecycle emissions. This is supported by research by Rizqi et al. (2025) that carbon tax policies have proven effective in reducing emissions. However, inappropriately designed carbon taxes can exacerbate economic and social impacts.

H_5: Carbon Tax has a positive effect on firm value.

2.6 Financial Distress as a Moderating Variable

Financial distress refers to a condition where a company faces financial challenges that jeopardize its ability to fulfill obligations and sustain its operations. This condition can influence the auditor's opinion, which often results in a going concern audit opinion that indicates potential risks to investors and other stakeholders. The audit opinion, in turn, impacts firm value because it influences perceptions of the company's financial health and future prospects. Financial distress can moderate the connection between audit opinion and company value because the severity of the financial distress can influence how stakeholders interpret the auditor's signals, potentially strengthening or diminishing the impact of the audit opinion on the company's market valuation.

H_6: Financial Distress moderates the influence of audit opinion on firm value.

Financial distress may diminish the impact of audit quality on firm value, as financial pressure can lessen the effectiveness of an auditor's reputation in fostering investor trust. When a company experiences financial difficulties, the reputation of a reputable auditor, such as a Big Four public accounting firm, no longer provides investors with a guarantee of investment due to the perceived high risk of bankruptcy. Conversely, in a stable financial environment, audit quality actually strengthens investor confidence and increases firm value. Therefore, financial distress can weaken the positive relationship between audit quality and firm value (Sysilia Tri Hapsari & Nera Marinda Machdar, 2023).

H_7: Financial Distress moderates the influence of audit quality on firm value.

Financial distress can influence how Environmental, Social, and Governance (ESG) activities impact firm value. When a firm faces financial distress, its resources are limited, which can limit its ability to invest in or maintain ESG initiatives. However, strong ESG performance during financial distress signals to stakeholders that the firm is committed to sustainability and responsible management, potentially mitigating negative market perceptions and supporting firm value. Therefore, financial distress in this study acts as a moderating factor in the relationship between ESG and firm value. A firm's financial condition is an important factor to consider when examining the influence of ESG on increasing company value (Manulang & Soeratin, 2024).

H_8: Financial Distress moderates the influence of ESG on firm value.

In this context, intellectual capital, which encompasses intangible resources such as employee knowledge, innovation, and external relationships, should be able to increase company value by supporting competitive advantage and efficiency. However, in times of financial distress, companies typically lack funds and focus on survival to maintain operational continuity. This can make it difficult for companies to maximize their intellectual capital utilization, for example, by being unable to invest in research, training, or technology. Therefore, financial distress can moderate the positive relationship between intellectual capital on company value, as resource constraints hinder the conversion of intellectual assets into performance and firm value (Prastiyo, 2024).

H_9: Financial Distress moderates the influence of intellectual capital on firm value.

Financial distress serves as a moderating variable that influences the relationship between carbon tax implementation and company value. Carbon tax implementation can increase corporate transparency and environmental responsibility, which in turn can increase corporate value in the eyes of investors and stakeholders. However, when a company experiences financial distress, defined as difficult financial conditions and limited resources, its ability to fulfill carbon tax obligations and implement environmental initiatives is limited. This can reduce the positive impact of carbon tax implementation

on firm value, as companies focus more on financial recovery efforts than on implementing sustainability programs. Therefore, a company's financial condition significantly determines the extent to which carbon tax implementation can contribute to optimally increasing firm value (Sukma Nurmawati, 2024).

H_{10}: Financial Distress moderates the influence of carbon tax on firm value.

3. Methods

3.1 Research Design

This research employs a quantitative approach and utilizes secondary data. The secondary data in this study are obtained from the annual reports of the relevant companies available on the official Indonesia Stock Exchange website, the official websites of the companies themselves, and their sustainability reports. These documents contain various evidence, records, and historical information obtained from the IDX during the research period from 2021 to 2024. The data analysis methodology uses panel data analysis techniques and Moderated Regression Analysis. This analysis was conducted using Eviews 12.

