“Environmental, social, and governance activities, managerial efficiency, and firm performance: Evidence from Asian economies”

AUTHORS	Ngoc Bich Thi Duong Vinh Khuong Nguyen Ngoc Tien Nguyen

ARTICLE INFO	Ngoc Bich Thi Duong, Vinh Khuong Nguyen and Ngoc Tien Nguyen (2026). Environmental, social, and governance activities, managerial efficiency, and firm performance: Evidence from Asian economies. *Problems and Perspectives in Management*, *24*(2), 686-703. doi:10.21511/ppm.24(2).2026.47
DOI	http://dx.doi.org/10.21511/ppm.24(2).2026.47
RELEASED ON	Thursday, 02 July 2026
RECEIVED ON	Friday, 19 December 2025
ACCEPTED ON	Monday, 22 June 2026

JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
39	1	11

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

Ngoc Bich Thi Duong (Vietnam), **Vinh Khuong Nguyen** (Vietnam), **Ngoc Tien Nguyen** (Vietnam)

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE ACTIVITIES, MANAGERIAL EFFICIENCY, AND FIRM PERFORMANCE: EVIDENCE FROM ASIAN ECONOMIES

Abstract

This study aims to examine the impact of environmental, social, and governance activities on financial performance, with the moderating role of managerial efficiency, using the data from 19,430 observations across Asian economies during 2004–2023. Ordinary least squares regression has been used for panel data analysis with fixed effects for industry, year, and country. The findings reaffirm the positive influence of environmental, social, and governance performance on financial performance (measured by Tobin's Q and Return on Equity). All three pillars show a positive relationship with financial performance. Moreover, the study shows that managerial efficiency plays a moderating role in increasing the positive impact of these activities on financial performance. Robustness tests include substituting the dependent variable and conducting regression analyses on sub-samples to compare the impact between developed and developing countries within Asian economies, thereby providing guidance for optimal investment decisions. In general, the study stresses the importance of managerial efficiency as a moderating factor. This is especially true in Asia, where ownership structures are often concentrated, and boards of directors have little independence. These findings provide practical implications for policymakers and firm managers in formulating sustainability strategies to optimize financial performance.

Keywords environment, social and governance, firm performance, managerial efficiency, moderation effect, Asian economies

JEL Classification G30, G34, M14, G32

Type of the article: Research Article

Received on: 19th of December, 2025
Accepted on: 22nd of June, 2026
Published on: 2nd of July, 2026

Ngoc Bich Thi Duong, Ph.D. Student, School of Finance and Accounting, Industrial University of Ho Chi Minh City, Vietnam.

Vinh Khuong Nguyen, Ph.D., Faculty of Accounting and Auditing, University of Economics and Law, Vietnam National University, Vietnam.

Ngoc Tien Nguyen, Ph.D., Associate Professor, School of Finance and Accounting, Industrial University of Ho Chi Minh City, Vietnam. (Corresponding author)

Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

ESG activities have emerged as a defining dimension of contemporary corporate strategy, reflecting the growing recognition that long-term firm value depends not only on financial returns but also on how firms manage their responsibilities toward the environment, society, and their governance structures. In the wake of the 2015 Paris Agreement, the United Nations Sustainable Development Goals, and increasingly stringent disclosure requirements across major capital markets, ESG has shifted from a voluntary, reputationally driven practice to a strategic imperative with direct implications for access to capital, investor confidence, and market valuation. Firms that demonstrate credible and consistent ESG engagement are increasingly rewarded by investors, regulators, and consumers alike, while those that fail to adapt face growing risks of regulatory sanction, reputational damage, and capital market exclusion.

Within the Asian context, the relevance of ESG is particularly pronounced yet distinctively complex. Asian countries have increasingly

