

Drivers of Sustainability Assurance: An Empirical Study of Indonesian Manufacturing Firms

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ABSTRACT

Amidst growing demands for non-financial transparency, this study investigates the determinants of sustainability assurance adoption among manufacturing firms listed on the Indonesia Stock Exchange during 2021–2024. Using binary logistic regression, this study examines the role of corporate characteristics and governance mechanisms in influencing firms' decisions to externally verify sustainability reports. The results show that sustainability assurance is primarily driven by firm-specific characteristics rather than governance structures. Profitability, leverage, and firm size significantly increase the likelihood of assurance adoption, while audit committees and institutional ownership do not exhibit a significant effect. This study contributes empirical evidence from an emerging market context and offers insights for stakeholders seeking to enhance the credibility of sustainability reporting.

INTRODUCTION

The contemporary business landscape has shifted its focus beyond more financial gain. Global systematic developments and evolving demands have compelled corporations to prioritize Environmental, Social, and Governance (ESG) aspects. Pressure from investors, regulators, and various stakeholders regarding transparency and accountability has given rise to corporate sustainability practice, which represent a form of corporate responsibility toward the environment and society in which the entity operates (Al-Qudah & Houcine, 2024). Transparency in sustainability reporting is now crucial for investors to assess long-term risks and potential returns (Aprianti et al., 2022). Globally, this reporting is supported by international standards such as GRI and IFRS S1-S2 to enhance information accountability (Christensen et al., 2021). In Indonesia, this urgency is reinforced by POJK Number 51/POJK.03.2017, which mandates public companies to prepare sustainability reports gradually, resulting in a surge of reporters reaching 97% of total public companies by 2024 (Puspadini, 2024).

However, the massive volume of reporting has introduced a new risk in the form of greenwashing, namely the presentation of misleading information to build a positive corporate image (Olivia & Hanjaya, 2024). Global cases, such as the carbon neutrality allegations against Apple (More, 2025), and local environmental transparency issues involving PT Adaro Energy and certain Chinese-funded projects in Indonesia, underscore that unverified sustainability reports are vulnerable to manipulation (Isaac, 2025; Peh, 2024). These cases involve companies that actively promote a “green” image despite continued. This phenomenon has triggered stakeholder demands for sustainability assurance through independent verification to guarantee report credibility. While jurisdictions such as Australia, India, and the European Union began mandating this assurance for 2025-2026, the practice in Indonesia remains voluntary, with adoption rates significantly lower than other Asia-Pacific countries (Islam, 2024).

The low adoption rate of assurance in Indonesia presents an interesting case to examine through the determinants of corporate governance and firm characteristics. Regarding governance, internal mechanisms via audit committees and external mechanism through institutional ownership are expected to encourage management to adopt assurance to protect shareholder interests (Dwekat et al., 2022; Sidiq et al., 2021). Neacșu & Georgescu (2025) argue that an audit committee’s focus on the accuracy of sustainability reports will increase meeting frequency, thereby enhancing reporting quality. However, a counter-argument suggests that the quality and substance of meeting discussions are more influential than mere frequency (Chulim et al., 2025).

Externally, institutional investors hold significant share portions and voting rights to drive management toward increased transparency and the avoidance of greenwashing (Eryadi et al., 2021; Sidiq et al., 2021). This aligns with García-Sánchez et al. (2021), who demonstrate that institutional investor pressure can compel firms to implement assurance. Nevertheless, Shinta et al. (2023) found inconsistent results, noting that institutional investors might prioritize short-term gains and overlook assurance costs during crises.

In addition to governance, firm characteristics such as profitability, leverage, and firm size serve as vital determinants. Highly profitable firms are perceived to have sufficient resources to fund the assurance process as legitimacy strategy and a signal of performance to attract investors (Widyastuti & Enderwati, 2023). Conversely, Eryadi et al. (2021) argue that firms still prioritize operational expenditures over voluntary sustainability assurance. High leverage may drive firms to seek social legitimacy to gain stakeholder trust (Widyastuti & Enderwati, 2023), yet Privika et al. (2021) contend that highly leveraged firms tend to limit assurance due to resource constraints and a focus on short-term obligations. Furthermore, while larger firms face greater stakeholder pressure due to their significant financial capacity (Shinta et al., 2023), Alfajar et al. (2024) state that they may be less likely to pursue assurance in the absence of mandatory regulations.