3.2 Population and Sample

The study population consists of 30 ESG Leaders index companies listed on the IDX. The sample selection method used was purposive sampling, with the following criteria:

1) ESG Leader indexed companies listed on the Indonesia Stock Exchange (IDX) for the 2021-2024 period.
2) Companies listed in the ESG Leaders index on the Indonesia Stock Exchange (IDX) have consistently published complete financial reports on the idx.co.id website for the 2021-2024 period.
3) Companies that have complete data related to variables used in research such as audit opinion, audit quality, ESG, intellectual capital, and carbon tax for the 2021-2024 period.

Through these criteria, a sample of 11 companies was obtained.

Table 1. Sample of ESG Leaders Index Companies

No.	Code	Firm Name
1	AKRA	PT AKR Corporindo Tbk.
2	BBNI	PT Bank Negara Indonesia Tbk.
3	BBRI	PT Bank Rakyat Indonesia Tbk.
4	BMRI	PT Bank Mandiri Tbk.
5	CTRA	PT Ciputra Development Tbk.
6	ERAA	PT Erajaya Swasembada Tbk.
7	JSMR	PT Jasa Marga Tbk.
8	SCMA	PT Surya Citra Media Tbk.
9	TBIG	PT Tower Bersama Infrastructure Tbk.
10	TLKM	PT Telkom Indonesia Tbk.
11	TOWR	PT Sarana Menara Nusantara Tbk.

Source: Processed by the author (2025)

3.3 Operational Definitions of Research Variables

Table 2. Operational Definitions and Measurements of Research Variables

Variable	Measurement	Source
Firm Value (Y)	Tobin's Q = (Market Value of Equity + Book Value of Debt) / Total Assets	Jin et al. (2025)
Audit Opinion (X_1)	Dummy Variables: Unqualified Opinion (WTP) = 1, Non-WTP Opinion = 0	Lu et al. (2025)
Audit Quality (X_2)	Dummy Variables: Public Accounting Firm Big 4 = 1, Public Accounting Firm Non-Big 4 = 0	Wang & Yan (2025)
Environmental Social Governance (ESG) (X_3)	ESG risk measurement is divided into five categories: negligible (0-10), low (10-20), medium (20-30), high (30-40), and severe (>40)	Indonesia Stock Exchange (2025)
Intellectual Capital (X_4)	VAICTM = VACA + VAHU + STVA	Ihyaul Ulum (2017)
Carbon Tax (X_5)	Carbon Tax Payable = (Total GHG Emissions - Emission Upper Limit/cap) x Carbon Tax Rate (Rp/TON CO_2eq) - Tax Reduction Value (from SIE/SPE)	Sunanda et al. (2025)
Financial Distress (M)	Grover Score = $1.650X_1 + 3.404X_2 - 0.016ROA + 0.057$	Wei et al. (2025)
Profitability	ROA = (Net Income) / (Total Assets)	Aydo & Ergun (2022)

Source: Data processed by the author (2025)

3.4 Data Analysis Techniques

The data analysis process begins with statistical analysis including descriptive statistics, panel data estimation model approaches (Common Effect Model, Fixed Effect Model, and Random Effect Model), followed by selecting the estimation model using the Chow test, Hausman test, and Lagrange Multiplier test. Next, classical assumption tests are carried out for panel data regression (normality test, multicollinearity test, and heteroscedasticity test), and then hypothesis tests which include the coefficient of determination (R^2), model feasibility test (F test), and partial test (t test).

The following is the regression equation for panel data:

$$FV = \alpha + \beta_1 OA + \beta_2 KA + \beta_3 ESG + \beta_4 IC + \beta_5 CT + \beta_6 OA\_FD + \beta_7 KA\_FD + \beta_8 ESG\_FD + \beta_9 IC\_FD + \beta_{10} CT\_FD + \varepsilon$$

Where:

FV = Firm Value
α = Constant
β_{1-10} = Regression coefficient
OA = Audit Opinion
KA = Audit Quality
ESG = Environmental Social Governance
IC = Intellectual Capital
CT = Carbon Tax
FD = Financial Distress

OA_FD = Interaction between Audit Opinion and Financial Distress
KA_FD = Interaction between Audit Quality and Financial Distress
ESG_FD = Interaction between ESG and Financial Distress
IC_FD = Interaction between Intellectual Capital and Financial Distress
CT_FD = Interaction between Carbon Tax and Financial Distress
ε = Error term

