FROM GOVERNANCE TO PERFORMANCE: HOW SUSTAINABILITY STRATEGY MEDIATES CORPORATE SUSTAINABILITY SUCCESS

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OPEN ACCESS

How to cite this paper: Pratama, A., Ismail, R. F., Tanzil, N. D., Koeswayo, P. S., & Megawati, L. R. (2026). From governance to performance: How sustainability strategy mediates corporate sustainability success. *Corporate Governance and Sustainability Review, 10*(2), 102–113. https://doi.org/10.22495/cgsrv10i2p9

ISSN Online: 2519-898X
ISSN Print: 2519-8971

Received: 21.06.2025
Revised: 21.11.2025; 23.02.2026
Accepted: 13.03.2026

JEL Classification: E16, G34, M41, Q56
DOI: 10.22495/cgsrv10i2p9

Abstract

This study examines how sustainability governance influences sustainability strategies and how these strategies subsequently affect sustainability performance in Southeast Asian public companies. Sustainability governance is operationalized using two Refinitiv Eikon proxies: the presence of a sustainability committee and the use of sustainability assurance. Sustainability strategy is measured using the corporate social responsibility (CSR) strategy score, while sustainability performance is captured through Refinitiv's environmental, social, and governance (ESG) score, a disclosure-based indicator widely used in prior research (Ma, 2024; Ghinizzini et al., 2025). The sample included 255 listed firms from Indonesia, Malaysia, Singapore, and Thailand. Descriptive statistics and analysis of variance (ANOVA) identify cross-country and industry differences, and structural equation modelling (SEM) with path analysis tests the hypothesized relationships. The results showed that governance mechanisms support the development of sustainability strategies, which subsequently enhance sustainability performance. These findings are consistent with agency and legitimacy theories and highlight the need for more standardized and substantive sustainability governance practices across the region.

Keywords: Sustainability, Strategy, Performance, Governance, Southeast Asia

Authors' individual contribution: Conceptualization — A.P.; Methodology — A.P.; Software — A.P.; Validation — A.P. and R.F.I.; Formal Analysis — A.P.; Investigation — A.P.; Resources — A.P., N.D.T., and P.S.K.; Data Curation — A.P. and R.F.I.; Writing — Original Draft — A.P.; Writing — Review & Editing — A.P. and R.F.I.; Visualization — A.P.; Supervision — N.D.T. and P.S.K.; Project Administration — A.P. and L.R.M.; Funding Acquisition — A.P., N.D.T., and P.S.K.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

Acknowledgements: This research was funded by the Universitas Padjadjaran through the Lecturer Competency Research Grant 2025 (Grant No. 7899/UN6.B/HK.07.00/2025). The Authors gratefully acknowledge the financial support, which made it possible to complete this study.

1. INTRODUCTION

Sustainability performance has become central to organizations in today's sustainability-driven global business environment. It reflects a firm's environmental, social, and governance (ESG) outcomes and ability to manage long-term risks and opportunities. Prior research has shown that strong sustainability performance contributes to operational efficiency, innovation, stakeholder trust, and value creation (Ma, 2024; Akuma et al., 2025; Ghinizzini et al., 2025). Organizations emphasizing sustainability experience improve employee engagement and innovation through sustainable products and processes (Zumente & Bistrova, 2021; Ha et al., 2025). Strong sustainability performance enhances competitive advantage while addressing global challenges (Li et al., 2022; Voto, 2025). As regulatory expectations and market pressure intensify across Southeast Asia, firms must demonstrate measurable sustainability outcomes.

Sustainability governance — structures and processes integrating sustainability into strategic decisions — drives sustainability performance. Effective governance through board-level committees and external assurance embeds ESG considerations into decision processes and supports transparent reporting (Dasinapa, 2024; Ab Aziz et al., 2023). However, evidence of the impact of governance remains mixed across industries (Gerged et al., 2024). This study introduced a sustainability strategy as an intervening mechanism. Strategy represents a firm's orientation toward embedding ESG into operations, resource allocation, and innovation (Purnomo et al., 2022). Strategies translate governance intentions into actionable plans, thus enabling substantive sustainability practices. Understanding strategy clarifies how governance structures shape performance.

This study draws on agency theory, which posits that governance mechanisms reduce managerial discretion and encourage structured sustainability strategies, and legitimacy theory, which suggests that firms implement sustainability strategies to meet stakeholder expectations. These theories explain how sustainability governance influences strategies and drives sustainability performance. This study addresses the following questions:

RQ1: How does sustainability governance influence sustainability strategy development?

RQ2: How does strategy affect sustainability performance?

RQ3: Does strategy help clarify inconsistent findings in governance-performance research?

The study examines 255 public companies across Southeast Asian countries using Refinitiv Eikon data. Sustainability governance is measured through sustainability committees and assurance, while strategy and performance use Refinitiv's corporate social responsibility (CSR) strategy score and ESG score. Descriptive statistics, analysis of variance (ANOVA), and structural equation modelling (SEM) were used to test the relationships. By examining strategy as an intermediary mechanism, this study enhances our understanding of how governance shapes sustainability outcomes.

The structure of the paper is as follows. Section 2 proceeds with a literature review and hypothesis development. Section 3 provides methodology. Section 4 presents results and implications. Section 5 gives a conclusion.