Given the inconsistent empirical findings and the limited research focused on sustainability assurance in Indonesia, a significant research gap exists (Utami et al., 2024). Consequently, this study aims to empirically validate these determinants. The results are expected to serve as a strategic reference for regulators in evaluating transparency and report credibility for more accurate decision-making.

LITERATURE REVIEW

Stakeholder Theory

Stakeholder theory, popularized by Freeman (1983), asserts that a company's existence is highly dependent on its ability to provide benefits and balance of the various parties affected by its operations (Erin et al., 2022; Merna, 2021). As a form of accountability, companies are required to disclose sustainability reports to mitigate conflicts of interest and ensure positive reciprocal relationships (Eryadi et al., 2021; Sidiq et al., 2021). However, as public awareness increases, stakeholders now demand more than just transparency; they require validation through external sustainability assurance to ensure that the reported information is accurate, reliable, and credible (Shinta et al., 2023).

Legitimacy Theory

Legitimacy theory, popularized by Dowling and Pfeffer (1975), emphasizes that an entity's behavior must align with the norms and expectations of society to maintain its public image (Breliastiti et al., 2025; Olivia & Hanjaya, 2024). Within the context of Indonesian regulations, specifically POJK 51/2017, sustainability reporting has become a vital instrument for companies to demonstrate that their operations are legitimate and credible (Mohd Fahmi et al., 2022). To ensure that such information is trustworthy and gains public support, external verification or sustainability assurance is required (Quick & Inwinkl, 2020). Consequently, the implementation of assurance serves as transparent validation that protects the company from allegations of greenwashing while simultaneously strengthening its legitimacy in the eyes of the stakeholders.

Signaling Theory

Signaling theory, popularized by Spence (1974), focuses on management's efforts to communicate positive information regarding the company's condition to stakeholders (Choudury, 2024; Shinta et al., 2023). These signals serve as credibility indicators that influence the decision-making of external parties (Kurniawati & Maria, 2025). In this context, the implementation of sustainability assurance acts as a positive signaling attribute that guarantees the quality of sustainability reports. However, the theory also emphasizes that companies will only adopt assurance if the benefits obtained, such as enhanced reputation and investor trust, outweigh the costs incurred (Utami et al., 2024).

HYPOTHESIS DEVELOPMENT

Audit Committee on Sustainability Assurance

The audit committee serves to strengthen oversight and reduce information asymmetry through intensive coordination with management regarding disclosure procedures (Hobbs & Keça, 2024). In accordance with signaling theory, companies with strong social performance will seek independent assurance to validate their sustainability commitments (Meutia et al., 2022). High meeting frequency reflects meticulous supervision, which encourages the engagement of high-quality sustainability assurance providers, such as Big 4 firms (Zaman et al., 2021; Alsaahli et al., 2024). Supported by the findings of previous studies by Dwekat et al. (2022); Neacșu & Georgescu (2025); Zaman et al. (2021), the following hypothesis is formulated:

H₁: Audit committee has a positive effect on sustainability assurance.

Institutional Ownership on Sustainability Assurance

Institutional ownership, such as pension funds and banks, plays a dominant role in promoting corporate transparency and credibility (García-Sánchez et al., 2021). One of the primary objectives of institutional ownership is to effectively monitor and supervise management while responding to demands for environmental and social responsibility disclosure (Suherman & Kurniawati, 2023). Based on signaling and stakeholder theory, these entities demand more robust ESG disclosures and sustainability assurance as positive signals and a form of protection for shareholder rights (Shinta et al., 2023; Chulim et al., 2025). Supported by the findings of Alomran & Alsaahli (2023); García-Sánchez et al. (2021); Yue et al. (2025), higher institutional ownership will trigger the need for external assurance as a form of accountability. Therefore, the formulated hypothesis is:

H₂: Institutional ownership has a positive effect on sustainability assurance.

Profitability on Sustainability Assurance

Profitability reflects a company's ability to generate profits to enhance shareholder value (Shinta et al., 2023). Companies with high profitability tend to attract significant public attention; consequently, they are motivated to conduct sustainability assurance to prove that their profits are earned ethically and responsibly (Widyastuti & Endarwati, 2023). In line with the findings of Meutia et al. (2022); Shinta et al. (2023); Widyastuti & Endarwati (2023) which

demonstrate a positive effect of profitability on sustainability assurance, the following hypothesis is formulated:

H₃: Profitability has a positive effect on sustainability assurance.