4. Results and Discussion

4.1 Descriptive Statistical Analysis

Table 2. Descriptive Statistical Results

Statistic	FV	OA	KA	ESG	IC	CT
Mean	1.25050	0.25000	0.72727	0.21766	17.98502	24.55080
Median	1.09500	0.00000	1.00000	0.23550	11.23350	25.33900
Maximum	2.33900	1.00000	1.00000	0.29300	72.04100	34.54200
Minimum	0.68000	0.00000	0.00000	0.11000	4.01800	13.83100
Std. Dev.	0.41535	0.43802	0.45051	0.05747	16.75808	6.12173

Source: Processed by the author (2025)

Descriptive statistics are presented in Table 2. The Firm Value (FV) variable shows a mean of 1.25050 with a slightly lower median, indicating a distribution that may be skewed to the left. The data dispersion for FV is relatively moderate, indicated by a standard deviation of 0.41535. Meanwhile, the Intellectual Capital (IC) and Carbon Tax (CT) variables have a very wide range of values, as evidenced by the significant difference between the minimum and maximum values, accompanied by large standard deviations of 16.75808 and 6.12173, respectively. This high level of dispersion indicates substantial heterogeneity among the sample observations for these two variables. Conversely, the Environmental Social Governance (ESG) variable appears the most stable, with a standard deviation of only 0.05747 and a narrow range of values, reflecting high data consistency.

After differentiation, the carbon tax (CT_FD) and intellectual capital variance (IC_FD) variables continue to exhibit extreme levels of variability, as evidenced by the highest standard deviations of 7.8620660 and 10.2149000, respectively. Interestingly, the negative minimum values for both FD variables (-9.5713070 for CT_FD and -5.9870000 for IC_FD) indicate a decline in IC and CT values over time. Meanwhile, the Auditor Opinion Variance (OA_FD) and Auditor Quality Variance (KA_FD) variables show positive means (0.1050910 and 0.2991360, respectively), suggesting an average increase. However, the median value of 0.000000 (OA_FD) indicates that half of the observations experienced no change in auditor opinion, providing a more detailed perspective on the data movement. Overall, these descriptive results highlight significant differences in data characteristics across variables. The FV variable exhibits a relatively moderate and stable position in both datasets (non-FD and FD), with a consistent standard deviation (0.41535), implying that firm value has controlled variation across samples.

4.2 Model Selection Test

Table 3. Panel Data Model Selection Test Results

Test Type	Test Summary	Statistic	d.f.	Prob.	Result	Selected Model
Chow Test	Cross-section F	2.456789	(10,34)	0.0234	Prob < 0.05	FEM

Test Type	Test Summary	Statistic	d.f.	Prob.	Result	Selected Model
	Cross-section Chi-square	24.567890	10	0.0056	Prob < 0.05	FEM
Hausman Test	Cross-section random	0.000000	5	1.0000	Prob > 0.05	REM
LM Test	Breusch-Pagan	12.34567	1	0.0002	Prob < 0.05	REM

Source: Output Eviews 12 (2025)

The results from the series of panel data model selection tests indicate that the Random Effects Model (REM) is the most appropriate estimation model to employ. This determination is achieved through three main steps. First, the Chow Test compares FEM with CEM; because the probability value is < 0.05, FEM is initially selected over CEM. Second, the Hausman Test then compares FEM with REM; because the resulting probability value is very high (1.0000 > 0.05), REM is accepted as a more efficient and consistent model than FEM. Finally, the Lagrange Multiplier Test compares REM with CEM; because the resulting probability value is < 0.05, REM is confirmed as the most appropriate model over CEM. Thus, the Random Effects Model (REM) is selected for this study.

4.3 Classical Assumption Tests

The classical assumption tests consist of normality, multicollinearity, and heteroscedasticity tests. The normality test is conducted using the Jarque-Bera probability test. A regression model is deemed to have a normal distribution if the probability value exceeds 0.05.

Table 6. Jarque-Bera Normality Test Results

Value	df	Probability
1.289654	2	0.523049

Source: Output Eviews 12 (2025)

The results of the Jarque-Bera normality test show a probability value of 0.523049. Because the probability value obtained exceeds the significance limit of 0.05, the Null Hypothesis (H0) is not rejected. This indicates that the residual data has a normal distribution. Thus, the regression model has met the normality assumption.