http://dx.doi.org/10.21511/ppm.24(2).2026.47

strengthened their ESG-related regulatory frameworks in response to sustainable development imperatives and the growing convergence toward international standards. Influenced by the Paris Agreement, the United Nations Sustainable Development Goals (SDGs), and the widespread adoption of sustainability reporting frameworks such as the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD), and the International Sustainability Standards Board (ISSB), stock exchanges and regulatory authorities across Asia have progressively required listed companies to disclose ESG information more transparently and systematically. Specifically, Singapore has emerged as a regional pioneer by mandating sustainability reporting for listed companies and introducing the Green Finance Taxonomy, considered one of the most advanced green finance classification systems in Asia. Thailand and Indonesia have also made substantial progress in integrating ESG principles into corporate policies and governance frameworks. Japan has played a leading role through the early adoption of the Corporate Governance Code and the requirement for companies to disclose climate-related risks in accordance with the TCFD recommendations. Beyond complying with international standards, Japan has actively encouraged firms to strengthen their risk management and governance practices. Similarly, South Korea has developed the Korean Green Taxonomy (K-Taxonomy) to prevent greenwashing and promote genuinely sustainable economic activities by establishing clear principles and classification criteria for environmentally sustainable investments. Large corporations are expected to take the lead in ESG disclosure in accordance with international reporting standards. In emerging Asian markets, regulators in Malaysia, Thailand, Indonesia, and Vietnam have also introduced sustainability reporting frameworks and ESG-related disclosure guidelines. However, the scope and enforcement intensity remain heterogeneous across countries.

Asia is home to some of the world's fastest-growing economies and a significant share of global industrial activity, making the region both a major contributor to and a frontline victim of environmental and social challenges. At the same time, many Asian economies are characterized by concentrated ownership structures – whether family-controlled, conglomerate-based, or state-owned – weakly independent boards of directors, and governance frameworks that continue to evolve in response to international standards. These structural features create a setting in which the implementation of ESG is qualitatively different from that observed in Western markets: the institutional environment is more heterogeneous, enforcement mechanisms are less uniform, and the capacity of individual firms to translate ESG commitment into financial performance is critically shaped by the quality of firm management. Against this backdrop, understanding how and under what conditions ESG activities generate financial value in Asia represents a research problem of both theoretical and practical urgency.

Empirical research on the ESG–financial performance relationship has expanded substantially over the past two decades, yet the evidence remains fragmented and inconclusive. Results vary considerably across studies depending on the regional context, the measurement of ESG performance, the choice of financial outcome variables, and the time period examined. Crucially, the existing literature has devoted limited attention to the boundary conditions that moderate the ESG–financial performance relationship – in particular, the role of managerial efficiency (M_score) as a factor that determines whether ESG resources are effectively deployed to generate shareholder value. In Asia, where governance quality and managerial capability vary substantially both across and within countries, this gap is especially consequential: it implies that the financial impact of ESG investment may be systematically conditioned by firm-level managerial factors that existing studies have largely overlooked.

1. LITERATURE REVIEW AND HYPOTHESES

Nowadays, firms are increasingly integrating ESG activities into their investment strategies. Firms with strong ESG practices are better positioned to mitigate risks, improve performance, and achieve sustainable growth if they operate within a supportive legal framework, effective governance systems, and robust governance structures (Handoyo & Anas, 2024). The implementation of ESG can generate sustainable competitive advantages, en-

hance corporate reputation, and strengthen firms' resilience to market fluctuations, particularly as consumers increasingly prioritize choosing firms that demonstrate environmental and social responsibility (Dkhili, 2024). ESG has become an essential component of firm risk management and sustainable development strategies, as it allows firms to meet stakeholder expectations, enhance access to capital, and strengthen corporate reputation (El Khoury et al., 2023). The three pillars of ESG include the environmental pillar, which emphasizes the preservation of nature, the reduction of negative impacts, and the response to climate change; the social pillar, which relates to equality, gender diversity, human rights, and community contribution; and the governance pillar, which concerns board independence, ownership structure, shareholder rights, and information transparency (Atan et al., 2018). Empirical research in Asia presents mixed results. Some studies confirm the positive impact of ESG on FP (Le, 2024; Naeem et al., 2022), while others find no significant relationship or that the relationship is moderated by market competition factors (Jung & Yoo, 2023).