Leverage on Sustainability Assurance

Leverage, measured by the ratio of total debt to total assets reflects a company's reliance on external financing (Shittu & Yahaya, 2024). Based on stakeholder theory, highly leveraged companies face intensive pressure from creditors who demand broader transparency through sustainability assurance to build trust (Privika et al., 2021). Supported by the findings of Vander & Van (2022) and Widyastuti & Enderwati (2023), which indicate a positive effect of leverage, the following hypothesis is formulated:

H₄: Leverage has a positive effect on sustainability assurance.

Firm Size on Sustainability Assurance

Firm size reflects the operational scale and resource capacity of a company (Alfajar et al., 2024). Large companies tend to be under strict stakeholder scrutiny; thus, they are encouraged to utilize sustainability assurance to gain public legitimacy and provide positive signals to investors (Privika et al., 2021). Supported by the findings of Al-Qudah & Houcine (2024); Shinta et al. (2023); Vander & Van (2022), the magnitude of the economic and social impact of large-scale companies demands greater transparency in order to maintain the credibility of sustainability reports, the following hypothesis is formulated:

H₅: Firm size has a positive effect on sustainability assurance.

RESEARCH FRAMEWORK

Figure 1 presents a flowchart illustrating the hypotheses used to determine drivers of sustainability assurance.

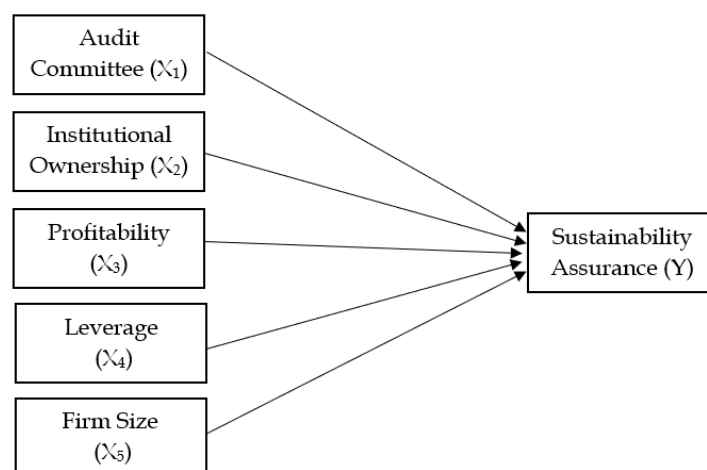


Figure 1. Conceptual Framework

METHODOLOGY

Population and Sample

This study is a quantitative study, using secondary data including annual reports and sustainability reports obtained from the Indonesia Stock Exchange

(IDX) for the period 2021-2024. This study uses a population of manufacturing companies during the period 2021-2024 and uses purposive sampling techniques for sample selection. This criteria for sample selection include: having the data required by the company available in a separate sustainability report, having an audited annual report, reporting consecutive profits, using Indonesian Rupiah (IDR) as reporting currency and excluding outliers from the data, resulting in a selection of 55 companies for a research period for 4 years.

The dependent variable in this study is sustainability assurance, the data for which was obtained from sustainability reports. The independent variables include audit committees, institutional ownership, profitability, leverage, and firm size, the data for which was sourced from company annual reports.

Operationalization of Variables

Table 1. Variable Measurement

Variable	Measurement	Scale
Y = Sustainability Assurance	Measured using a dummy variable, where: Value 1: Company issues sustainability assurance Value 0: Company does not issue sustainability assurance (Al-Qudah & Houcine, 2024; Dwekat et al., 2022; Shinta et al., 2023)	Nominal
X ₁ = Audit Committee	The number of meetings held by the audit committee within one period. (Dwekat et al., 2022; Neacșu & Georgescu, 2025; Zaman et al., 2021)	Ratio
X ₂ = Institutional Ownership	Measured using the percentage ratio of the number of shares held by institutions divided by the total outstanding shares. <i>Institutional Ownership</i> $= \left(\frac{\text{Number of institutional shares}}{\text{Number of companies shares outstanding}} \right) \times 100$ (Eryadi et al., 2021; Melenia & Sebrina, 2024; Shinta et al., 2023)	Ratio
X ₃ = Profitability	Measured using the profitability ratio, specifically Return on Assets (ROA). $\text{Return on Asset} = \left(\frac{\text{Net Income}}{\text{Total Assets}} \right) \times 100\%$ (Shinta et al., 2023; Vander & Van, 2022; Widyastuti & Endarwati, 2023)	Ratio
X ₄ = Leverage	Measured using the leverage ratio. $\text{Leverage} = \frac{\text{Total Debt}}{\text{Total Assets}}$ (Privika et al., 2021; Vander & Van, 2022; Widyastuti & Endarwati, 2023)	Ratio
X ₅ = Firm Size	Measured using the natural logarithm of total assets. $\text{Size} = \text{Ln}(\text{total asset})$	Ratio