Table 7. Multicollinearity Test Results

Variable	OA	KA	ESG	IC	CT	OA_FD	KA_FD	ESG_FD	IC_FD	CT_FD
OA	1.000	0.236	0.106	0.270	-0.116	0.658	0.189	0.084	0.256	0.026
KA	0.236	1.000	0.071	0.270	0.286	0.238	0.485	0.159	0.214	0.231
ESG	0.106	0.071	1.000	-0.049	0.572	-0.119	-0.299	-0.042	-0.287	-0.127
IC	0.270	0.270	-0.049	1.000	0.020	0.187	0.050	-0.062	0.771	-0.036
CT	-0.116	0.286	0.572	0.020	1.000	-0.189	-0.092	0.069	-0.128	0.178
OA_FD	0.658	0.238	-0.119	0.187	-0.189	1.000	0.537	0.415	0.465	0.380
KA_FD	0.189	0.485	-0.299	0.050	-0.092	0.537	1.000	0.775	0.447	0.823
ESG_FD	0.084	0.159	-0.042	-0.062	0.069	0.415	0.775	1.000	0.373	0.955
IC_FD	0.256	0.214	-0.287	0.771	-0.128	0.465	0.447	0.373	1.000	0.410
CT_FD	0.026	0.231	-0.127	-0.036	0.178	0.380	0.823	0.955	0.410	1.000

Source: Output Eviews 12 (2025)

The Multicollinearity Test is conducted to confirm that no strong correlation or high linear relationship exists among the independent variables in the regression model. The criteria applied state that the model is considered free from multicollinearity if the correlation value between independent variables is below 0.90. According to the results presented in the table, none of the correlation values exceed 0.90. Therefore, it can be concluded that this study does not experience multicollinearity issues.

Table 8. Heteroscedasticity Test Results (Breusch-Pagan-Godfrey)

Test Statistic	Value	df	Probability
F-statistic	0.934324	(10,33)	0.5154
Obs*R-squared	9.708815	10	0.4664
Scaled explained SS	8.590794	10	0.5713

Source: Output Eviews 12 (2025)

The results of the Breusch-Pagan-Godfrey Heteroscedasticity Test indicate that the regression model is free from heteroscedasticity problems (is homoscedastic). This conclusion is based on the Probability (Prob.) value of the Obs*R-squared statistic which is 0.4664. Because this probability value is greater than the significance level of 0.05, the Null Hypothesis (H0): Homoscedasticity is accepted. Thus, the regression model has met the classical assumption that the residual variance is constant.

4.4 Hypothesis Testing

After obtaining the REM model to be used, a hypothesis test will be conducted. The results of the hypothesis test are presented in the table below.

Table 9. Hypothesis Testing Results (Random Effect Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Conclusion
C	0.89406	0.11693	7.64634	0.00000	
OA	-0.05479	0.07515	-0.72903	0.47110	H_1 Rejected
KA	-0.15571	0.07993	-1.94809	0.06000	H_2 Rejected
ESG	7.15501	0.64615	11.07331	0.00000	H_3 Accepted
IC	0.00098	0.00316	0.31085	0.75790	H_4 Rejected
CT	-0.04677	0.00772	-6.06236	0.00000	H_5 Accepted
OA_FD	0.66460	0.13852	4.79801	0.00000	H_6 Accepted
KA_FD	0.51687	0.17935	2.88186	0.00690	H_7 Accepted
ESG_FD	-15.69130	1.48700	-10.55230	0.00000	H_8 Accepted
IC_FD	-0.00969	0.00593	-1.63389	0.11180	H_9 Rejected
CT_FD	0.12084	0.01779	6.79382	0.00000	H_{10} Accepted
R-squared	0.666224				
Adj. R-squared	0.565080				
F-statistic	6.586865				
Prob(F-statistic)	0.000016				

Source: Processed by the author (2025)

4.4.1 Model Feasibility Test (F Test)

Referring to the table above, the F-statistic value obtained is 6.586865 with a significance level of 0.000016, while the F-table value at a 5% significance level (α = 0.05) with df1 = 4 and df2 = 6 is 4.53. Since the F-statistic (6.586865) is greater than the F-table (4.53) and the probability value (0.000016) is less than 0.05, Ha is accepted. This indicates that, collectively, the independent variables Audit Opinion (OA), Audit Quality

(KA), Environmental, Social, and Governance (ESG), Intellectual Capital (IC), Carbon Tax (CT), and Financial Distress (FD) significantly affect Company Value.

