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The Impact of EESG Dimensions on Market Valuation of Firms Within Publicly-listed Logistics and Transportation Sector in Indonesia

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ABSTRACT
Indonesian companies are becoming more pressured to schedule, budget, and release sustainability reports, including for companies in the Indonesian logistics and transportation industry. Unfortunately, little empirical evidence exists about the financial value of filing *sustainability reports* in emerging markets. The purpose of this research is to investigate the relationship between the contents of *sustainability reports* and the financial performance of publicly listed logistics and transportation companies listed on the Indonesian Stock Exchange (*IDX*) for the period 2019–2024. This study, utilizing a revised *EESG* (Economic, Environmental, Social, Governance) evaluation framework, examines the content of *sustainability reports*. This analysis applied multiple linear regression (*MLR*) to consider effects on firms' Tobin's Q (*TQ*). Results indicated that, except for the partial significance of the Environmental dimension, other dimensions did not significantly affect market valuation. The findings indicate that *sustainability reporting* within this industry may emphasize requirements disclosure and environmental disclosure for value addition.

Keywords: EESG, MLR, Sustainability Reporting, IDX, Financial Performance

INTRODUCTION

With the world's focus shifting to become more eco-friendly and methods to save the earth from pollution, companies are deciding to do their part by carrying out their sustainability through *CSR*. Sustainability activities are a core part of business operations, presenting an amalgamation of the economic, environmental, and social aspects, and also complying with the reference of the governance of the company. Many companies perform well in this area within their own communities, though not all receive the kind of feedback from their communities that reflects their efforts, as not all are great communicators to begin with. These activities have been shown to impact corporate brand reputation and improve significant revenue by gaining and retaining customers and investors, as well as building trust with internal and external stakeholders of the company (Mollenkamp, 2023; Ahmad et al., 2025). Sustainability activities can also help companies save costs by encouraging innovation of the green variety and can contribute to a positive company culture, which can attract and retain employees; effective activities could also reduce the risk of penalties from non-compliance (Boutmaghzoute & Moustaghfir, 2021).

The transportation and logistics industry in Indonesia is now one of the largest sectors contributing to the development of the country via local and international trade, while also affecting the gross domestic product (*GDP*). Even so, projected expansion and vertiginous growth have placed heavy loads on social and environmental ecosystems. Indeed, logistics and transportation industries are recognized as contributing to about 20% of carbon dioxide (CO_2) emissions globally (Ritchie, 2020). Indonesia is already burdened by extreme dependency on road transport, as evidenced by its main means of transporting goods, where 90% of freight

transportation is by road (Mulyono, 2019). Furthermore, this sector is a significant contributor to Indonesia's *GHG* emissions, since road transport alone accounts for almost 90% of the energy used in the transport sector, with heavy fossil fuel use and an unintended rapid increase in carbon emissions (WRI Indonesia, 2023). The Institute for Essential Services Reform (2023) showed that as of 2021, the transportation sector has overtaken the industry sector and become the second highest carbon emitter in Indonesia. Because of the environmental damage caused by logistics and transportation, the Indonesian government has implemented other *ESG*-related policies for companies in the logistics and transportation industries.

It is also essential for companies to implement sustainability measures via *CSR* activities due to rising *ESG* costs. This situation has forced the Indonesian government to set new requirements for companies listed on the stock exchange, i.e., to perform sustainability actions. One of the sustainability-related regulations enforced includes *Peraturan Presiden Republik Indonesia Nomor 98 Tahun 2021 tentang Nilai Ekonomi Karbon* (Republic of Indonesia, 2021), which stipulates that carbon pricing is currently being implemented through carbon levies and carbon trading, and is required to be included in a company's sustainability report. Another regulation is the *Peraturan Menteri LHK Nomor 21 Tahun 2022 tentang Tata Laksana Penerapan Nilai Ekonomi Karbon*, which provides checklists and criteria that transportation and logistics companies may use as benchmarks in calculating, verifying, and reporting emissions in their sustainability reports (Ministry of Environment and Forestry, 2022). *OJK* (2021) has enforced the *Sustainable Finance Roadmap Phase II* (2021–2025), which requires financial institutions and publicly listed companies to integrate *TO* into their operational strategy and risk management, as well as to increase transparency and awareness toward sustainable efforts through programs and reporting principles. Several factors have boosted the growth of the sector, including expansive e-commerce, national policy changes, and investments in infrastructure that have helped the Indonesian archipelago become more connected than ever (IMARC Group, 2024). These shifts are factors that the IMARC Group (2024) expects could lead to a market growth rate of 7.20% in the Indonesian market from 2024 to 2032.

