

# The Effect of Greenwashing and Audit Quality on Firm Value: Evidence from High-Carbon-Emission Companies Listed on the Indonesia Stock Exchange

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| Article Info                                                                                                                                                                                                                                  | ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| <p><b>Article history:</b></p> <p>Received July, 2026<br/>Revised July, 2026<br/>Accepted July, 2026</p> <hr/> <p><b>Keywords:</b></p> <p>Audit quality;<br/>Firm value;<br/>Greenwashing;<br/>High carbon emission;<br/>Signaling Theory</p> | <p>Growing demands for sustainability reporting have pressured carbon-intensive companies, yet this pressure is often unaccompanied by adequate independent oversight, creating conditions conducive to greenwashing that can undermine the trustworthiness of information relied upon by investors. Grounded in Signaling Theory, this research investigates how greenwashing and audit quality influence firm value among high-carbon-emission firms listed on the Indonesia Stock Exchange between 2021 and 2025, controlling for firm size and leverage. A quantitative design was employed on a purposively selected sample of firms in the energy, basic materials, and industrials sectors, examined through multiple linear regression. Findings reveal that greenwashing exerts a significant negative influence on firm value, implying that discrepancies between environmental disclosures and actual outcomes are interpreted unfavourably by the market. Audit quality shows no significant relationship with firm value, suggesting auditor affiliation has yet to serve as a decisive credibility marker for investors. Firm size shows no meaningful influence, while leverage exerts a positive, significant impact. These results suggest alignment between disclosure and genuine environmental performance carries greater weight in market valuation than auditor prestige. Companies are encouraged to avoid greenwashing to preserve stakeholder trust, while investors are urged to critically evaluate issuers' environmental disclosures before investing.</p> <p><i>This is an open access article under the <a href="#">CC BY-SA</a> license.</i></p> <div></div> |

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## 1. INTRODUCTION

Concerns over sustainability have steadily gained prominence within contemporary business practice, propelled by mounting global efforts to confront the challenges posed by climate change. Following the adoption of the Paris Agreement in 2015, nations worldwide began establishing more

assertive carbon reduction targets, prompting corporations to adopt greater openness in reporting their environmental, social, and governance (ESG) initiatives [1]. In Indonesia, this commitment is reflected in Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017, which mandates listed companies to publish sustainability reports [2]. However, independent verification of ESG

implementation remains limited, as assurance over sustainability reports is generally voluntary and not as rigorous as financial statement audits [3].

The Indonesia Stock Exchange (IDX) reported that by 2024, 94% of listed companies had submitted sustainability reports [4]. However, several international institutions have emphasized that this increase in reporting has not been fully matched by an improvement in information quality [5], [6], so the low level of external verification opens opportunities for greenwashing, namely the disclosure of environmental information that is overstated or does not reflect actual conditions. This issue carries particular weight within high-carbon-emission industries, including energy, basic materials, and industrials, where mounting pressure from regulators, investors, and the wider public has become increasingly pronounced. Within these sectors, adherence to environmental management standards is tracked through the Corporate Performance Rating Assessment Program (PROPER), a monitoring instrument administered by the Ministry of Environment and Forestry (KLHK) under Law No. 32 of 2009 [7], which in this study is used as one of the sampling criteria so that companies' actual environmental performance can be independently verified.

Signaling Theory explains that companies convey information to external parties as a signal to reduce information asymmetry with investors [8], [9]. ESG disclosure can serve as a positive signal of sustainability commitment; however, when such information does not reflect actual conditions, greenwashing emerges as a misleading signal that can ultimately damage market trust. Audit quality plays an important role in enhancing the credibility of such signals, as high-quality auditors are better able to ensure the reliability of information, thereby restoring investor confidence [10].

Empirical evidence on the effect of greenwashing on firm value remains inconclusive. Several studies found that greenwashing tends to reduce firm value because it undermines the credibility of information disclosed to investors [11], [12], [6], [13]. In contrast, other studies found that

greenwashing may, under certain conditions, generate a short-term positive effect on firm value, particularly in emerging markets [14], or that its impact is dynamic depending on the disclosure stage [15]. These divergent findings point to a research gap: most studies examine the effect of greenwashing on firm value separately from external credibility mechanisms such as audit quality [11], [12], [6], while other studies show the impact is dynamic depending on how the market verifies the credibility of the information [14], [15], yet none has positioned audit quality as a mechanism that moderates the greenwashing signal within a single Signaling Theory framework, particularly for high-carbon-emission companies in Indonesia.