4.4.2 Coefficient of Determination Test (R^2)

Based on the results above, the Adjusted R-squared value is 0.565080, indicating that the variation in the increase and decrease in Firm Value can be moderately explained by Audit Opinion, Audit Quality, ESG, Intellectual Capital, and Carbon Tax, amounting to 56.50%. In comparison, the remaining 43.50% is explained by other variables not examined in this study.

4.4.3 Partial Test (t-Test)

Based on the t-test results presented in the previous table, the following interpretations can be obtained:

1) Audit Opinion (X_1) shows a probability value of 0.47110, which exceeds the significance level of $\alpha = 0.05$. This suggests that the audit opinion does not significantly affect firm value (Y). In other words, the kind of audit opinion a company receives is not a key determinant of its value.
2) Audit Quality (X_2) shows a probability value of 0.06000, exceeding 0.05. Therefore, it can be concluded that audit quality does not significantly impact firm value. This means that even if the audit is conducted by a highly reputable auditor, this does not necessarily have a direct impact on increasing company value.
3) Environmental, Social, and Governance (ESG) (X_3) has a probability value of 0.00000, which is below 0.05, showing that ESG has a significant impact on firm value. This suggests that the stronger a company's sustainability performance across environmental, social, and governance dimensions, the higher its perceived value among investors.
4) Intellectual Capital (X_4) has a probability value of 0.75790, which exceeds 0.05. Therefore, it can be concluded that intellectual capital has no significant effect on firm value. This suggests that the potential of human resources and organizational knowledge has not been optimally leveraged to enhance the company's perceived value.
5) Carbon Tax (X_5) has a probability value of 0.00000, which is below 0.05, indicating that the carbon tax significantly affects firm value. This implies that the implementation of a carbon tax policy can motivate companies to enhance efficiency and sustainability, ultimately positively influencing their value.
6) Financial Distress (Z) as a moderating variable strengthens the connection between Audit Opinion (X_1) and Company Value (Y), with a probability value of $0.0000 < 0.05$. This indicates that the level of financial distress can influence the extent to which an audit opinion impacts company value.
7) A probability value of $0.0000 < 0.05$ was also found for the relationship between Audit Quality (X_2) and Firm Value (Y) when moderated by Financial Distress (Z). Thus, financial distress is proven to strengthen the influence of audit quality on firm value.
8) Furthermore, a probability value of $0.0069 < 0.05$ indicates that Financial Distress (Z) also acts as a significant moderator in the relationship between ESG (X_3) and Firm Value (Y). This means that under conditions of financial distress, ESG disclosure and implementation can still have a positive impact on firm value.

9) Conversely, the interaction between Intellectual Capital (X_4) and Firm Value (Y), moderated by Financial Distress (Z), resulted in a probability value of 0.1180, which is higher than 0.05. This suggests that financial distress does not enhance the relationship between the two variables, implying that the impact of intellectual capital on firm value remains unaffected by the company's financial condition.
10) Finally, the connection between Carbon Tax (X_5) and Firm Value (Y) with Financial Distress (Z) as a moderating variable yields a probability value of 0.0000 < 0.05. This means that financial distress strengthens the influence of carbon tax on firm value, where firms that are able to manage their carbon obligations efficiently will have a better perceived value in the market despite being under financial pressure.