	(Alfajar & Taqwa, 2024; Shinta et al., 2023; Vander & Van, 2022)	
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Empirical Research Model

This study includes descriptive statistical analysis and logistic regression analysis using EViews 10 software. The logistic regression method is employed because the dependent variable, sustainability assurance, is measured on a nominal (dummy) scale. Furthermore, the independent variables, which includes audit committee, institutional ownership, profitability, leverage, and firm size, consist of a combination of a metric and non-metric scales. The regression analysis models developed for this study are:

$$SA = \alpha + \beta_1KOMDIT + \beta_2KI + \beta_3ROA + \beta_4LEV + \beta_5SIZE$$

Where:

- SA : Sustainability Assurance (dependent variable)
- α : Constants
- β : Regression Coefficient
- KOMDIT : Audit Committee
- KI : Institutional Ownership
- ROA : Profitability
- LEV : Leverage
- SIZE : Firm Size

RESEARCH RESULT

The population of this study consists of manufacturing sector companies listed on the Indonesia Stock Exchange (IDX) as of December 31, 2024, totaling of 472 companies. The final data obtained includes only 55 companies that met the criteria for the 2021-2024 period.

Descriptive Statistical Results

Descriptive statistical analysis is used to represent the data through minimum, maximum, mean, and standard deviation indicators of the company sample data. The results of the descriptive statistical analysis are presented as follows:

Table 2. Descriptive Statistics

	X ₁ _KA	X ₂ _KI	X ₃ _ROA	X ₄ _LEV	X ₅ _SIZE	Y_SA
Mean	6.355	74.141	0.091	0.388	29.236	0.077
Median	4.500	83.277	0.078	0.346	29.308	0.000
Maximum	43.000	100,000	0.302	2.642	33.790	1.000
Minimum	2.000	0.002	0.004	0.030	25.035	0.000
Std. Dev.	5.188	26.745	0.059	0.321	1.804	0,268

Based on the results of the descriptive statistical analysis, it is found that the average for companies implementing sustainability assurance is 0,077% (7,7%). This condition reflects that sustainability assurance practices have not yet been widely adopted by most companies in the manufacturing sector. The audit

committee variable, measured by meeting frequency, has a mean of 6,355, indicating that on average, companies hold approximately 7 meetings per period. Institutional ownership has a mean of 74,14%, which indicates that the average company maintains a high level of institutional ownership. Profitability, measured by ROA, has a mean of 0,091 (9,1%). Leverage has an average of 0,388 (38,8%), showing that the average sample company utilize debt to finance its assets. Meanwhile, firm size, measured by total assets, has a mean of 29,236, which is equivalent to IDR 24.334.481.592.884.

Goodness of Fit Test

Table 3. Hosmer and Lemeshow’s Test

H-L statistic	0.927	Prob. Chi-Sq(8)	0.999
Andrew’s Statistic	152.251	Prob. Chi-Sq(10)	0.000

The test results show that the H-L statistics value is 0,927 with a significance level of 0,999. Since this value exceeds the significance threshold of 0,05, the logistic regression model meets the goodness of fit requirements and is declared feasible for further analysis.

Expectation-Prediction Evaluation

Table 4. Expectation-Prediction Evaluation

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)≤C	200	4	204	203	17	220
P(Dep=1)>C	3	13	16	0	0	0
Total	203	17	236	203	17	220
Correct	200	13	213	203	0	203
% Correct	97.36	68.48	95.13	92.27	7.73	85.74
% Incorrect	2.64	31.52	4.87	7.73	92.27	14.26

Based on the results in Table 4, the model’s accuracy rate in providing correct predictions is 97,36%. This indicates that the logistic regression model has strong predictive power for the dependent variables, sustainability assurance, based on its independent variables. These variables include the audit committee, institutional ownership, profitability, leverage, and firm size. Consequently, the model can be said to accurately represent the relationships between the research variables.