The originality of this research lies in its integration of a potentially non-credible signal, namely greenwashing, with an external credibility signal, namely audit quality, within a unified analytical model, applied specifically to the sector exhibiting the highest greenwashing risk in the Indonesian capital market during the 2021 to 2025 period, while accounting for firm size and leverage as control variables. This study is anticipated to generate new empirical insights into the extent to which audit quality can serve as a counterbalance to the risks posed by the non-credible signal of greenwashing, while also offering practical implications for companies, investors, and regulators seeking to assess the credibility of sustainability disclosures among issuers operating in high-carbon-emission industries.

## 2. LITERATURE REVIEW

### 2.1 *Signaling Theory*

Signaling Theory describes to us how companies give information to external entities so that the management and investors can exchange signals against the information asymmetry that is reduced to the market, allowing us to analyze the company for its quality and potential [9]. ESG disclosure is one form of signal that can reflect a company's commitment to sustainability and the quality of its performance [16], [17]. However, the effectiveness of a signal depends heavily on its credibility; when disclosed information

does not correspond to actual conditions, greenwashing emerges as a misleading signal that can reduce investor trust and firm value [18]. Audit quality serves as a credibility signal indicating that a company's information has undergone reliable verification, since high-quality auditors possess greater competence and independence in detecting information manipulation [10], and are associated with increased transparency and reduced information asymmetry [19].

## 2.2 Greenwashing

Greenwashing is a misleading environmental communication practice aimed at portraying a company as more environmentally friendly than it actually is [20], characterized as false green imagery without substantive operational improvement [21], and occurring through the selective, exaggerated, or inaccurate misrepresentation of environmental claims relative to actual performance [22]. From a signaling theory perspective, greenwashing undermines the credibility of the signals conveyed by a company; the short-term misperception it creates among investors tends to reverse into declining trust once the discrepancy between disclosed information and actual performance is revealed. Prior studies show that greenwashing reduces the credibility of information and market perception [23], [24], and has a negative effect on firm value [25].

## 2.3 Audit Quality

Audit quality is an external governance mechanism that ensures a company's financial statements and disclosures have undergone independent verification, theoretically defined as the probability that an auditor will discover and report material misstatements [26], [27]. From the perspective of Signaling Theory, audit quality functions as a credibility signal indicating that a company's information has been independently verified, thereby reducing information asymmetry between management and investors [10], [19]. This study uses the Big Four/Non-Big Four

public accounting firm (KAP) dichotomy as a proxy; although all KAPs auditing IDX-listed issuers are required to be registered with and supervised by the Financial Services Authority (OJK) under POJK No. 13/POJK.03/2017, and therefore equally meet the regulator's minimum qualification standards, this proxy is used because the greater resource scale and international networks of Big Four firms are associated with stronger auditor independence when facing pressure from large clients [27]. Prior research shows that audit quality has a positive effect on firm value because it enhances the transparency and credibility of information [10], including in sustainability disclosures [3].

## 2.4 Firm Value and Control Variables

Firm value can be understood as an indication of how the market perceives a company's economic performance and its prospects going forward, commonly represented through stock price movements [28] and the firm's capacity to generate future cash flows [29]. Consistent with this view, the present study operationalizes firm value using Tobin's Q [30], [31]. This study also uses firm size and leverage as control variables to reduce estimation bias. Firm size reflects a company's scale of operations and access to information [29], while leverage reflects the level of financial risk arising from the use of debt [28], which from the perspective of Signaling Theory may be perceived negatively due to bankruptcy risk, but may also serve as a positive signal of management's confidence [32].

## 2.5 Conceptual Framework and Hypothesis Development

Based on the theoretical and empirical review above, this study proposes that greenwashing and audit quality jointly shape the credibility of the signals a company sends to the market, and consequently its firm value. Greenwashing represents a potentially non-credible signal: when environmental disclosures overstate actual performance, the market interprets the resulting inconsistency as a bad signal and revises its valuation of the

company downward. In contrast, audit quality represents an external credibility signal: when a company's financial information has been verified by a high-quality auditor, information asymmetry between management and investors is expected to decrease, thereby supporting a higher firm value. Accordingly, the conceptual framework of this study positions greenwashing and audit quality as independent variables, firm size and leverage as control variables, and firm value as the dependent variable, leading to the formulation of the following research hypotheses.

H1: Greenwashing has a negative effect on firm value.

H2: Audit quality has a positive effect on firm value.