2. LITERATURE REVIEW

2.1. Agency and legitimacy theory

Agency and legitimacy theories jointly offer a multi-dimensional basis for understanding how sustainability governance influences sustainability strategy and performance. Agency theory emphasizes the role of governance mechanisms, such as board oversight, sustainability committees, and formal monitoring processes, in reducing information asymmetry and mitigating opportunistic managerial behavior (Hussain et al., 2016; Nguyen et al., 2020). In the sustainability context, these mechanisms function as internal controls that direct managers toward integrating ESG issues into planning, monitoring, and resource allocation. However, the degree to which governance structures translate into effective sustainability practices is often contingent on contextual variables such as board competence, organizational priorities, and institutional pressures (Hussain et al., 2016). This limitation has led scholars to advocate for multi-theoretical approaches that combine agency theory with stakeholder or institutional perspectives to better explain the heterogeneity of sustainability outcomes (Wang et al., 2023).

Legitimacy theory adds an external institutional dimension by explaining firms' motivation to engage in sustainability practices as a means of aligning with societal norms, regulatory expectations, and stakeholder values. Companies frequently adopt sustainability disclosures, pursue external assurance, and engage in stakeholder-oriented initiatives to strengthen their legitimacy and reduce reputational risk (Simoni et al., 2020). Empirical studies have shown that sustainability practices and disclosures often serve as legitimacy-enhancing mechanisms, enabling firms to preserve brand reputation, reinforce stakeholder trust, and maintain competitive positioning (Amran et al., 2013; Doni et al., 2021; De Souza Barbosa et al., 2023). Importantly, legitimacy theory also accounts for symbolic governance behaviors, where formal structures such as sustainability committees exist but do not necessarily lead to substantive sustainability improvements, highlighting the possibility of decoupling, and the integration of these theories clarifies the governance-strategy-performance relationship. Agency theory explains how governance structures shape managerial decisions regarding sustainability strategies, while legitimacy theory explains why firms translate strategies into improved sustainability performance to meet stakeholder expectations. These theories demonstrate that sustainability governance serves as both an internal monitoring mechanism and an external legitimacy tool that drives strategy formation and performance.

2.2. Sustainability governance, strategy, and performance

Sustainability governance, strategy, and performance represent three interdependent dimensions of contemporary corporate sustainability management.

Sustainability governance refers to the formal structures, oversight mechanisms, and decision-making processes through which organizations direct and monitor their sustainability-related activities. These governance mechanisms, such as sustainability committees, chief sustainability officers (CSOs), audit committees, external assurance, and sustainability audits, play a central role in shaping both sustainability strategies and performance outcomes. Prior research has demonstrated that governance bodies with specialized expertise and independence help improve sustainability oversight, reduce information asymmetry, and strengthen managerial accountability (Zaman et al., 2021). For example, firms with dedicated sustainability committees or CSOs are more likely to adopt external sustainability assurance, reflecting greater institutional commitment to credible reporting. Audit committees with environmental expertise have also been linked to higher quality sustainability reporting, indicating the importance of governance competence in shaping disclosure practices (Zaman et al., 2021).

However, the empirical evidence also reveals important nuances. The effectiveness of governance mechanisms is not universal; they vary according to firm size, industry characteristics, and baseline environmental performance (Elmaghrabi et al., 2025). Sustainability committees may negatively influence assurance adoption among smaller firms, possibly because assurance imposes a significant financial and administrative burden. Firms with strong environmental performance may experience reduced pressure for intensive sustainability oversight, leading audit committees to prioritize other governance issues because stakeholders already perceive these firms as environmentally responsible. These findings suggest that sustainability governance can be both substantive when it catalyses meaningful sustainability practices and symbolic when firms adopt governance structures primarily to signal legitimacy without fully integrating sustainability into operations. This duality highlights the need for deeper institutional and organizational analyses to understand how governance mechanisms operate across different contexts (Agyemang et al., 2025).

Meanwhile, a sustainability strategy concerns how firms integrate ESG considerations into long-term planning, operational processes, and value creation activities. A sustainability strategy typically involves setting objectives, establishing ESG performance indicators, and embedding sustainability principles into organizational structures and resource allocation decisions. The strategic integration of sustainability has expanded across sectors, including urban planning, healthcare, and education, reflecting the increasing recognition that sustainability contributes to long-term organizational resilience and competitiveness (Quijano et al., 2022). Effective sustainability strategies require a multipillar approach that addresses environmental protection, energy efficiency, sustainable mobility, digital transformation, citizen well-being, economic vitality, and institutional governance. However, their implementation remains uneven. Laurian and Crawford (2016) reported that American cities often lag behind in environmental sustainability due to limited political prioritization, resource constraints, and institutional resistance. These challenges reflect broader organizational difficulties in operationalizing sustainability strategies: insufficient information, inconsistent stakeholder engagement, budget limitations, and methodological complexity often hinder successful alignment between strategy and practice.

Sustainability strategy evaluation is equally critical, as it provides feedback loops for improving strategic decisions. Continuous monitoring of performance indicators enables firms to assess their progress toward sustainability goals and adapt to emerging social, regulatory, or market pressures. This evaluative process is essential for aligning sustainability initiatives with broader business objectives, ensuring that sustainability remains an integral part of decision-making rather than a peripheral activity (Hristov et al., 2021). The presence of governance mechanisms, such as integrated management systems (IMS), environmental audits, or board oversight, can help institutionalize sustainability strategies by making them systematic, cyclical, and organization-wide.