From a theoretical perspective, the relationship between ESG performance and financial performance may differ between developed and developing economies in Asia due to variations in institutional environments, stakeholder expectations, and managerial efficiency. According to stakeholder theory, firms operating in developed economies are more likely to derive financial benefits from ESG implementation because stakeholders place greater value on sustainability-related activities. Consequently, ESG initiatives can enhance a firm's reputation, reduce financing costs, and strengthen its competitive advantage. In contrast, in developing economies, stakeholders may exhibit lower awareness of and engagement with ESG performance, thereby limiting its contribution to financial outcomes. Furthermore, agency theory suggests that the effectiveness of ESG practices depends on the quality of corporate governance mechanisms and monitoring systems. In developed countries, stronger regulatory enforcement, greater investor protection, and more effective corporate governance structures facilitate the alignment of ESG initiatives with shareholders' interests, thereby reducing agency costs and enhancing financial performance. Conversely, developing countries often face weaker governance environments and less effective monitoring mechanisms, which may constrain the ability of ESG practices to generate financial benefits. Therefore, theoretical arguments concerning the ESG–financial performance relationship indicate that the impact of ESG performance on financial performance is likely to vary between developed and developing Asian economies. Differences in institutional quality, stakeholder pressure, and governance effectiveness may influence the extent to which ESG activities translate into improved financial outcomes.

In terms of regulations and institutional frameworks, various reporting standards and guidelines have been established globally, including the GRI, SASB, TCFD, and ISSB (IFRS S1 and S2), alongside the European Union's regulatory frameworks such as CSRD and SFDR, all of which aim to standardize ESG reporting and enhance transparency. Additionally, companies in Asia have been paying more attention to ESG activities as regulatory mechanisms have changed. According to recent studies, there is no common regional standard for ESG, with most countries still adopting ESG practices voluntarily and lacking uniformity (Singhania & Saini, 2022; Qian et al., 2025). While certain countries have issued or are developing their own legal frameworks, these remain heavily reliant on international standards and are moving toward alignment with global regulations. Despite these findings, a significant research gap persists, particularly concerning the impact of ESG on financial performance with the moderating role of M_score in the Asian context.

A substantial body of empirical research has examined the ESG–financial performance relationship across different regional and methodological contexts, yet findings remain heterogeneous. Studies based on US samples (Thanh Nguyen et al., 2022; Tahtamoni et al., 2025) predominantly employ fixed-effects regression (FEM). Thanh Nguyen et al. (2022) additionally applied two-stage least squares (2SLS) to address endogeneity. Both studies report a positive ESG-FP association using accounting-based measures (ROA, ROE) and market-based Tobin's Q. European and multinational studies (Velte, 2020; Aydoğmuş et al., 2022; Jung & Yoo, 2023; Ho et al., 2024; Dkhili, 2024) similarly rely

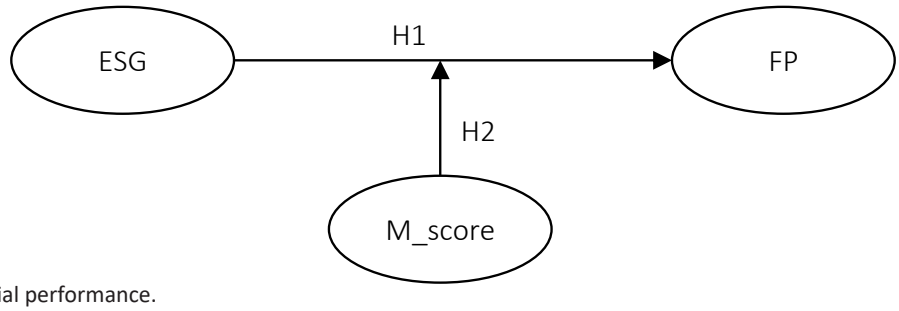
http://dx.doi.org/10.21511/ppm.24(2).2026.47

on FEM. Dkhili (2024) employs GMM to mitigate endogeneity concerns and consistently document positive ESG effects on ROA, ROE, and Tobin's Q. Naeem et al. (2022) further show that this positive effect is more pronounced in developed than developing markets, attributing the difference to institutional quality and investor awareness. Consistent with this, Garcia and Orsato (2020) find that the financial value of ESG varies systematically with institutional context, suggesting that country-level differences moderate the ESG–financial performance relationship before firm-level factors are even considered. In Asian and developing economy contexts, Le (2024) applies FEM and FGLS across six Southeast Asian countries and finds a positive relationship, while Maji and Lohia (2023) report mixed pillar-level results in India, with the environmental dimension showing a negative effect on ROA. Al Azizah and Haron (2025) document that the pandemic altered the direction and significance of individual ESG pillars on financial performance, highlighting the sensitivity of results to temporal context. Across this body of evidence, endogeneity between ESG and financial performance remains a methodological concern addressed inconsistently – through 2SLS, GMM, or lagged variables – and the boundary conditions moderating the ESG–financial performance relationship, particularly firm-level managerial factors, receive limited attention. This study addresses these gaps by introducing M_score as a theoretically grounded moderator within a large Asian panel, employing lagged ESG as a robustness check for endogeneity, and decomposing results across developed and developing economies.