These hypotheses aim to empirically test the extent to which greenwashing and audit quality, as two competing forms of market signal, jointly influence the value that investors assign to high-carbon-emission companies listed on the Indonesia Stock Exchange.

### 3. METHODS

#### 3.1 Research Design

This study employed a quantitative approach with a causal (explanatory) research design to examine the relationship between the independent

and dependent variables [33], [34]. Multiple linear regression analysis was used to assess the effects of greenwashing and audit quality on firm value.

#### 3.2 Population and Sample

The population comprised high-carbon-emission companies in the energy, basic materials, and industrials sectors listed on the Indonesia Stock Exchange (IDX) during 2021-2025. The sample was selected using purposive sampling [40] based on the following criteria: (1) classified as a high-carbon-emission company; (2) consecutively listed on the IDX during 2021-2025; (3) published complete annual and sustainability reports; (4) received consecutive PROPER ratings from KLHK at the holding company level; and (5) reported financial statements in Rupiah.

#### 3.3 Data Type and Source

Secondary quantitative data were collected from the secondary quantitative data were collected from the annual and sustainability reports of the sample companies, PROPER ratings published by the Ministry of Environment and Forestry (KLHK), and official publications of the Indonesia Stock Exchange (IDX) and the Financial Services Authority (OJK) [33], [35].

#### 3.4 Variable Measurement

Table 1. Variable Measurement

| Variable           | Definition                                                                                | Measurement                                                           |
|--------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Firm Value (NP)    | The market value of a company's total assets as reflected in its stock price [28]         | Tobin's Q = (Market Value of Equity + Total Debt) / Total Assets      |
| Greenwashing (GW)  | The disclosure of environmental information that is inaccurate or exaggerated [20]        | GW = ESG Disclosure Score (Z-score) - ESG Performance Score (Z-score) |
| Audit Quality (QA) | The likelihood that an auditor identifies and discloses material misstatements [26], [27] | Dummy: 1 = Big Four; 0 = Non-Big Four                                 |
| Firm Size (SIZE)   | The scale of operations and resource capacity of a company [36]                           | Size = Ln (Total Assets)                                              |
| Leverage (LEV)     | The extent to which a company relies on debt financing [36]                               | LEV = Total Liabilities / Total Assets                                |

#### 3.5 Analytical Method

Hypothesis testing is conducted using multiple linear regression analysis [33], [35] with the following model:

$$NP_i = \alpha + \beta_1 GW + \beta_2 QA + \beta_3 SIZE + \beta_4 LEV + \varepsilon$$

Where: NP = Firm Value; GW = Greenwashing; QA = Audit Quality; SIZE = Firm Size (control); LEV = Leverage (control);  $\alpha$  = Constant;  $\beta_1$ – $\beta_4$  = Regression coefficients;  $\varepsilon$  = Error term.

Descriptive statistics were first employed to summarize the data, followed by classical Descriptive statistics were first used to summarize the data, followed by classical assumption tests to evaluate the suitability of the regression model. These tests included the Kolmogorov–Smirnov test for normality, tolerance and variance inflation factor (VIF) for multicollinearity, the Park test for heteroscedasticity, and the

Durbin–Watson test for autocorrelation. Hypotheses were subsequently tested using the adjusted  $R^2$ , F-test, and t-test at a 5% significance level [25], [35], [37].

## 4. RESULTS AND DISCUSSION

### 4.1 Research Sample and Population

The population of this study comprises all high-carbon-emission companies listed on the IDX during 2021–2025. Through purposive sampling, 26 companies were obtained as the final sample, with a total of 130 firm-year observations over the 2021–2025 period, as presented in Table 2.

Table 2. Number of Sample Companies and Observations

| Sample Selection Criteria                                                                                           | Companies | Observations (5 Years) |
|---------------------------------------------------------------------------------------------------------------------|-----------|------------------------|
| High-carbon-emission companies listed on the IDX in the energy, basic materials, and industrial sectors (2021–2025) | 269       | 1,345                  |
| Did not publish complete Annual Reports and Sustainability Reports                                                  | (38)      | (190)                  |
| Did not obtain consecutive PROPER ratings from KLHK (holding company level)                                         | (190)     | (950)                  |
| Presented financial statements in a currency other than Rupiah                                                      | (15)      | (75)                   |
| Number of companies meeting the sample criteria                                                                     | 26        | 130                    |

Source: Processed Secondary Data, 2026

The considerable reduction in sample size was mainly caused by the large number of high-emission companies that did not meet the PROPER rating criteria from KLHK, as some IDX issuers are not yet within the mandatory scope of PROPER assessment, and PROPER ratings are essentially assigned to operational

units or subsidiaries rather than to the listed holding company. This condition indicates that environmental data transparency in Indonesia remains fragmented between actual operational activities and reporting at the public corporate level.