Sustainability performance reflects the degree to which organizations successfully manage their environmental, social, and economic impacts while achieving operational and financial objectives. It encompasses a wide range of outcomes, including carbon emissions reduction, responsible resource management, community development, labor practices, governance transparency, and ethical conduct (Alsayegh et al., 2020). Increasing societal expectations, investor scrutiny, and international sustainability frameworks have heightened the importance of performance measurement and reporting (Amin et al., 2024). To meet these demands, organizations are increasingly adopting sustainability performance management systems that link environmental and social initiatives with strategic planning, quality management, and supply chain practices. High sustainability performance has been associated with improved corporate reputation, enhanced risk management, stronger financial stability, and more efficient supplier relations, demonstrating its value to stakeholders and shareholders alike (Luque-Vílchez et al., 2023).

Sustainability performance measurement relies on comprehensive sets of ESG indicators linked to organizational objectives, metrics, and key performance indicators (KPIs). Environmental indicators include carbon emissions, energy use, waste management, and environmental investments; social indicators address labor practices, human rights, customer responsibility, and community engagement; governance indicators track audit quality, compliance, board effectiveness, and transparency. Despite the growing emphasis on environmental performance owing to global climate concerns, economic and governance indicators remain critical for assessing the overall integrity and credibility of sustainability efforts. Frameworks such as the sustainable environmental, social, and corporate governance value-added model enhance organizational understanding of sustainability value creation, while newer simplified models aim to support sustainability measurement in small and medium-sized enterprises (Kassem & Trenz, 2020).

2.3. Hypotheses development

Drawing on agency and legitimacy theories, organizations respond to internal governance demands and external pressures. Agency theory suggests that sustainability governance mechanisms reduce managerial discretion and align actions with stakeholder interests, thereby facilitating coherent sustainability strategies. Legitimacy theory explains how firms adopt sustainability strategies to maintain their social acceptance and secure resources. These theories indicate that governance shapes strategic sustainability choices, whereas sustainability strategy becomes a legitimate tool for stakeholders. This theoretical perspective provides the foundation for the following hypotheses.

Sustainability committees and sustainability assurance play important roles in shaping corporate sustainability management, disclosure practices, and overall reporting quality. Board-level sustainability committees help institutionalize sustainability oversight within governance structures, and empirical evidence shows that their presence is positively associated with more comprehensive ESG reporting, stronger sustainability strategies, and integration of ESG targets into executive compensation systems (Ali et al., 2023). However, committee effectiveness is contingent on the expertise and independence of committee members. Sustainable committees are more likely to influence the adoption of sustainability assurance when directors possess relevant ESG knowledge, highlighting that formal committee structures are insufficient without substantive competence.

Despite these positive associations, the literature has documented important contradictions. While some studies find that sustainability committees enhance reporting quality, others report a negative association between committees and assurance uptake in smaller firms, where assurance may be viewed as costly or unnecessary relative to firm scale. Expert CSOs often prefer using sustainability consultants rather than accounting firms, suggesting that assurance decisions reflect not only governance structures, but also professional preferences and the perceived credibility of assurance providers. Moreover, both sustainability committees and assurance mechanisms influence firms' sustainability strategies, but their effectiveness varies significantly, depending on committee expertise, industry context, regulatory pressures, and firm characteristics (Martínez-Ferrero & García-Sánchez, 2017; Velte, 2023).

From an agency theory perspective, sustainability governance mechanisms reduce the information asymmetry between managers and stakeholders. Governance structures enhance monitoring and accountability, and encourage deliberate sustainability strategies. Studies indicate that these mechanisms institutionalize sustainability priorities by integrating ESG into strategic decisions. Thus, agency theory predicts a positive association between sustainable governance and strategy. Therefore, we propose the following hypothesis:

H1: There is a significant association between sustainability governance and sustainability strategy.

Sustainability strategy influences sustainability performance through a sequential process of formulation, implementation, and evaluation, each of which contributes to ESG outcomes. During the formulation stage, strategic commitment shapes the direction of sustainability initiatives and stimulates innovation. Hermundsdottir and Aspelund (2022) found that sustainability-oriented strategies in Norwegian manufacturing firms foster both environmental and social innovations, with environmental innovations contributing to value creation, cost efficiency, operational resilience, and risk reduction. This suggests that strategy formulation sets the foundation for the types of innovation that later translate into performance outcomes.

In the implementation stage, the effectiveness of a sustainability strategy depends on the extent to which organizations embed sustainability principles into operational processes and resource management. Evidence from Indonesia indicates that environmental management processes mediate the relationship between business strategy and sustainability performance, demonstrating the relevance of resource-based and capability-building perspectives (Tjahjadi et al., 2022). However, the impacts of sustainability strategies remain uneven across dimensions, while environmental innovations consistently generate operational and financial benefits and social innovations may produce mixed or less immediate performance effects (Hermundsdottir & Aspelund, 2022). These differences reflect sectoral, cultural, and institutional factors that shape which aspects of sustainability strategies gain traction within firms. Evaluation constitutes the final stage of the strategic cycle, involving the continuous monitoring and assessment of sustainability initiatives. The use of multidimensional performance frameworks, such as the 4E (economy, efficiency, effectiveness, and environmental quality) rubric, enables organizations to track progress, identify gaps, and adjust practices to improve long-term sustainability outcomes. Effective evaluation ensures the learning, accountability, and alignment between strategic intent and sustainability performance.