In summary, the extant literature consistently highlights the importance of ESG practices for corporate value creation, yet findings remain heterogeneous due to differences in institutional contexts, measurement approaches, and sample characteristics. Limited studies on Asia yield inconsistent results and pay scant attention to the boundary conditions that shape the ESG–financial performance relationship.

ESG activities enhance corporate reputation and value while strengthening the trust of stakeholders such as investors, customers, and business partners. According to stakeholder theory, effective implementation of ESG enables firms to meet stakeholder expectations, build a strong reputation, and create a stable growth environment, thereby enhancing financial performance (Freeman, 1984). According to Friede et al. (2015), an analysis of approximately 2,000 studies indicates that 78.6% of firms achieve higher financial performance by adhering to ESG practices. In the context of climate change risk, companies that follow strong ESG practices are more likely to maintain their corporate value (Bagh et al., 2024). Companies that put ESG first often show more innovation and better operational efficiency by making products that are better for the environment, improving their supply chains, and using less energy, which leads to better financial performance. ESG activities are perceived as an interconnected ecosystem in which individuals, organizations, and technologies continuously interact and exchange information, fostering knowledge sharing, disseminating sustainable values, shaping brand equity, and experiencing significant growth over the past decade (Lee et al., 2022). Previous empirical studies have found evidence of the positive impact of ESG performance on financial performance (Alareeni & Hamdan, 2020; Velte, 2017; Nareswari et al., 2023; Le, 2024).

Meanwhile, firms with high M_scores, when engaging in ESG activities, tend to mitigate investment risks as they possess standardized business processes and risk management practices, thereby becoming more attractive opportunities for investors (Velte, 2020; Dkhili, 2024). Managerial efficiency is a core factor that enables firms to optimize resources, enhance revenues, demonstrate strategic vision, forecast plans, and make sound decisions, thereby increasing the benefits of ESG activities and improving financial performance. To measure managerial efficiency, this study employs data envelopment analysis (DEA) (Demerjian et al., 2011). Agency theory emphasizes information asymmetry and the conflict of interest between shareholders and managers (Jensen et al., 1976). Competent managers can alleviate agency issues by proficiently executing ESG, thereby harmonizing corporate objectives with stakeholder anticipations. Conversely, ineffective management often prioritizes short-term investments and risk avoidance, which undermines the value of ESG (Al Amosh et al., 2023). Many studies have confirmed that the M-score is a critical



Note: FP = financial performance.

Figure 1. Research model

factor in the ESG-FP relationship. Managers with high competence enhance financial performance, whereas less competent managers may undermine financial performance (Inam Bhutta et al., 2021). High managerial efficiency enables companies to reduce costs, develop viable business plans, and use their resources wisely (Welch & Yoon, 2023). Managerial capability enhances firms' access to finance, mitigates risks during crises, and consequently improves firm value (Andreou et al., 2015). Managerial efficiency is essential to realizing the potential benefits of ESG activities, as it enhances financial performance, mitigates business risks, strengthens competitive advantage, and fosters sustainable development (Mahanta et al., 2024; Welch & Yoon, 2023).

The scientific interest, the refore, concerns the conditions under which ESG performance translates into improved financial performance in an Asian institutional context, with specific attention to the moderating role of M_score. Resolving this problem requires not only an empirical assessment of the direct ESG–financial performance relationship across a large and diverse sample of Asian listed firms, but also an examination of how managerial efficiency shapes that relationship – and whether its effects differ between developed and developing economies within the region. Answers to these questions have direct implications for the design of ESG regulation, the allocation of investment capital, and the governance of firms operating in Asia's rapidly evolving institutional landscape.