Amid a rapidly increasing trend of research into how sustainability reporting relates to financial performance, there are gaps in past studies regarding methodological approaches and sector coverage. Most previous studies on emerging economies have centered on industries such as finance, manufacturing, food & beverages, and energy. Thus, other industries, notably logistics & transportation, are often not included. Given the significant economic contribution of the transportation & logistics industries, this is an important gap, especially regarding present-day sustainability issues within the sector in Indonesia. Furthermore, earlier studies utilized regression analysis with observed variables as proxies for analysis. Very few articles have investigated the use of statistical frameworks like multiple linear regression (*MLR*), whose characteristics can adequately capture the nature of sustainability report content. Even fewer have investigated *EESG*-based measurement of sustainability reports or how each of its dimensions impacts specific financial measures. To address these research gaps, this study uses *MLR* to analyze *IDX*-listed companies in the logistics and transportation sector. The quality grading tool utilized was the *EESG*-aligned tool, grading every aspect for further research on its impact on Tobin's Q for immediate feedback. Utilizing the four dimensions—economic, environmental, social, and governance—this study has the potential to provide a detailed

understanding of how context-dependent sustainable reporting impacts financial performance. This study will potentially contribute new knowledge on the application of *EESG* in quality assessment, empirical observation of the Indonesian logistics and transportation sector, and the use of the *MLR* model as an analysis tool for examining the relationship between independent and dependent variables.

Although there is an increasing number of studies on sustainability, past research has yielded inconsistent outcomes regarding how financial performance is influenced by sustainability disclosure. There is evidence of a positive association between profitability and company performance, as well as between profitability levels and disclosure levels (Stanescu et al., 2024; Sunny & Apsara, 2024). Other research has analyzed how deeper and more transparent disclosures affect brand-level perception and, eventually, a firm's value (Zhang & Liu, 2023). Yet, most studies have generally investigated general *CSR* initiatives or composite *ESG* scores, with little attention to specific quality or dimensions within a sustainability report.

Traditionally applied frameworks like the *Triple Bottom Line* (*TBL*) and *Environmental, Social, and Governance* (*ESG*) each have limitations—*TBL* tends to omit governance elements, whereas *ESG* does not cover an economic element. To overcome this shortcoming, the *EESG* framework enhances *ESG* with an economic element, ensuring a more comprehensive approach, especially suited for sectoral and emerging market settings like Indonesia's transportation and logistics sector. Despite its promise, empirical uses of the *EESG* framework are not abundant, both in Indonesian settings and sectoral studies.

To fill this research gap, the current study uses a multiple linear regression method to analyze the direct association between the dimensions of *EESG* and market-based financial performance (Tobin's Q). This method allows for easy interpretation regarding how individual aspects of sustainability disclosures can impact firm valuation without the use of complicated structural modeling. Report quality, as it pertains to dimensions in *EESG*, could be more significant. Dincer et al. (2023), Coelho et al. (2023), and Sunny & Apsara (2024) have established in research that firms with more prominent, detailed, and transparent sustainability reports, particularly in environmental accounting and governance dimensions, are financially more successful. Consistent with this, the current research examines whether each component in *EESG* affects firm value. Hence, the hypotheses tested were as follows:

H1: The economic dimension of sustainability reporting has a significant effect on Tobin's Q.
H2: The environmental dimension of sustainability reporting has a significant effect on Tobin's Q.
H3: The social dimension of sustainability reporting has a significant effect on Tobin's Q.
H4: The governance dimension of sustainability reporting has a significant effect on Tobin's Q.

These hypotheses represent a departure from analyzing aggregated or latent constructs to a focus on examining direct linear relationships between components of report quality and firm valuation. This method reduces complexity without compromising the conceptual integrity of the *EESG* framework. The development of these hypotheses further assists in conceptualizing a visual model to better present the correlation between the variables in this research.