Based on the legitimacy theory, firms develop sustainability strategies to demonstrate compliance with societal norms and stakeholder expectations. Clear sustainability strategies help organizations signal commitment to sustainable practices and effectively implement ESG initiatives. Prior literature shows that firms with defined sustainability strategies respond better to stakeholder pressure and achieve higher sustainability performance. Therefore, the legitimacy theory supports the notion that sustainability strategies enhance sustainability performance. Therefore, we propose the following hypothesis:

H2: There is a significant association between a sustainability strategy and sustainability performance.

3. RESEARCH METHODOLOGY

Quantitative methods were used in the present study. The study population comprised public companies on the Indonesia, Malaysia, Singapore, and Thailand Stock Exchanges, totaling 3,008 companies, with data from the Refinitiv Eikon database. Due to incomplete variable data, the final

sample included 255 companies (54 Indonesian, 72 Malaysian, 69 Singaporean, and 70 Thai), yielding 510 observations over 2021–2022. Years 2023–2024 were excluded as many companies had not submitted sustainability data to Refinitiv Eikon, and the research was conducted in early 2025, when 2023 was the latest available data.

This study had three main variables and one control variable: *Sustainability governance, Sustainability strategy*, and *Sustainability performance*. The *Sustainability governance* variable combines two dummy variables: sustainability committee existence and sustainability assurance implementation. These capture the structural and oversight dimensions of sustainable governance. The sustainability committee oversees initiatives and integrates ESG into strategic decisions, whereas sustainability assurance verifies disclosures through external verification. Both proxies use dummy variables (1 = present, 0 = absent) following prior research methods. A weighted scoring scheme (0, 0.5, 1.0) accounts for firms adopting a single governance mechanism, providing a composite measure while maintaining interpretability.

The *Sustainability strategy* and *Sustainability performance* variables are scores from Refinitiv, ranging from 0 to 100, where 0 indicates no sustainability strategy/performance, and 100 indicates perfect performance. These scores were obtained from the Refinitiv Eikon database, a leading ESG data provider. The CSR strategy score measures how firms integrate ESG into their corporate strategies, including sustainability policies and governance frameworks. The ESG score assesses the overall sustainability performance across ESG pillars. Refinitiv's scoring methodology relies on public information from reports and regulatory files. While providing consistent cross-country metrics, Refinitiv has limitations. The scoring system's dependence on voluntary disclosures means that firms with more extensive reporting may receive higher scores, regardless of their actual performance. This "disclosure-based bias" suggests high ESG scores may reflect reporting quality rather than ESG performance. Additionally, standardized indicators may not fully capture local regulatory contexts in Southeast Asia. Despite these limitations, Refinitiv remains suitable for this study due to its coverage and comparability.

As both governance proxies and Refinitiv scores rely on public disclosures, measures may reflect reporting differences across firms and countries. Companies in jurisdictions with stronger disclosure regulations may show higher scores because of comprehensive reporting, rather than better outcomes. This study acknowledges these biases and uses multiple indicators for governance variables, incorporating cross-country comparisons to contextualize disclosure practices.

Company size, measured by the natural logarithm of total assets, is the control variable that reflects company resources. Large resources indicate higher sustainability risks and require special management strategies (Gomez-Trujillo et al., 2023). Company size controls for the relationship between *Sustainability governance* and *Sustainability strategy*.

Table 1 explains the operationalization of the variables in this study.

Table 1. Variable operationalization

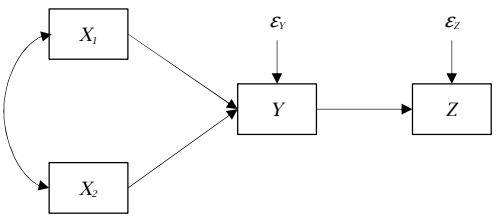
Variable	***Explanation***
Sustainability governance (X_1)	Calculated based on the presence of two elements: 1) the sustainability committee and 2) the sustainability assurance in the company. The existence of both elements is based on a database taken from the Refinitiv Eikon database. If both elements are present, then a score of 1. If only one of the elements is present, then a score of 0.5 is given, and if neither of the two elements is present, then a score of 0 is given.
Sustainability strategy (*Y*)	Calculated based on CSR strategy score taken from the Refinitiv Eikon database. Has a score range of 0 to 100. The CSR strategy score evaluates a company's commitment to integrating ESG factors into its corporate strategy. It measures how well a company incorporates sustainability into its overall business strategy and assesses transparency in corporate responsibility policies and governance frameworks. A high score indicates a strong commitment to sustainability in corporate strategy, while a low score suggests a lack of integration of ESG principles at the strategic level.
Sustainability performance (*Z*)	Calculated based on ESG score taken from the Refinitiv Eikon database. Uses a percentile ranking approach (0 to 100 scale), where higher scores indicate better ESG performance. Refinitiv's ESG scoring system consists of multiple sub-scores that provide insights into a company's sustainability performance. The main ESG score is calculated based on three core pillars: 1. *Environmental (E) score*. Evaluates a company's environmental impact and sustainability efforts, including: • Carbon emissions and climate change mitigation. • Energy and water usage efficiency. • Waste management and recycling. • Biodiversity impact. • Environmental innovation and clean technologies. 2. *Social (S) score*. Measures how well a company manages its social relationships with employees, customers, and communities: • Workforce diversity and inclusion. • Employee health and safety. • Human rights policies. • Product responsibility and data privacy. • Community relations and corporate philanthropy. 3. *Governance (G) score*. Assesses a company's corporate governance structure and ethical practices, including: • Board diversity and independence. • Executive compensation and alignment with shareholder interests. • Business ethics, corruption, and bribery policies. • Shareholder rights and transparency. • Risk management and CSR integration.
Company size (X_2)	Company size is calculated based on the natural logarithm (Ln) of the total asset value. The company size value is taken from total assets, reported from the Refinitiv Eikon database.