### 4.2 Descriptive Statistics

Table 3. Descriptive Statistics

| Variable               | N   | Min     | Max     | Mean    | Std. Dev. |
|------------------------|-----|---------|---------|---------|-----------|
| Greenwashing (GW)      | 130 | -2.6509 | 1.8987  | 0.0000  | 1.1171    |
| Firm Size (SIZE)       | 130 | 27.1608 | 32.8108 | 29.4845 | 1.4247    |
| Leverage (LEV)         | 130 | 0.0650  | 3.5448  | 0.4475  | 0.3312    |
| Firm Value (Tobin's Q) | 130 | 0.3561  | 5.8721  | 1.1122  | 0.6684    |

Source: SPSS Output

Table 4. Frequency Distribution of the Audit Quality Variable (Dummy)

| Category     | Code | Frequency (n) | Percentage (%) |
|--------------|------|---------------|----------------|
| Non-Big Four | 0    | 62            | 47.7           |
| Big Four     | 1    | 68            | 52.3           |
| Total        | -    | 130           | 100.0          |

Source: SPSS Output, 2026

The Greenwashing (GW) variable is measured as the difference between the Z-scores of ESG disclosure and actual ESG performance, so a positive value indicates disclosure exceeding actual performance. Of the 130 observations, 53 (40.8%) had a positive GW value. The minimum GW value (-2.6509) was found in United Tractors Tbk (UNTR) in 2023 and Aneka Tambang (Persero) Tbk (ANTM) in 2021, while the maximum value (1.8987) was found in Lion Metal Works Tbk (LION) throughout 2021-2025. For the Audit Quality (QA) variable, of the 130 firm-year observations, 68 (52.3%) were audited by Big Four firms and 62 (47.7%) by Non-Big Four firms, reflecting a fairly balanced use of audit services in the high-carbon-emission sector.

The Firm Size (SIZE) variable ranged from a minimum of 27.1608 for Lion Metal Works Tbk (LION) in 2025 to a maximum of 32.8108 for United Tractors Tbk (UNTR) in 2025. The Leverage (LEV) variable ranged from a minimum of 0.0650 for Indonesia Fibreboard Industry Tbk (IFII) in 2021 to a maximum of 3.5448 for Semen Indonesia (Persero) Tbk (SMGR) in 2025, with a mean of 44.75%, indicating a moderate level of reliance on debt financing. Firm Value (Tobin's Q) ranged from a minimum of 0.3561 for Kabelindo Murni Tbk (KBLM) in 2022 to a maximum of 5.8721 for Semen Indonesia (Persero) Tbk (SMGR) in 2025, with a mean of 1.1122, indicating that the market values the sample companies above their book value of total assets.

#### 4.3 Classical Assumption Tests

Table 5. Normality and Autocorrelation Test Results

| Test            | Method                        | Before     | After      | Remarks                 |
|-----------------|-------------------------------|------------|------------|-------------------------|
| Normality       | One-Sample Kolmogorov-Smirnov | 0.000      | 0.064      | Normally Distributed    |
| Autocorrelation | Durbin-Watson / Runs Test     | 1.665 (DW) | Sig. 0.218 | Free of Autocorrelation |

Source: SPSS Output, 2026

The residuals of the initial model were not normally distributed (Sig. 0.000), so a base-10 logarithmic (LG10) transformation was applied to the firm value variable, which increased the significance value to 0.064 (>0.05). The

initial Durbin-Watson test fell within the inconclusive zone, so a subsequent Runs Test was conducted, yielding a significance value of 0.218 (>0.05), confirming that the residuals are random and the model is free of autocorrelation.

Table 6. Multicollinearity and Heteroscedasticity Test Results

| Variable           | Tolerance | VIF   | Sig. (Park) | Remarks                             |
|--------------------|-----------|-------|-------------|-------------------------------------|
| Greenwashing (GW)  | 0.706     | 1.417 | 0.644       | Free of Classical Assumption Issues |
| Audit Quality (QA) | 0.524     | 1.910 | 0.916       | Free of Classical Assumption Issues |
| Firm Size (SIZE)   | 0.420     | 2.381 | 0.278       | Free of Classical Assumption Issues |
| Leverage (LEV)     | 0.992     | 1.008 | 0.060       | Free of Classical Assumption Issues |

Source: SPSS Output, 2026

Across all variables, Tolerance values exceeded 0.10 while VIF values remained below 10, jointly confirming that the model is free from multicollinearity issues. Similarly, the Park test produced significance values above 0.05 for every

variable, indicating homoscedastic residual variance. Taken together, these results demonstrate that the regression model fulfills all the requirements of a Best Linear Unbiased Estimator (BLUE).