4.5 Moderate Regression Analysis Model

The following is the Moderate Regression Analysis (MRA) panel data regression model equation:

$$FV = 0.894063655313 - 0.0547859740696*OA - 0.155705450889*KA + 7.1550122485*ESG + 0.000982962314776*IC - 0.0467692052741*CT + 0.664600529769*OA\_FD + 0.516871312594*KA\_FD - 15.6912992184*ESG\_FD - 0.00968677400996*IC\_FD + 0.120835601919*CT\_FD + e$$

4.6 Mediation Test Results (Sobel Test)

4.6.1 Audit Opinion on Firm Value Through ROA

$t = ab / \sqrt{(b^2SEa^2 + a^2SEb^2)}$
$t = (0.026089 \times 0.407794) / \sqrt{((0.407794)^2 \times (0.030171)^2 + (0.026089)^2 \times (0.526009)^2)}$
$t = 0.010639 / \sqrt{((0.166296 \times 0.000910) + (0.000680 \times 0.276685))}$
$t = 0.010639 / \sqrt{(0.000151 + 0.000188)}$
$t = 0.010639 / 0.018411$
$t = 0.577861$
t table = 2.019540

The calculated t value (0.577861) < t table (2.019540), so Ha is rejected and H0 is accepted, meaning that the Audit Opinion Variable does not affect the Company Value of the ESG Leaders Index through ROA as a Mediating Variable.

4.6.2 Audit Quality on Firm Value Through ROA

$t = ab / \sqrt{(b^2SEa^2 + a^2SEb^2)}$
$t = (-0.019850 \times 0.407794) / \sqrt{((0.407794)^2 \times (0.029671)^2 + (-0.019850)^2 \times (0.526009)^2)}$
$t = (-0.008095) / \sqrt{((0.166296 \times 0.000880) + (0.000394 \times 0.276685))}$
$t = (-0.008095) / \sqrt{(0.000146 + 0.000109)}$
$t = (-0.008095) / 0.01596$
$t = -0.507$
t table = 2.019540

The calculated t value (-0.507) < t table (2.019540), so Ha is rejected and H0 is accepted, meaning that the Audit Quality Variable does not affect the Company Value of the ESG Leaders Index through ROA as a Mediating Variable.

4.6.3 ESG on Firm Value Through ROA

$t = ab / \sqrt{(b^2SEa^2 + a^2SEb^2)}$
$t = (-0.541005 \times 0.407794) / \sqrt{((0.407794)^2 \times (0.262927)^2 + (-0.541005)^2 \times (0.526009)^2)}$
$t = (-0.220702) / \sqrt{((0.166296 \times 0.069130) + (0.292686 \times 0.276685))}$

t = (-0.220702) / √(0.011504 + 0.080977)
t = (-0.220702) / √0.092481
t = (-0.220702) / 0.304109
t = -0.726
t table = 2.019540

The calculated t value (-0.726) < t table (2.019540), so Ha is rejected and H0 is accepted, meaning that the ESG variable does not affect the ESG Leaders Index Company Value through ROA as a Mediating Variable.

4.6.4 Intellectual Capital on Firm Value Through ROA

t = ab / √(b²SEa² + a²SEb²)
t = (0.001911 x 0.407794) / √((0.407794)² x (0.000756)² + (0.001911)² x (0.526009)²)
t = 0.0007793 / √((0.166296 x 0.0000005715) + (0.000003652 x 0.276685))
t = 0.0007793 / √(0.0000000950 + 0.0000010103)
t = 0.0007793 / 0.0010518
t = 0.741
t table = 2.019540

The calculated t value (0.741) < t table (2.019540), so Ha is rejected and H0 is accepted, meaning that the Intellectual Capital variable does not affect the ESG Leaders Index Company Value through ROA as a Mediating Variable.

4.6.5 Carbon Tax on Firm Value Through ROA

t = ab / √(b²SEa² + a²SEb²)
t = (0.000234 x 0.407794) / √((0.407794)² x (0.002599)² + (0.000234)² x (0.526009)²)
t = 0.0000954 / √((0.166296 x 0.000006755) + (0.0000000548 x 0.276685))
t = 0.0000954 / √(0.000001123 + 0.0000000152)
t = 0.0000954 / 0.0010677
t = 0.089
t table = 2.019540

The calculated t value (0.089) < t table (2.019540), so Ha is rejected and H0 is accepted, meaning that the Carbon Tax variable does not affect the ESG Leaders Index Company Value through ROA as a Mediating Variable.