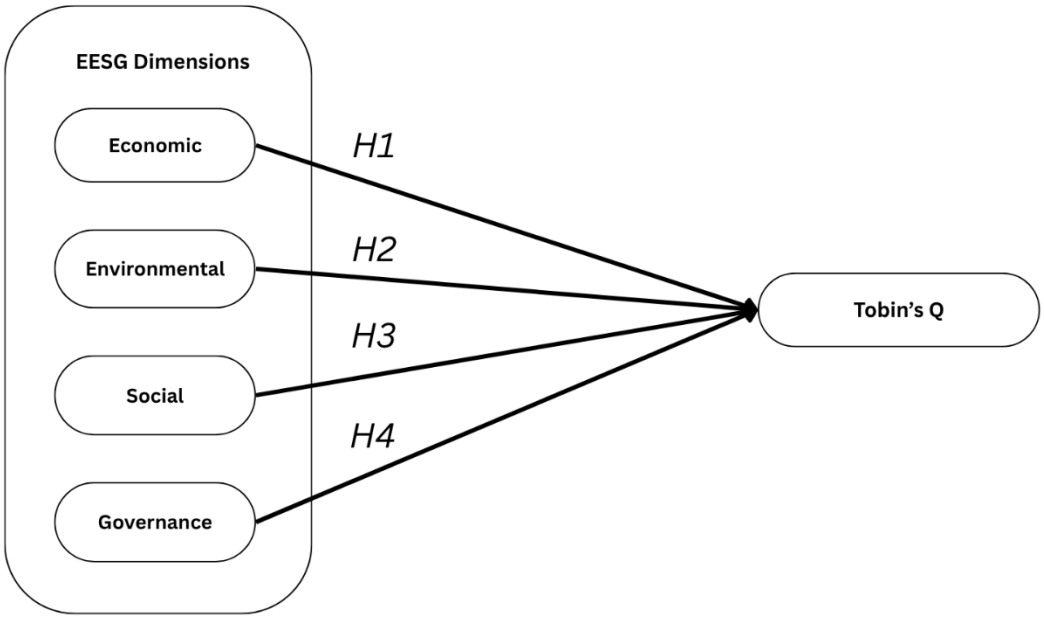

Figure 1. Conceptual Framework H1-H4.

METHOD

This research employed a quantitative approach, specifically using secondary data from publicly listed companies in the logistics and transportation segment of the Indonesian Stock Exchange. The data spanned six years, from 2019 to 2024, and focused on various sustainability, annual, and financial reports available on the companies' websites or the IDX platform. Secondary data was chosen for its availability, accuracy, and ability to provide insights into long-term trends across multiple companies. The data population consisted of 37 companies in the logistics and transportation sector, and purposive sampling was applied. This method ensured that only companies with a sufficient market cap and a minimum of three years of complete sustainability, annual, and financial reports were included, ensuring the reliability and validity of the data for analysis.

The research utilized four independent variables: economic, environmental, social, and government factors, with the dependent variable Tobin's Q, a financial performance indicator. These variables were chosen based on their relevance to the logistics and transportation sector and their impact on long-term corporate sustainability and performance. Data from these variables were carefully examined and analyzed to draw meaningful conclusions regarding the relationship between corporate governance, sustainability factors, and financial performance.

Table 1. Research Variables

Label	Name of Variable	Type of Variable
ECON	Economic	Independent
ENV	Environmental	Independent
SOC	Social	Independent
GOV	Government	Independent
TQ	Tobin's Q	Dependent

For data analysis, the study applied *Multiple Linear Regression* (*MLR*), a method suited for evaluating relationships between multiple independent variables and a dependent variable. The *MLR* analysis was executed using R Studio, leveraging its built-in functions for data

synthesis, visualization, and model evaluation. This approach enabled robust statistical assessment of how economic, environmental, social, and government factors influenced financial performance in the sector.

RESULTS AND DISCUSSION

A. Descriptive Statistics

The data gathered in this research is from 37 listed companies from the logistics and transportation industries in IDX. They are from the period 2019-2024. There were 170 rows in observations for all the variables. There were 5 independent variables (economic, environmental, social, and governance factors) and 1 dependent variable (TQ).