Descriptive statistics were used to calculate the means, standard deviations, and maximum/minimum values. The analysis compares averages by a) year, to track variable changes; b) country, to compare differences in sustainability governance, strategy, and performance between countries; and c) industry, to compare differences in sustainability governance, strategy, and performance between industries. The industry classification follows the Global Industry Classification Standard, which classifies companies into 11 sectors: 1) energy, 2) materials, 3) industries, 4) consumer discretionary, 5) consumer staples, 6) healthcare, 7) financials, 8) information technology (IT), 9) communication services, 10) utilities, and 11) real estate. ANOVA tests determine whether the differences between countries and industries are significant.

A SEM path analysis approach tested the research hypothesis. This model analyzes the observable data. With two endogenous variables, *Sustainability strategy* and *Sustainability performance*, SEM provides more precise simultaneous equation results than other tools (Grace et al., 2015). Robust maximum likelihood was used because the multivariate normal data assumptions were not met. The model was fit tested using absolute, incremental, and parsimony tests. Following Grace (2008) and Grace et al. (2015), this study incorporates comprehensive model fit indicators, including the Tucker-Lewis index (TLI) and standardized root mean square residual (SRMR). TLI compares the hypothesized model with the null model, whereas SRMR assesses the standardized differences between the observed and predicted correlations. This study reports the chi-square/df ratio for better interpretation with moderate sample sizes.

Diagnostic checks were performed before estimating the SEM path model. Multivariate normality was assessed using skewness and kurtosis data, with robust maximum likelihood estimation used for non-normal data. Multicollinearity was checked using the variance inflation factor (VIF), with values below five indicating no harmful collinearity among *Sustainability governance*, *Sustainability strategy*, and firm size variables. Bivariate correlation checks confirmed no suppression or redundancy among the predictors.

Figure 1. Path diagram



Below are the structural equations:

$$Z = \rho_{ZY} Y + \varepsilon_Z \quad (1)$$

$$Y = \rho_{YX_1} X_1 + \rho_{YX_2} X_2 + \varepsilon_Y \quad (2)$$

where,

- ρ_{YX_1} = path coefficient from X_1 to Y;
- ρ_{YX_2} = path coefficient from X_2 to Y;
- $\rho_{ZY} Y$ = path coefficient from Y to Z;
- ε_Y = error term Y;
- ε_Z = error term Z.

Hypothesis testing used a t-test with $\alpha = 5\%$. If t-test < -1.96 or > 1.96, the statistical hypothesis is rejected, and the research hypothesis is accepted.

To strengthen the SEM-path findings, additional robustness testing used multiple linear regression (MLR). Because all model variables are observable, MLR is a suitable complementary technique for confirming whether the SEM model relationships remain consistent with an ordinary least squares (OLS) based approach. The two regression models mirror the structural paths of the SEM model.

$$Y_{it} = \alpha_0 + \alpha_1 X_{1_{it}} + \alpha_2 X_{2_{it}} + \varepsilon_{it} \quad (3)$$

$$Z_{it} = \alpha_0 + \alpha_1 Y_{it} + \varepsilon_{it} \quad (4)$$

where,

- Z = sustainability performance;
- Y = sustainability strategy;
- X_1 = sustainability governance;
- X_2 = company size;
- α = intercept term;
- ε = error term.

4. RESULTS AND DISCUSSIONS

4.1. Descriptive results

The descriptive statistical results for the research variables are presented in Table 2. *Sustainability governance* value increased from 0.698 to 0.729. However, some companies lack sustainability committees and assurance. Table 3 shows that nearly 90% of companies across the four countries have sustainability committees, with Indonesia having a lower committee presence due to the later mandate implementation through Law No. 4 of 2023. Only 50% of the companies disclosed sustainability assurance, with Thailand showing higher levels due to mandatory audits since 2022 and a 2021 pilot program. The *Sustainability strategy* variable showed declining mean values in 2022 compared with 2021, with an increased standard deviation. This decline reflects reduced COVID-19-related CSR activities as the pandemic subsided, with companies refocusing on core sustainability (Xiang et al., 2021). The *Sustainability performance* scores increased from 57 to 59, remaining in the "adequate" category. The decrease in the standard deviation suggests improved sustainability performance across companies by 2022.