Based on the theoretical background and extant empirical evidence, this study examines the impact of environmental, social, and governance performance on financial performance and investigates the moderating role of managerial efficiency in the Asian context. To address this objective, we propose the following hypotheses and a conceptual model (Figure 1):

H1: ESG performance is positively related to financial performance.

H2: M_score efficiency positively moderates the relationship between ESG performance and financial performance.

2. METHOD

2.1. Data collection

To examine the impact of ESG activities on financial performance, we obtained the data from the London Stock Exchange Group (LSEG), which provides data for scores of ESG pillars and other firms' financial statement data. First, we constructed the sample by obtaining a list of all publicly listed Asian countries for the period 2004–2023. We chose the sample that covers the period from 2004 to 2023, as the LSEG ESG database for ASEAN countries has been available since 2004. We excluded firms in the banking and insurance sectors due to the distinct nature of their operations and financial reporting. Then, we exclude missing observations and winsorize the sample data to eliminate outliers, specifically at the 1st and 99th percentiles. After eliminating missing values and outliers, the final sample is an unbalanced panel with 19,430 annual observations.

Table 1 presents the number of firms by country across 12 Asian economies. The distribution is uneven, with Japan (26.18%), China (21.83%), Hong Kong (12.17%), and Taiwan (8.61%) collectively accounting for approximately 69% of the total ob-

http://dx.doi.org/10.21511/ppm.24(2).2026.47

Table 1. Country-wise distribution of firms in the sample

Country	Freq.	Percent	Cum.
China	4,241	21.83	21.83
Hong Kong	2,365	12.17	34.00
India	1,485	7.64	41.64
Indonesia	449	2.31	43.95
Japan	5,086	26.18	70.13
Malaysia	1,142	5.88	76.01
The Philippines	237	1.22	77.23
Singapore	632	3.25	80.48
South Korea	1,396	7.18	87.66
Taiwan	1,672	8.61	96.27
Thailand	682	3.51	99.78
Vietnam	43	0.22	100.00
Total	19,430	100.00	

servations. This concentration reflects the reality of ESG data availability in Asia: firms in more developed capital markets disclose ESG information more systematically and consistently, resulting in greater representation in the LSEG database. To mitigate the risk that the results are driven by any single dominant economy, the study conducts a robustness check by comparing the full sample with a sub-sample excluding Chinese observations (Table 10). Furthermore, the fixed effects specification controls for time-invariant country-level heterogeneity, reducing the likelihood that country-specific characteristics of dominant economies confound the estimated ESG-FP relationship.

Table 2 presents the distribution of firms by industry. The research sample is highly concentrated in the manufacturing sector (53.13%), followed by transportation, communication, electricity, gas, and utilities (14.66%) and services (10.71%). In contrast, industries such as agriculture, forestry, and fisheries (0.92%), mining (3.24%), and wholesale and retail trade (3.43% and 5.50%, respectively) account for relatively small proportions.

2.2. Research model

Based on previous studies (Velte, 2020; Handoyo & Anas, 2024), we developed a model to examine the relationship between ESG and financial performance, in which M_score serves as a moderating variable:

$$FP_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 control\ variables + \varepsilon_{it}, \quad (1)$$

$$FP_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 M\_score_{it} + \beta 3\left(ESG_{it} \cdot M\_score_{it}\right) + \beta_4 control\ variables + \varepsilon_{it}, \quad (2)$$

where FP_{it}: Financial performance of firm i at time t, measured by TOBINQ and ROE. ESG_{it}: Environmental, social, and governance performance score of firm i at time t. M_score: Managerial efficiency score.

Control variables: Financial leverage (LEV), firm size (Size), Research and development expendi-

Table 2. Sample distribution across industries

Industry	Freq.	Percent	Cum.
Agriculture, forestry, and fishing	179	0.92	0.92
Construction	1,634	8.41	9.33
Manufacturing	10,324	53.13	62.47
Mining	630	3.24	65.71
Retail Trade	1,068	5.50	71.20
Services	2,080	10.71	81.91
Transportation, communications, electric, gas, and sanitary service	2,848	14.66	96.57
Wholesale trade	667	3.43	100.00
Total	19,430	100.00	