Table 2. Descriptive Statistics of Data

Variables	Observation	Mean	Standard Deviation	Minimum	Maximum
ECON	126	13.80158730	6	6.00	19
ENV	126	10.28571429	3.4982445	4	19
SOC	126	14.74603175	3.8862558	8	24
GOV	126	16.95238095	3.3391188	9	25
TQ	159	1.31981132	1.2589972	0.02	8.730

Out of all dimensions in EESG, there is a highest average score of 16.95 in the governance dimension, whereas environmental has a low average score of 10.29. Meanwhile, the TQ variable has a range from 0.02 to 8.730.

B. Multiple Linear Regression Results

The multiple linear regression was performed with Tobin's Q as the dependent variable and the four EESG dimensions as independent variables. The resulting model is as follows:

$$\mathbf{TQ = \beta_0 + \beta_1(econ) + \beta_2(env) + \beta_3(soc) + \beta_4(gov) + \varepsilon}$$

Table 3. Regression Output

Variable	Coefficient	Robust Std. Error	t-value	p-value	Significance
Intercept	1.563	0.496	3.15	0.002	**
Economic	-0.051	0.067	-0.76	0.448	Not Significant
Environmental	0.126	0.056	2.23	0.027	*
Social	-0.058	0.063	-0.92	0.361	Not Significant
Governance	-0.005	0.054	-0.10	0.920	Not Significant

Significance: *p < 0.05, **p < 0.01

The environmental aspect was the sole factor discovered with a statistical significance level at 5% using a positive coefficient, suggesting a positive association with higher environmental quality reporting with greater valuation in firms. Other aspects—economic, social, as well as governance—did not have any statistically significant impacts on Tobin's Q.

C. Model Fit Summary

Table 4. Model Fit Indices

Statistic	Value	Interpretation
R-squared	0.02236	Only 2.24% of the variance in Tobin's Q is explained by the model.

Adjusted R-squared	-0.00995	After adjusting for number of predictors, the model explains no meaningful variance.
F-statistic (4, 121 df)	0.692	Indicates that the overall model is not statistically significant.
p-value (F-test)	0.5989	High p-value suggests that none of the independent variables improve the model over a mean-only model.
AIC (Akaike Information Criterion)	390.61	Indicates model fit; useful for comparing models. Lower values imply better fit.
BIC (Bayesian Information Criterion)	407.63	Penalizes model complexity; higher than AIC due to more predictors.
Breusch-Pagan p-value	0.8195	No heteroscedasticity detected; residuals are homoscedastic.
Shapiro-Wilk p-value	3.2e-14	Residuals are not normally distributed; robust errors are used to compensate.
VIF Range (min–max)	6.80 – 10.01	Some multicollinearity is present, especially in the social dimension.

Several model fit statistics were explored in order to assess whether the regression model was adequate. R-squared = 0.022 reflects that only 2.24% of variation in Tobin's Q (market valuation) is explained by all dimensions of EESG. Since this is a low value, it implies that the model fails to capture adequately the key drivers behind valuation in the sample firms. Again, an adjusted R-squared = -0.00995, implying after controlling for the number of predictors, there is practically no meaningful variation explained in the dependent measure. This finding implies that the included variables do not provide significant explanatory power. The F-statistic value of 0.692 with its correspondent p-value being 0.5989 further affirms that, in general, the model is not statistically significant. That is, there is no significant evidence that jointly the set of EESG predictors does a better job at predicting Tobin's Q than a model with no predictor at all. Other model fit criteria like the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) provided values of 390.61 and 407.63, respectively. These on their own are not an indicator of poor fit but are more informative while comparing multiple models—especially models with different numbers of predictor variables. These measures can be useful in future research in choosing more parsimonious, yet more explanatory models. Diagnostic tests were also conducted in order to evaluate the assumptions of reliability in the regression. The Breusch-Pagan test gave a p-value equal to 0.8195, meaning that there is no heteroscedasticity in the model. This implies that there is a constant variance in the residuals, supporting linear regression. Nevertheless, a Shapiro-Wilk test for residual normality gave a p-value less than 0.001, implying that there is non-normal distribution of the residuals. Due to this breakdown of one OLS assumption, robust standard errors (HC1) were utilized in order for the estimates for coefficients as well as significance tests not to be undermined in spite of non-normality.