Table 2. Descriptive statistics

Statistics	X_1		X_2		Y		Z	
Year	2021	2022	2021	2022	2021	2022	2021	2022
Mean	0.698	0.729	21.924	21.942	67.249	66.582	57.944	59.176
Std. dev.	0.299	0.299	1.733	1.739	24.408	25.271	16.526	15.584
Min	0.000	0.000	17.220	17.690	3.160	3.650	18.140	16.960
Max	1.000	1.000	26.950	27.040	99.840	99.590	91.620	91.430

Table 3. *Sustainability governance* component score

Variable/Explanation	*Year*	*Indonesia*	*Malaysia*	*Singapore*	*Thailand*	*Overall*
The number of companies that have a sustainability committee	2022	39	70	68	58	235
		72.22%	97.22%	98.55%	82.86%	92.16%
	2021	34	70	68	57	229
		62.96%	97.22%	98.55%	81.43%	89.80%
The number of companies that have a sustainability assurance	2022	26	37	28	46	137
		48.15%	51.39%	40.58%	65.71%	53.73%
	2021	25	33	24	45	127
		46.30%	45.83%	34.78%	64.29%	49.80%

4.2. Analysis of variance

The ANOVA results are in Table 4. The test was conducted only on the study's main variables, not the control variables. Results comparing countries showed significant differences in average scores of *Sustainability governance*, *Sustainability strategy*, and *Sustainability performance*. Malaysia and Thailand scored above average across these measures. Thailand has required sustainability reporting since 2020, especially in agriculture (Setiarini et al., 2023). Malaysia mandates sustainability in palm oil plantations as it is the largest exporter to the European Union, which enforces strict standards (Wardhani & Rahadian, 2021). Despite being developed, Singapore has less strict regulations, with its business sector focused on finance and property. Indonesia lags in sustainability due to low implementation of sustainability-based management and reporting (Laskar & Gopal Maji, 2018). The ANOVA results across industry sectors also reveal significant differences in *Sustainability governance*, *Sustainability strategy*, and *Sustainability performance*. The IT industry has the lowest scores, as Southeast Asian countries lack regulations on technology's social aspects. Their poor performance stems from hardware waste issues (Sahin et al., 2022). The energy and material mining sectors show the best performance, as these industries face high stakeholder scrutiny due to their environmental impact (Naeem et al., 2022).

The results showed that *Sustainability performance* can increase despite declining strategy scores. This suggests that firms respond to external pressures, such as mandatory reporting and stakeholder expectations, rather than to internal strategies. Following legitimacy theory, firms may adopt sustainability actions for compliance and stakeholder acceptance, improving performance metrics, even when strategic integration lags. This aligns with the "symbolic governance" phenomenon, where external performance improves despite limited internal governance changes.

Table 4. ANOVA test results

Variable/Explanation	*2-year average score*		
	X_1	Y	Z
Per country			
Indonesia	0.574	60.583	56.664
Malaysia	0.729	76.392	60.422
Singapore	0.681	56.865	52.328
Thailand	0.858	72.801	65.198
Overall	0.714	66.916	58.560
ANOVA test-score	19.766	21.375	16.251
Sig.	0.000	0.000	0.000
Per industry			
Financials	0.7095	65.2403	62.2042
Industrials	0.6842	63.2846	53.1067
Real estate	0.6927	57.8573	56.879
Communication services	0.7031	70.2109	58.2297
Consumer staples	0.7258	69.4177	56.8779
IT	0.55	53.776	46.4185
Consumer discretionary	0.6458	62.4121	60.8529
Utilities	0.8088	75.5609	56.9644
Materials	0.8167	80.628	64.981
Energy	0.8158	84.4429	70.7921
Health care	0.6667	67.2658	58.7954
Overall	0.7137	66.9155	58.5601
ANOVA test-score	2.098	5.976	5.853
Sig.	0.023	0.000	0.000

4.3. Structural equation modelling path

The results of the model fit assessment are presented in Table 5. While several indices indicate adequate performance, the root mean square error of approximation (RMSEA) value of 0.23 suggests poor absolute fit. However, RMSEA tends to be overly sensitive with low degrees of freedom, few structural paths, or categorical predictors — characteristics present in this study. The incremental fit indices (comparative fit index — CFI, incremental fit index — IFI, and normed fit index — NFI) exceeded 0.90, showing a substantial improvement over the null model. An SRMR value below 0.08 indicates acceptable residuals between observed and predicted correlations. These indices suggest an adequate model fit under robust maximum likelihood estimation. The SEM path analysis is exploratory rather than confirmatory, estimating the directional relationships among the observable variables. The simple model specification and cross-country sample heterogeneity contribute to RMSEA inflation despite an acceptable incremental fit. The structural coefficients remain stable across the sensitivity analyses, suggesting robust conclusions.