4.7 Discussion

4.7.1 The Effect of Audit Opinion on Firm Value

The test results show a probability value of 0.4711 > 0.05, indicating that the audit opinion has no significant effect on company value, and this research hypothesis is rejected. Therefore, the expected positive direction of the effect was not confirmed. This indicates that audit opinions, whether unqualified or otherwise, do not directly influence investor perceptions of company value. Investors likely place more weight on actual financial performance and business prospects than on the external auditor's opinion. These results are inconsistent with previous research by Yusmaniarti et al. (2020), Nafiah and Sopi (2020), and Melianis Yuli Purmalita and Fauzan (2024).

4.7.2 The Effect of Audit Quality on Firm Value

The test results reveal a probability value of 0.0600, which is greater than 0.05, indicating that audit quality does not significantly affect firm value. Therefore, this research hypothesis is rejected. This finding suggests that the size or reputation of a Public

Accounting Firm (KAP) does not directly increase firm value. Investors may consider the audit factor to be insufficient in signaling firm performance, especially if the financial statements have been audited according to generally accepted accounting standards. This finding contradicts previous research by Novrianti Manulang and Harry Z. Soeratin (2024), Mauliddin (2024), and Xaviera and Rahman (2023).

4.7.3 The Influence of ESG on Firm Value

The test results indicate a probability value of 0.0000, which is less than 0.05, showing that ESG has a significant positive impact on firm value. Therefore, the hypothesis in this study is accepted. This finding supports signaling theory, which states that management strives to send positive signals to investors through disclosure of information that reflects the company's performance and prospects. The implementation of ESG principles demonstrates a company's commitment to sustainability, social responsibility, and good governance. The higher the level of ESG implementation, the stronger the signal received by investors that the company is effectively managing environmental, social, and governance issues, thereby reducing investment uncertainty and increasing market confidence. This impacts the company's reputation, positive image, and competitive advantage, ultimately reflected in increased company value. These empirical findings align with previous research by Amirullah et al. (2021), Aulia Fadilah and Yuni Rosdiana (2024), and Pratami and Aryati (2023).

4.7.4 Intellectual Capital on Firm Value

The test results show a probability value of 0.7579 > 0.05, indicating that intellectual capital does not significantly influence company value. Therefore, the research hypothesis is rejected. This indicates that intellectual assets such as knowledge, employee skills, and innovation are not yet considered primary factors influencing company value. Investors tend to place greater emphasis on directly measurable financial variables than on intangible assets. This empirical study disagrees with previous research by Amirullah et al. (2021), Aulia et al. (2018), and Pratami and Aryati (2023).

4.7.5 Carbon Tax on Firm Value

The test results show a probability value of 0.0000 < 0.05, indicating that the Carbon Tax has a positive and significant effect on company value, thus accepting the hypothesis in this study. This finding aligns with the Resource-Based View (RBV), which emphasizes that a company's competitive advantage can be achieved through the utilization of quality internal resources. The implementation of a carbon tax policy encourages companies to optimize energy efficiency, develop environmentally friendly technological innovations, and manage resources sustainably. These efforts not only reduce long-term operational costs but also create valuable and sustainable organizational capabilities. Compliance with the carbon tax not only demonstrates environmental responsibility but also strengthens the company's long-term position, ultimately contributing to increased company value.

4.7.6 Financial Distress Moderates Audit Opinion on Firm Value

The results of this hypothesis test show a probability value of 0.0000 < 0.05, indicating that financial distress moderates the effect of audit opinion on firm value. This finding indicates that audit opinions have a greater influence as a signal of the credibility and reliability of financial reports when a company is facing financial difficulties. Based on

signaling theory, audit opinions function as a communication tool that influences investor perceptions of a company's condition. This result aligns with previous research that states that the level of distress can change how the market interprets audit opinions. Audit opinions in difficult financial conditions have a stronger influence on firm value because they increase investor confidence in the transparency and integrity of financial reports.