Coefficient of Determination

Table 5. Mc-Fadden R-Squared

McFadden R-squared	0.693	Mean dependent var	0.077
S.D. dependent var	0.268	S.E. of regression	0.158
Akalike indo criterion	0.221	Sum squared resid	5.362
Schwarz criterion	0.314	Log likelihood	-18.390
Hannan-Quinn criter.	0.259	Deviance	36.780
Restr. Deviance	119.705	Restr. log likelihood	-51.853
LR statistic	82.925	Avg. log likelihood	-0.084
Prob(LR statistic)	0.000		

Based on table 5, the McFadden R-squared value is 0,693 (69,3%). Therefore, it can be concluded that the independent variables in this study, which include the Audit Committee (X_1), Institutional Ownership (X_2), Return on Assets (X_3), Leverage (X_4), and Firm Size (X_5), contribute an influence of 69,3% toward Sustainability Assurance as the dependent variable.

Likelihood Ratio Statistic

Based on the research results presented in table 5, the probability value of the LR statistic is 0,000. Therefore, it can be concluded that the independent variables in this study, which include Audit Committee (X_1), Institutional Ownership (X_2), Return on Asset (X_3), Leverage (X_4), and Firm Size (X_5), have a significant simultaneous effect on the dependent variable, Sustainability Assurance.

Hypothesis Testing Results

Table 6. Hypothesis Testing

Hypothesis		Coefficient	Prob.	Results
H1	Audit Committee has a positive and significant effect on Sustainability Assurance.	0.006	0.915	H1 Rejected
H2	Institutional Ownership has a positive and significant effect on Sustainability Assurance.	0.038	0.333	H2 Rejected
H3	Return on Assets has a positive and significant effect on Sustainability Assurance	16.328	0.020	H3 Accepted
H4	Leverage has a positive and significant effect on Sustainability Assurance.	3.176	0.032	H4 Accepted
H5	Firm Size has a positive and significant effect on Sustainability Assurance.	2.306	0.000	H5 Accepted

DISCUSSION

Audit Committee on Sustainability Assurance

Based on statistical testing results, this study shows that the frequency of audit committee meetings has no significant effect on the implementation of sustainability assurance. In terms of regulations, POJK Number 55/POJK.04/2015 requires audit committees to supervise the quality of company reporting and mandates a minimum frequency of meetings within a certain period. However, this empirical evidence is inconsistent with the findings of Dwekat et al. (2022); Neacșu & Georgescu (2025); Zaman et al. (2021), which state that audit committee meeting activities encourage management to adopt sustainability assurance practices.

The insignificance of these results can be explained through a critical analysis of the meeting agenda listed in the annual report. It appears that the audit committee's discussions are still predominantly focused on financial performance and traditional audit compliance. Sustainability issues have not yet become a top priority on the strategic meeting agenda because the committee's main focus is still on the accuracy of financial reporting. In addition, given that regulations on sustainability reporting requirements in Indonesia only became widely effective in 2021, audit committees tend to prioritize compliance with disclosure standards rather than conducting voluntary external assurance validation. This indicates that audit committee members are likely still in the adaptation or learning process in understanding the urgency and mechanism of sustainability assurance in the Indonesian Capital Market.

Institutional Ownership on Sustainability Assurance

Based on statistical test results, this study shows that the proportion of share ownership by institutions has no significant impact on corporate decisions related to sustainability guarantees. Theoretically, referring to stakeholder theory, institutional investors should have a great capacity to encourage transparency and credibility of ESG information in order to reduce long-term investment risks and maintain public legitimacy. However, in the context of manufacturing companies in Indonesia, the strategic role of these institutions has not been able to adopt broader external assurance practices.

The insignificance of these results reflects the gap between theory and practice in the Indonesian capital market. Currently, many companies still view sustainability assurance as an additional operational cost (cost center) rather than as an instrument that adds value to the company's reputation. This condition is exacerbated by the low level of understanding and literacy regarding the urgency of sustainability assurance among domestic institutional investors. This finding reinforces the research by Melenia & Sebrina (2024); Shinta et al. (2023); Yue et al. (2025), which state that institutional investors in Indonesia tend to still have a short-term financial orientation. Their main focus remains on maximizing profits and quick returns on investment, so that the credibility of non-financial reports through assurance has not been positioned as a determining variable in their investment decision-making.

Profitability on Sustainability Assurance

Based on statistical testing results, the profitability variable confirms that profitability has a significant positive effect on the implementation of sustainability assurance. theoretically, profitability reflects a company's effectiveness in managing asset resources to generate net income while demonstrating a sound financial condition. In this context, entities with high ROA values have sufficient financial capacity to bear the costs of using voluntary external assurance services.