#### 4.4 Multiple Linear Regression and Hypothesis Testing

Table 7. Multiple Linear Regression and Hypothesis Test Results

| Variable                   | B      | t      | Sig.  | Remarks                         |
|----------------------------|--------|--------|-------|---------------------------------|
| (Constant)                 | -0.628 | -1.382 | 0.169 | -                               |
| Greenwashing               | -0.032 | -2.081 | 0.039 | H1: Accepted (Negative)         |
| Audit Quality              | -0.003 | -0.084 | 0.933 | H2: Rejected                    |
| Firm Size                  | 0.017  | 1.097  | 0.275 | Control: No Effect              |
| Leverage                   | 0.256  | 5.768  | 0.000 | Control: Positive & Significant |
| F-test (Simultaneous)      | 11.794 | -      | 0.000 | Model Fit                       |
| R Square (R <sup>2</sup> ) | 0.274  | -      | -     | -                               |
| Adjusted R Square          | 0.251  | -      | -     | -                               |

Source: SPSS Output, 2026

The F-test produced a value of 11.794 with a significance level of 0.000 (<0.05), indicating that the regression model is statistically significant. The Adjusted R<sup>2</sup> of 0.251 shows that greenwashing, audit quality, firm size, and leverage jointly explain 25.1% of the variation in firm value, while the remaining 74.9% is attributable to other factors not included in the model.

##### a. Effect of Greenwashing on Firm Value

The regression analysis reveals that greenwashing has a negative and statistically significant effect on firm value (B = -0.032; Sig. = 0.039). In practical terms, this finding suggests that as the divergence between a company's disclosed environmental claims and its actual environmental performance grows wider, firm value tends to diminish accordingly. On this basis, H1, positing that greenwashing negatively affects firm value, is supported by the data.

##### b. Effect of Audit Quality on Firm Value

Audit quality has a coefficient of -0.003 with a significance value of 0.933 (>0.05), indicating no significant effect on firm value. This suggests that differences between Big Four and Non-Big Four auditors do not significantly influence firm value after controlling for greenwashing, firm size, and leverage. Therefore, H2 is not supported. Among the control variables, firm size has no significant effect (B = 0.017; Sig. = 0.275), whereas

leverage has a positive and significant effect on firm value (B = 0.256; Sig. = 0.000). Overall, the results support H1 but not H2, suggesting that greenwashing plays a more important role than audit quality in shaping the market valuation of high-carbon-emission companies.

#### 4.5 Discussion

The results indicate that greenwashing has a negative and significant effect on firm value, supporting H1. This finding is consistent with signaling theory, which suggests that inconsistencies between a company's environmental claims and its actual practices are perceived by the market as a negative signal. Such signals increase information asymmetry, weaken investor confidence, and ultimately reduce firm value. When environmental disclosures take longer to be verified or are found inconsistent with actual performance, investors are forced to rely on incomplete or unreliable information, leading to greater uncertainty and more cautious market valuation. This finding is consistent with prior studies emphasizing that credible, verifiable disclosure is essential in reducing information asymmetry and maintaining market confidence [12], [23], [24], but differs from the finding of [38], who reported that greenwashing has no effect on firm value a divergence that reinforces the notion that, amid rising public scrutiny, the manipulation of

environmental issues now carries real economic consequences for market value.

Furthermore, this study finds that audit quality has no significant effect on firm value, so H2 is rejected. This pattern is consistent with the nearly balanced use of Big Four (52.3%) and Non-Big Four (47.7%) audit firms in the high-carbon-emission sector, suggesting that KAP affiliation is no longer a sharp differentiator among sample issuers. Moreover, since both Big Four and Non-Big Four firms auditing IDX-listed issuers are equally required to be registered with and supervised by OJK under POJK No. 13/POJK.03/2017, investors likely regard financial statements audited by any KAP as already meeting minimum reliability standards, so the credibility signal once associated with Big Four affiliation appears to have weakened. This finding differs from studies that found audit quality has a positive effect on firm value because it enhances the transparency and credibility of information [3], [10], but is consistent with other studies that likewise found no significant effect of audit quality on firm value [39], [40].