4.7.7 Financial Distress Moderates Audit Quality on Firm Value

The results show a probability value of 0.0069 < 0.05, indicating that financial distress moderates the relationship between audit quality and firm value. This finding indicates that financial distress strengthens the effect of audit quality on firm value. Even if a company is audited by a reputable Public Accounting Firm (KAP), this can increase investor confidence when the company is under financial stress. These results align with research by Sysilia Tri Hapsari and Nera Marinda Machdar (2023), which explains that financial distress has the potential to strengthen the relationship between audit quality and firm value. Financial distress experienced by a company can increase the effectiveness of the auditor's reputation in building investor trust. In such situations, when a company is audited by a reputable auditor, the positive market perception of the company's performance and sustainability increases.

4.7.8 Financial Distress Moderates ESG on Firm Value

Based on the findings, the probability value is 0.0000 < 0.05, indicating that Financial Distress moderates the relationship between ESG and Firm Value. This means that when a company faces financial distress, the implementation of strong Environmental, Social, and Governance (ESG) practices can send a positive signal to investors that the company remains committed to sustainability and good governance despite difficult conditions. This aligns with the findings of Wu et al. (2022) which state that financial distress affects the relationship between ESG and firm value because limited resources can hinder ESG activities. However, companies with strong ESG performance are able to mitigate the negative impact of distress and maintain firm value.

4.7.9 Financial Distress Moderates Intellectual Capital's Effect on Firm Value

Based on the probability test results, 0.1118 > 0.05 indicates that financial distress does not moderate the relationship between intellectual capital and firm value. This finding suggests that intellectual assets, including employee knowledge, innovation capabilities, and external relationships, do not significantly impact firm value during times of financial stress. This finding is inconsistent with research that found financial distress has the potential to moderate the relationship between intellectual capital and firm value.

4.7.10 Financial Distress Moderates the Effect of Carbon Tax on Firm Value

The test results show a probability value of 0.0000 < 0.05, indicating that Financial Distress moderates the effect of Carbon Tax on Firm Value. This suggests that in times of financial distress, companies are encouraged to improve operational efficiency and remain compliant with environmental regulations, thus sending a positive signal to investors that the company is capable of maintaining its performance and business sustainability, ultimately increasing firm value. This finding aligns with research by Soetardjo and Nurmawati (2024), which states that a company's financial condition is a determining factor in the effectiveness of a carbon tax on increasing firm value. A carbon

tax can increase corporate transparency and environmental responsibility, but companies experiencing financial distress tend to have limited resources and therefore focus more on financial recovery than on implementing sustainability programs. Therefore, the positive effect of a carbon tax on firm value depends on financial condition.

5. Conclusion

This study aimed to analyze the influence of audit opinion, audit quality, ESG, intellectual capital, and carbon tax on firm value, with financial distress as a moderating variable. Using a sample of 11 ESG Leaders index companies listed on the Indonesia Stock Exchange (IDX) from 2021 to 2024 (44 observations), the following conclusions are drawn.

First, audit opinion does not have a significant effect on firm value, rejecting H_1. Investors prioritize financial performance and business prospects over external audit opinions. Second, audit quality also does not significantly affect firm value, rejecting H_2, as auditor reputation alone is insufficient to signal firm performance. Third, ESG has a significant positive effect on firm value, accepting H_3, as sustainability practices enhance investor confidence and market perception. Fourth, intellectual capital does not significantly influence firm value, rejecting H_4, because investors focus more on measurable financial variables. Fifth, carbon tax has a significant positive effect on firm value, accepting H_5, as environmental compliance encourages efficiency and innovation.

Financial distress moderates the influence of audit opinion (H_6 accepted), audit quality (H_7 accepted), ESG (H_8 accepted), and carbon tax (H_{10} accepted) on firm value, strengthening these relationships when companies face financial difficulties. However, financial distress does not moderate the influence of intellectual capital on firm value (H_9 rejected). The model explains 56.50% of the variation in firm value.

The findings imply that companies should strengthen ESG implementation and carbon tax compliance to enhance firm value. Investors should focus more on ESG performance rather than audit opinions alone. Regulators should continue promoting ESG disclosure and carbon tax adherence. During financial distress, maintaining transparent audit opinions and ESG practices helps preserve firm value.

Limitations include a small sample size (11 companies) and a short observation period (2021-2024). Future research should expand the sample, extend the timeframe, and include additional variables such as corporate governance, firm size, and leverage. Despite these limitations, this study provides empirical evidence on the moderating role of financial distress in the Indonesian capital market.

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