The results of this study reinforce the argument that high profitability acts as a major driver for management to send positive signals to the market. Through sustainability assurance, companies not only demonstrate financial success, but also proves that these profits are obtained through transparent and accountable business practices. The existence of external assurance increases the credibility of non-financial reports, which in turn attracts investors to make long-term investments due to lower information asymmetry risk. These findings are in line with Meutia et al. (2022); Shinta et al. (2023); Widyastuti & Endarwati (2023), who assert that companies with strong financial resources tend to be more committed to verifying their sustainability reports in order to strengthen the legitimacy and trust of all stakeholders.

Leverage on Sustainability Assurance

Based on statistical testing results, the leverage variable provides empirical evidence that supports the fourth hypothesis, confirming that leverage has a significant positive effect on the implementation of sustainability assurance. operationally, leverage represents the degree of a company's dependence on debt financing to fund its assets. This capital structure, which is dominated by external liabilities, requires companies to be more proactive in mitigating financial risks in order to provide security guarantees for creditors and other stakeholders.

The results of this study reinforce the theory that a high leverage ratio creates a greater responsibility for entities to present information in a transparent and reliable manner. In a effort to maintain good relationships and meet creditor expectations, companies tend to use sustainability assurance as an instrument to enhance the credibility of their sustainability reports. This external validation serves as a signal that the company remains committed to responsible business practices despite its high debt burden. These findings are in line with research Vander & Van (2022); Widyastuti & Endarwati (2023), which state that companies with high leverage are often the center of public attention, thus requiring report verification to strengthen legitimacy and maintain the trust of external capital provider

Firm Size on Sustainability Assurance

Based on statistical testing results, the firm size variable shows that the fifth hypothesis is supported, confirming that company size has a significant positive effect on the implementation of sustainability assurance. Theoretically, firm size reflects the operational scale and capacity of an entity to manage resources. The size of a company automatically increases its exposure to public

pressure and stakeholder scrutiny, making large companies more prominent and vulnerable to reputational risk than small companies.

The results of this study show that large companies face greater legitimacy pressure to prove the reliability and transparency of their non-financial information. In this context, sustainability assurance is adopted as a proactive strategy to mitigate the risk of scandal and maintain public trust. The financial structure and resource availability advantages of large entities enable them to fund complex external sustainability assurance processes. This step signals that the company operates responsibly and ethically. These findings are in line with research by Al-Qudah & Houcine (2024); Shinta et al. (2023); Vander & Van (2022), which confirms that large assets capacity correlates with a company's ability to prioritize environmental issues and make long-term social contributions through verified reporting.

CONCLUSIONS AND RECOMMENDATIONS

This study examines the determinants of sustainability assurance by analyzing the roles of audit committee characteristics, institutional ownership, profitability, leverage, and firm size. The empirical findings reveal that profitability, leverage, and firm size have a positive and statistically significant effect on sustainability assurance, whereas audit committee and institutional ownership do not show a significant influence.

The significant effect of profitability indicates that firms with stronger financial performance are more capable and willing to engage in sustainability assurance practices. This finding supports the notion that financially healthy firms possess greater resources and incentives to enhance the credibility of sustainability disclosures. Similarly, the positive influence of leverage suggests that highly leveraged firms tend to adopt sustainability assurance as a mechanism to reduce information asymmetry and strengthen stakeholder confidence, particularly creditors. Furthermore, firm size emerges as the most consistent determinant, implying that larger firms face greater public scrutiny and institutional pressure, motivating them to adopt assurance services to enhance legitimacy.

Conversely, the insignificance of audit committee and institutional ownership implies that formal governance structures alone are insufficient to drive sustainability assurance adoption. This finding suggests that sustainability assurance decisions are more strongly influenced by economic capacity and external pressure rather than internal monitoring mechanisms. Overall, this study contributes to the sustainability reporting literature by highlighting the dominant role of firm-specific financial and structural characteristics in explaining sustainability assurance practices.

Based on the findings, firms—particularly those with strong financial performance and larger size—are encouraged to adopt sustainability assurance as a strategic instrument to enhance transparency and stakeholder confidence. Regulators should strengthen sustainability assurance guidelines to improve the effectiveness of corporate governance mechanisms in overseeing sustainability reporting. Additionally, investors and creditors are advised to consider

sustainability assurance as a credible signal of reporting quality and risk management.

ADVANCED RESEARCH

Future studies may incorporate qualitative characteristics of audit committees, explore moderating or mediating variables related to sustainability and regulatory pressure, and extend the analysis across countries or industries to enhance generalizability.

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