Table 5. Model fit test

SEM goodness of fit tests	*Score*	*Sig.*	*Criteria for a good fit*	*Interpretation*
Absolute test				
Chi-square test	52.900	0.000	Sig ≥ 0.05	Bad fit
RMSEA	0.230	0.000	RMSEA < 0.05	Bad fit
SRMR	0.080		SRMR < 0.08	Good fit
Goodness of fit index (GFI)	0.950		GFI > 0.90	Good fit
Incremental test				
Adjusted goodness of fit index (AGFI)	0.750		AGFI > 0.9	Bad fit
NFI	0.930		NFI > 0.9	Good fit
TLI	0.790		TLI > 0.9	Bad fit
CFI	0.930		CFI > 0.9	Good fit
IFI	0.930		IFI > 0.9	Good fit
Relative fit index (RFI)	0.780		RFI > 0.9	Bad fit
Parsimony test				
Parsimonious goodness of fit index (PGFI)	0.19		PGFI small	Good fit
Parsimonious normed fit index (PNFI)	0.31		PNFI small	Good fit
Akaike information criterion (AIC)	69.53		AIC small	Good fit
Consistent Akaike information criterion (AIC)	20		CAIC small	Good fit
Critical N	88.58		Critical N > 200	Bad fit

The SEM path test results are shown in Table 6. Path coefficients are positive, indicating that good *Sustainability governance* influences *Sustainability strategy* creation, and good *Sustainability strategy* creates high *Sustainability performance*. The t-test values for paths ρ_{ZY} and ρ_{ZX_1} are > 1.96; thus, *H1* and *H2* can be accepted. The R^2 value shows Model 1 at 57% and Model 2 at 29%, indicating large values.

Table 6. SEM path results

Path coefficient	*Coefficient score*	*R^2 model*	*t-test*	*Hypothesis testing results*
ρ_{YX_1}	0.7400	0.57	26.14	Accepted
ρ_{YX_2}	0.0400		1.47	
ε_Y	0.4300			
ρ_{ZY}	0.5400	0.29	16.14	Accepted
ε_Z	0.7100			

4.4. Robustness check

To further validate the SEM path findings, additional robustness checks were conducted using MLRs. Before conducting the robustness tests, classical assumption diagnostics were performed to ensure that the regression models satisfied the minimum statistical requirements for the panel estimation. These tests included checks for heteroscedasticity, multicollinearity, and model specifications. Heteroskedasticity was detected, and heteroskedasticity-robust standard errors were applied. In addition, the appropriate panel structure was confirmed through model selection tests, where both the F-test (pooled vs. fixed effects) and the Hausman test (fixed effects vs. random effects) indicated that the fixed-effects specification is the most suitable for the data. The results are presented in Tables 7 and 8, respectively.

Table 7. Regression model results: Eq. (3), dependent variable = *Y*

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*	*VIF*
C	-101.9449	89.21275	-1.142717	0.2542	-
X_1	48.09660	5.313986	9.050945	0.0000*	1.105060
X_2	6.133799	4.084865	1.501592	0.1344	1.105060
Adjusted R-squared	0.937307				
F-statistic	30.72657				
Prob (F-statistic)	0.000000*				
Prob (Jarque-Bera test)	0.051256				
Prob (White test)	0.000000				
Prob (Serial correlation Lagrange multiplier (LM)-test)	0.237600				
Prob (Chow test)	0.000000				
Prob (Hausman test)	0.000000				
Model decision	Fixed effect with heteroskedasticity- and autocorrelation-consistent (HAC) robust standard errors				

*Note: * significant at α = 5%.*

Table 8. Regression model results: Eq. (4), dependent variable = *Z*

Variable	*Coefficient*	*Std. error*	*t-statistic*	*Prob.*	*VIF*
C	52.80494	2.562430	20.60737	0.0000	-
Y	0.086006	0.038201	2.251418	0.0252*	-
Adjusted R-squared	0.937123				
F-statistic	30.74594				
Prob (F-statistic)	0.000000*				
Prob (Jarque–Bera test)	0.005310				
Prob (White test)	0.022600				
Prob (Serial correlation LM-test)	0.403000				
Prob (Chow test)	0.000000				
Prob (Hausman test)	0.000000				
Model decision	Fixed effect with HAC robust standard errors				

*Note: * significant at α = 5%.*

To validate the structural relationships from the SEM path analysis, robustness checks were conducted using MLR with fixed effects and HAC-robust standard errors. The Jarque-Bera values show normally distributed residuals in the strategy equation, with acceptable deviations in the performance equation, given robust standard errors. White test results indicated heteroskedasticity in both models, justifying the HAC standard errors. Multicollinearity was not an issue with VIF values below the threshold. Serial correlation tests revealed no autocorrelation. Panel model selection tests favored a fixed-effects specification, with Chow and Hausman tests rejecting pooled OLS and random-effects alternatives.

Robustness regression results are presented in Tables 7 and 8. For the *Sustainability strategy*, Eq. (3), X_1 has a strong, positive, and significant effect on Y, indicating that firms with sustainability committees adopt more structured strategies. X_2 showed a positive but insignificant relationship with Y, suggesting that sustainability assurance is not a major strategy driver. This mirrors the SEM findings, where X_1 had a stronger influence than X_2.

For *Sustainability performance*, Eq. (4), the results show that *Sustainability strategy* (Y) positively and significantly influences Z, confirming that firms with developed strategies achieve higher performance. This aligns with the SEM path coefficient, reinforcing the strategy's mediating role between governance and performance.

Robustness checks supported the SEM results. The relationships remain stable across both estimation approaches, indicating that the findings are not dependent on SEM-specific assumptions. These results confirm the reliability of the governance-strategy-performance linkage.