Table 3. Variables in the model

Variable	Variable Description	Measurement Method	Sources
Dependent variables			
TOBINQ	Tobin's Q	The ratio of the market value of total assets and total debt to the book value of total assets.	Ahmad et al. (2024); Buallay (2019)
ROE	Return on equity	The ratio of net income after taxes to equity	Thanh Nguyen et al. (2022); Alareeni and Hamdan (2020)
Moderator variable			
M_score	Managerial efficiency	Estimated following Demerjian et al. (2011) in two stages: (1) DEA model per industry-year yields a firm efficiency score ∈ [0,1]; (2) This score is regressed on firm characteristics; the residuals constitute M_score. A higher residual indicates superior managerial efficiency relative to peers	Demerjian et al. (2011)
Independent variables			
ESG	Environmental, social, and governance performance score	Measured by ranging from 0% to 100%, based on information on governance, environmental, and social pillars of firms	Handoyo and Anas (2024); Matemane et al. (2024)
Control variables			
SIZE	Firm size	The natural logarithm of the book value of total assets at year-end	Handoyo and Anas (2024); Jung and Yoo (2023)
LnAGE	Firm age	AGE = Current year – Year of firm establishment, the natural logarithm of AGE	Velte (2020); Handoyo and Anas (2024)
LEV	Financial Leverage	Dividing total debt by total assets	Ahmad et al. (2024);
RD	Research and development expenditure	RD expense /net sales or revenues	Velte (2020), Jung and Yoo (2023)
GROWTH	Sale growth	$GROWTH = \frac{(Total\ sales\ current\ year - Total\ sales\ previous\ year)}{Total\ sales\ previous\ year}$	Velte (2020)
CapEX	Capital expenditure	$CapEX = \Delta PP\&E + Depreciation,$ (ratio of fixed assets to total assets)	Velte (2020)
GDPa_Growth	GDP growth	$GDPa\_Growth = \frac{(GDP_t - GDP_{t-1})}{GDP_{t-1}} \cdot 100$	Duque-Grisales and Aguilera-Caracuel (2021)
CPI	Consumer price index	$CPI = \left(\frac{Cost\ of\ basket\ at\ time\ t}{Cost\ of\ basket\ at\ base\ year} \right) \cdot 100.$ Base year selected in 5-7 year cycles	Duque-Grisales and Aguilera-Caracuel (2021); Handoyo and Anas (2024)

ture (RD), Sale growth (GROWTH), Capital expenditure (CapEx), GDP growth (GDPa_Growth), Consumer price index (CPI), and firm age (LnAGE). Detailed information about the study variables is shown in Table 3.

2.3. Estimation strategy

In this study, panel data are analyzed using ordinary least squares (OLS) regression with fixed effects to examine the impact of ESG on financial performance, while also testing the moderating role of M_score, following prior studies (Velte, 2020; Handoyo & Anas, 2024). The moderating variable, M_score, is constructed following Demerjian et al. (2011) in two stages. In the first stage, a DEA model is estimated separately for each industry-year group, using net revenue as the output and seven inputs: cost of goods sold, SG&A expenses, net PP&E, net operating leases, net R&D expenditure, purchased goodwill, and other intangible assets. This yields a firm-level efficiency score bounded between 0 and 1, where 1 denotes full technical efficiency. In the second stage, this efficiency score is regressed on firm-level characteristics, including firm size, market share, cash availability, firm age, and exchange listing status. The residuals from this regression capture managerial ability (M_score) net of firm-specific factors. Because M_score is a residual, it is unbounded and should not be interpreted against the [0,1] constraint of the first-stage DEA score; a higher

http://dx.doi.org/10.21511/ppm.24(2).2026.47

value indicates superior managerial efficiency relative to industry peers after controlling for firm characteristics. Financial performance is primarily measured using TOBINQ. An OLS model with fixed effects is employed to analyze the panel data. It measures the impact of ESG on financial performance and tests the moderating role of M_score. Fixed differences across industries, countries, and years are controlled for, ensuring these do not confound the relationship. The fixed effects allow for controlling unobserved characteristics of countries, industries, and years that are typically time-invariant (such as governance structures, legal environments, corporate culture, and industry competition), which may influence ESG activities and financial performance. Omitting these factors would bias conventional OLS estimates due to omitted variable issues. Financial performance is measured by TOBINQ, which reflects market value relative to book value and is strongly influenced by industry and country-specific characteristics. To ensure the robustness of the model, the study conducts a robustness test by replacing the dependent variable with ROE, as recommended by Wooldridge (2012). Moreover, the study conducts a subsample regression analysis to compare differences in the impact of ESG on financial performance between firms in developed and developing countries. Furthermore, the study performs Pearson correlation analysis to detect multicollinearity and examines model defects such as autocorrelation and heteroscedasticity. Although the FE model controls for unobserved firm-specific characteristics that remain constant over time, the possibility of endogeneity may still exist due to potential reverse causality between ESG performance and financial performance. Therefore, to examine the robustness of the results, this study employs a one-year lagged ESG variable in the regression analysis. If the estimated coefficients remain consistent in both direction and statistical significance, the robustness and reliability of the main findings are further substantiated.