Finally, Variance Inflation Factor (VIF) analysis demonstrated 6.80-10.01 values, with all dimensions, especially social, being higher than the traditional cut-off point of 10. This implies a moderate level of high multicollinearity, especially between EESG dimensions. High multicollinearity has a tendency to inflate coefficients' standard errors, rendering it impossible to establish a true effect for an individual predictor. To a great extent, this can be a contributing factor for not finding significance in economic, social, and

governance dimensions. More generally, the model has a number of limitations regarding explanatory power and assumption fulfillment. Nevertheless, diagnostic testing along with robust standard errors improves the validity of the findings and identifies the relative significance of the environmental factor from among the EESG factors. These results imply environmental disclosures might be prized in the market, yet the model could be enhanced or complemented with other variables in subsequent studies.

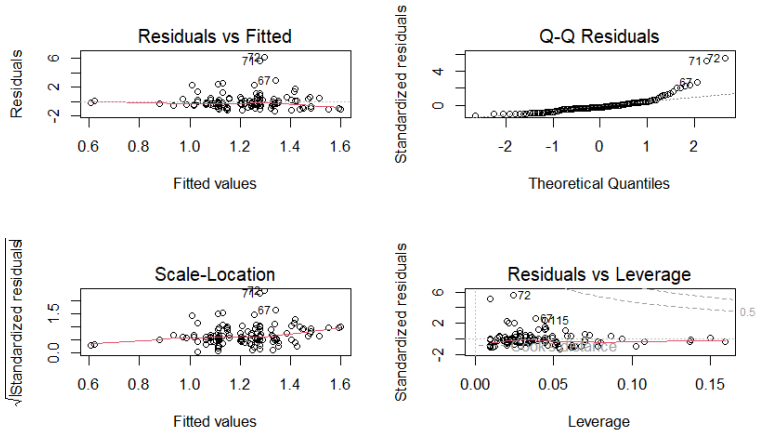

Figure 2. Regression Diagnostic Analysis Plots

To test the assumptions and validity of linear regression model applied to assess the effect of dimensions of sustainability reports (EESG) on Tobin's Q, four common diagnostic plots were considered. They are Residuals vs Fitted, Normal Q-Q, Scale-Location, and Residuals vs Leverage. Each sheds light on assumptions of the model as well as on potential model fit, normality, homoscedasticity, as well as on influence problems.

Residuals Vs Fitted Plot shows how well the residuals fit with the predicted values from the regression model. Under a well-specified linear model, residuals should be evenly scattered around a horizontal line at zero. Yet, in this model, there is a bit of a funneling in the residuals as well as non-random distribution. Both are indicators of a potential breakdown of the assumption of linearity, suggesting a relationship between the predictors (econ, env, soc, gov) and Tobin's Q that is not strictly linear. As well, the curvature suggests a higher-order term, interaction effect, or an omitted explanatory factor that might explain more variation in Tobin's Q.

Normal Q-Q Plot of Residuals graphically compares a theoretical normal distribution with standardized residual distribution. We would want our residuals on a 45-degree reference line. Unfortunately, the Q-Q plot for this model deviates significantly from the line, particularly for outliers, suggesting non-normal residual distribution. This is further attested by Shapiro-Wilk test ($W = 0.719$, $p < 0.00001$) rejecting, with strong evidence, the null hypothesis of normal distribution. Non-normal residuals can dilute the confidence in p-values as well as confidence levels obtained under standard OLS assumptions.

Scale-Location Plot (or Spread-Location) graphs square root standardized residual values against the fitted values. The plot checks homoscedasticity—the assumption that residuals exhibit constant variance across levels of the fitted outcome. In this analysis, increasing variance with increasing fitted values is suggested, a mild heteroscedasticity, yet

this is not supported statistically using the Breusch-Pagan test (BP = 1.54, p = 0.82), with failure to reject a null hypothesis of constant variance. Nevertheless, there is a visual trend suggesting caution with a potential need for robust standard errors, included in subsequent analysis.