4.5. Discussions

Research shows that sustainability governance in Southeast Asian companies remains symbolic, with established committees, but inadequate implementation. This is evidenced by the high sustainability committee scores, but lower assurance scores. Studies have found no significant link between committees and sustainability performance, suggesting symbolic roles. A negative association exists between committees and assurance, particularly for smaller firms. Companies establish committees as governance indicators; however, their effectiveness may be limited. Direct sustainability checks are not consistently performed because establishing committees is easier than implementing audits. Although governance structures tend to be symbolic, these mechanisms can still improve sustainability performance. Under the legitimacy theory, firms face pressure to demonstrate environmental and social responsibility. Sustainability committees can signal conformity with societal expectations and improve ESG scores despite the lack of an embedded strategy. The company's sustainability strategy value decreased from 2021 to 2022, which is inconsistent with its increased performance. This indicates that performance is not affected by strategy, as it is not part of the corporate vision. Research has found that sustainability initiatives are positively related to carbon performance, regardless of the formal strategy (Haque & Ntim, 2022). Performance improvements can occur because of regulatory pressures, stakeholder expectations, or operational efficiencies. The improved sustainability performance despite declining strategy scores shows that firms respond more to external pressures than to internal alignment. Mandatory reporting, environmental concerns, and supply chain expectations drive sustainability practices without strategic integration. External monitoring through regulations and investors can encourage managers to improve their KPIs. Companies strengthen sustainability practices because ESG performance affects access to capital, reflecting institutional pressure-driven behavior (Haack et al., 2012; Higgins et al., 2020).

This study demonstrates that sustainability governance creates an optimal sustainability strategy. Research shows that formulating a sustainability strategy guides boards in navigating environmental, social, and economic pressures (Annesi et al., 2024). The integration of sustainability initiatives into strategic decision-making correlates positively with corporate performance (Hristov et al., 2021). IMS promotes systematic sustainability management (Silva et al., 2020). Country-level governance positively affects sustainability performance, especially in countries with high Sustainable Development Goals (SDG) scores (Almaqtari et al., 2023). Learning organizational characteristics tied to governance structures promotes sustainable practices in tourism (Showkat & Nagina, 2024). Corporate governance mechanisms foster triple bottom line performance, with mechanisms suited to specific sustainability dimensions (Hussain et al., 2016).

This study proves that a well-executed sustainability strategy drives the sustainability performance. Firms with effective CSR strategies show better environmental and social performance, and board sustainability committees improve CSR strategy effectiveness. Hristov et al. (2021) showed a positive correlation between sustainability initiatives and corporate performance, improving both firm performance and community well-being. Nicolò et al. (2023) provide evidence that superior sustainability performers offer more SDG disclosures. Hongming et al. (2020) confirm the positive effects of sustainability reporting on firm performance in Pakistan, with both individual indicators and a composite reporting index improving performance.

Robustness checks using fixed-effects regression strengthened the findings of the study. The results show that sustainability governance's influence on sustainability strategy — particularly X_1's strong effect — remains consistent across methods, while X_2's effect remains positive but weaker. The significant relationship between sustainability strategy and sustainability performance was confirmed, with more developed strategies leading to higher ESG scores. This alignment between SEM and regression outputs indicates that the governance-strategy-performance linkage is more robust than a methodological artifact.

5. CONCLUSION

This study examines relationships between sustainability governance, strategy, and performance in Southeast Asian public companies using Refinitiv

database indicators and structural path modelling. The results show that sustainability governance, through sustainability committees and assurance, shapes firms' sustainability strategies. Sustainability strategy shows a strong positive association with sustainability performance, indicating that firms with formalized sustainability commitments implement ESG practices more effectively. These findings demonstrate the value of internal sustainability governance in building strategic orientations to improve performance outcomes.

This study contributes to sustainability governance literature by integrating agency and legitimacy theories to explain how governance influences strategy and how strategy acts as a legitimacy tool. It provides empirical evidence from Southeast Asia's varied regulatory environments and advances measurement by combining governance proxies with disclosure-based performance metrics for emerging markets.

The findings of this study have important implications for stakeholders. Regulators can strengthen sustainability governance by mandating assurance requirements, harmonizing reporting standards, and incentivizing firms to adopt substantive practices. Boards should enhance their expertise, clarify oversight mandates, and integrate ESG into strategic decisions. Sustainability managers must translate commitments into operational plans through KPIs, cross-functional implementations, and reliable ESG data systems. Assurance providers can add value by tailoring approaches to industry contexts and improving verification depth to bridge the gaps between disclosure and performance.

This study has some limitations. Refinitiv scores introduce disclosure-driven bias, while governance proxies are simplified indicators that may not fully capture quality. The SEM model's limited degrees-of-freedom constrained model fit, and cross-country regulatory differences affect comparability. Future research should examine the cross-country heterogeneity in regulatory maturity and cultural norms across Southeast Asian markets. Alternative measurement approaches, such as textual analyses of sustainability reports and board documents, can better capture qualitative governance dimensions. Studies should also address emerging ESG risks, including artificial intelligence practices, supply chain transparency, and climate exposure, to understand how global expectations reshape governance-strategy-performance relationships in evolving environments.

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