In addition, several factors help explain these results, including the characteristics of the sample sector and the control variables examined. Leverage is found to have a positive and significant effect on firm value, suggesting that within this high-carbon-emission sample, the market may interpret debt financing as a signal of management's confidence in future cash flows rather than purely as financial risk [32]. Firm size, in contrast, has no significant effect, indicating that scale alone does not guarantee a more favourable market valuation once greenwashing and audit quality are accounted for. These findings highlight that market valuation in this sector is shaped less by company scale or auditor affiliation than by the perceived integrity of a company's own environmental claims.

The relatively moderate Adjusted  $R^2$  value of 0.251 indicates that greenwashing and audit quality, together with the control variables, are important

but not exhaustive factors in explaining variation in firm value; other variables such as profitability, ownership structure, or the specific mechanisms through which sustainability information is verified may also play a role. From a practical perspective, these findings emphasize the need for companies in high-carbon-emission sectors to ensure that sustainability disclosures accurately reflect actual environmental performance, for investors to look beyond auditor affiliation and scrutinize the consistency of ESG disclosures directly, and for regulators to strengthen independent verification mechanisms for sustainability reporting rather than relying solely on the Big Four/Non-Big Four status of financial statement auditors. More specifically, companies in high-carbon-emission sectors are strongly encouraged to practice honest and accurate sustainability reporting, ensuring that disclosed environmental claims genuinely reflect actual operational performance rather than being used merely as an image-enhancement tool, since this study demonstrates that the market penalizes such inconsistency with a lower valuation. Investors, in turn, are advised to exercise greater caution when interpreting ESG and sustainability reports, going beyond a company's stated commitments to independently verify the consistency between disclosed environmental claims and the company's actual environmental track record before making investment decisions. Overall, this study confirms that greenwashing is not merely a communication issue but carries significant consequences for market valuation and investor trust in Indonesia's capital market.

## 5. CONCLUSION

This study concludes that greenwashing has a negative and significant effect on firm value (H1 accepted), while audit quality is not found to have a significant effect (H2 rejected). Regarding the control variables, firm size has no significant effect, whereas leverage has a positive and significant effect on

firm value. These findings confirm that the Indonesian capital market, particularly in the high-carbon-emission sector, is sufficiently sensitive to inconsistencies between sustainability claims and actual environmental performance, perceiving them as a negative signal, while KAP affiliation alone has not yet become a sufficiently strong credibility signal to enhance firm value. The implications are that companies in high-carbon-emission sectors need to ensure consistency between sustainability disclosures and actual environmental performance, investors need to more critically scrutinize the credibility of issuers' ESG disclosures and consider firms' capital structure (leverage) when assessing their prospects, and regulators need to encourage stricter independent verification mechanisms for sustainability reports, rather than relying solely on the Big Four/Non-Big Four status of financial statement auditors. In practical terms, companies are urged to prioritize honest and transparent sustainability disclosure, ensuring that every environmental claim communicated to the market is fully substantiated by actual performance, as this study shows that credibility, not merely the volume or tone of disclosure, is what ultimately shapes investor confidence and firm value. Investors, meanwhile, are encouraged to adopt a more cautious and critical stance when reading ESG and sustainability reports, treating them as a starting point for further scrutiny rather than as a definitive indicator of a company's environmental integrity.

This study has several limitations. The model's explanatory power for the variation in

firm value remains moderate (Adjusted  $R^2 = 25.1\%$ ), the measurement of greenwashing still relies on disclosure content that is difficult to validate objectively, the scope of the study is limited to high-carbon-emission companies on the IDX, and the audit quality proxy remains limited to the Big Four/Non-Big Four dichotomy. Future research is encouraged to incorporate additional relevant variables such as profitability or ownership structure, employ more varied audit quality proxies, expand the sectoral and temporal scope of the study, and consider more validated methods for measuring greenwashing. Regulators are also encouraged to promote stricter external assurance mechanisms for issuers' sustainability reports in order to narrow the scope for greenwashing practices in the Indonesian capital market.

## ACKNOWLEDGEMENTS

The author wishes to convey her profound appreciation to her parents, whose unwavering support, encouragement, and prayers have accompanied her throughout the course of this research. Special appreciation is also extended to her thesis supervisor, Herawansyah, S.E., M.Ak, for the invaluable guidance, direction, and patience provided during both the research and writing process. Lastly, the author acknowledges with gratitude all individuals and parties, whether directly or indirectly involved, whose support made the completion of this study possible

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