Residuals vs. Leverage Plot allows influential points to be detected with the residual plotted against its leverage (each point's potential impact on the model). Most points hover centrally with moderate standardized residuals, implying the model is not unduly skewed by outlier observations. Points are, however, present in the right-hand upper region, suggesting there might be influential or high-leverage observations. While there are no observations with an unduly high influence, as evidenced from Cook's distance lines, an indication from points on or very close to the boundary calls for additional robustness tests. Conclusion: Diagnostics stems from Collectively, these diagnostic plots imply a number of reservations regarding the model's assumptions. We detect evidence of non-linearity as well as non-normality of residuals, with a moderate issue regarding heteroscedasticity as well as with influence from high-leverage observations. Robust standard errors do address some, but these diagnostics highlight limited explanatory power of the model as well as an opportunity for model enhancement with specification adjustment or data transformation.

D. Research Discussion

The findings indicate that of these four dimensions of sustainability reporting, only environmental disclosure has a statistically significant, positive association with company value. The implication is then that market actors assign more value to a company's environmental accountability than its economic, social, or governance disclosures.

The evidence does not lend support to a hypothesis where all dimensions of EESG contribute significantly toward improving firm performance. Instead, it suggests that investor sentiment, as well as market valuation, is highly responsive to environmental performance disclosure—perhaps as a consequence of regulatory pressure, investor expectations, or worldwide trends toward sustainability.

1) Literature Comparison

The findings of this study—indicating that only the environmental dimension of sustainability reporting has a statistically significant and positive influence on market valuation (Tobin's Q)—align with a subset of previous research that emphasized the increasing relevance of environmental responsibility in investor perception.

Sunny and Apsara (2024) reported that firms demonstrating strong environmental and governance disclosures tend to perform better financially. This current study supports their conclusion partially, confirming that environmental quality plays a role in shaping market-based performance, though governance did not show significant results in this sample.

Dincer et al. (2023), in their analysis of Turkish firms, found a positive correlation between detailed environmental disclosures and improved financial outcomes, especially in capital-intensive sectors. The present study echoes this finding within the Indonesian logistics and transportation sector, highlighting a shared sensitivity to environmental transparency in both developed and emerging economies.

In contrast, Stanescu et al. (2024) and Coelho et al. (2023) emphasized the cumulative impact of all ESG or EESG dimensions on performance metrics like ROA

and ROE. However, this study, focused solely on Tobin's Q as a market valuation metric, did not observe statistically significant contributions from the economic, social, or governance dimensions. These differences may stem from:

- The choice of financial metric (TQ vs Other Financial Ratios),
- Sector-specific dynamics, and
- The maturity of investor awareness regarding non-environmental disclosures in the Indonesian context.

Meanwhile, Zhang and Liu (2023) suggested that brand perception and firm value improved over time following consistent CSR disclosure, implying a lagged effect. However, such a temporal dynamic was not explored in this multiple linear regression (MLR) model, which instead focuses on immediate, direct relationships. The lack of significance for economic and social dimensions in this analysis may reflect limited short-term market sensitivity to these disclosures in the logistics and transportation sector.

In summary, while this study does not support the hypothesis that all EESG dimensions significantly influence market-based performance, it does reinforce the growing materiality of environmental reporting—a trend consistently reflected in global sustainability research. The limited impact of the other dimensions suggests either a lower emphasis by Indonesian stakeholders on economic, social, and governance factors, or a potential delay in their financial reflection, warranting future studies with lagged models or qualitative triangulation.

CONCLUSION

This research investigated the impact of sustainability reporting, measured through EESG dimensions, on Tobin's Q (TQ) in publicly listed logistics and transportation companies in Indonesia. The study found that only the environmental dimension of sustainability reporting had a significant positive impact on market valuation. This suggested that investors prioritized detailed environmental disclosures, likely due to heightened concerns about environmental responsibility and climate-related risks. In contrast, the economic, social, and governance dimensions showed no significant associations with TQ, implying that these disclosures may not yet influence market perceptions, at least in the short term. Overall, the quality of sustainability reporting (as captured by EESG dimensions) was not a significant determinant of market performance. These findings indicated that while sustainability reports enhance corporate transparency, they may not directly affect immediate financial valuations. However, robust environmental reporting could gradually attract investor interest and improve company value over time. The study emphasized the need for more substantive sustainability reporting aligned with core business strategies, ensuring greater credibility and operational integration. At the policy level, improvements in reporting frameworks and verification mechanisms were recommended to incentivize higher-quality disclosures. Future research should explore sector-specific dynamics and potential mediating variables that could clarify the relationship between sustainability reporting and financial performance.

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