3. RESULTS

3.1. Descriptive statistics analysis

Table 4 presents the descriptive statistics for the dependent, independent, and control variables of the model.

Table 4. Descriptive statistics of the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
TOBINQ	19,430	1.952	1.928	0.53	12.28
ROE	19,430	0.098	0.182	–1.189	0.82
ESG	19,430	0.428	0.204	0.004	0.933
ENV	19,430	0.399	0.273	0	0.988
SOC	19,430	0.399	0.244	0.001	0.974
GOV	19,430	0.486	0.222	0.001	0.987
SIZE	19,430	18.769	2.516	10.832	24.72
LEV	19,430	0.234	0.174	0	0.717
RD	19,430	0.025	0.05	0	0.345
GROWTH	19,430	0.118	0.31	–0.582	2.705
CapEx	19,430	0.029	0.039	0	0.26
LnAGE	19,430	2.967	0.702	0	3.951
GDPa Growth	19,430	0.03	0.034	–0.11	0.144
CPI	19,430	0.019	0.024	–0.06	0.153
M_score	19,430	0.734	0.245	0.007	1.575

The ESG score ranges from 0.004 to 0.933, with a mean value of 0.428 and a standard deviation of 0.204. This indicates that the ESG performance of the firms is mid-level and relatively concentrated. At the pillar level, ENV and SOC both have a mean value of 0.399, while GOV has a higher mean value of 0.486. This suggests that firms in the sample tend to place greater emphasis on governance activities than on the environmental and social pillars. Notably, several firms report ESG scores close to zero, indicating non-compliance with the GRI 2016 guidelines (GRI 200, 300, 400), whereas the maximum score of 0.933 reflects an almost full level of compliance. Regarding financial performance, TOBINQ has a mean value of 1.952, which is higher than the findings of Ahmad et al. (2024), indicating relatively optimistic market expectations. Meanwhile, the mean ROE value is 0.098, higher than the findings of Thanh Nguyen et al. (2022), indicating a better return on equity. The moderating variable (M_score) has a mean value of 0.734 and ranges from 0.007 to 1.575. As a residual from the second-stage regression, M_score is not bounded by the [0,1] interval of the first-stage DEA score. The distribution does not center at zero because the second-stage model has an intercept that takes in the sample mean of the DEA efficiency scores. Values above (below) the sample mean show that managerial efficiency is relatively higher (lower) after controlling for firm-level characteristics. The moderate standard deviation (0.245) indicates significant variability in managerial competence among the sample firms.

Table 5. Pearson's correlation coefficient matrix (Pairwise correlations)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	VIF
(1) TOBINQ	1.000											
(2) ESG	−0.070***	1.000										1.218
	(0.000)											
(3) SIZE	−0.270***	0.319***	1.000									1.449
	(0.000)	(0.000)										
(4) LEV	−0.282***	0.056***	0.166***	1.000								1.298
	(0.000)	(0.000)	(0.000)									
(5) RD	0.185***	0.040***	−0.091***	−0.226***	1.000							1.144
	(0.000)	(0.000)	(0.000)	(0.000)								
(6) GROWTH	0.207***	−0.050***	−0.105***	−0.035***	0.055***	1.000						1.104
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)							
(7) CapEx	−0.013*	0.129***	0.239***	0.029***	−0.007	−0.008	1.000					1.108
	(0.067)	(0.000)	(0.000)	(0.000)	(0.313)	(0.241)						
(8) lnAGE	−0.260***	0.242***	0.323***	0.014*	−0.088***	−0.209***	0.085***	1.000				1.22
	(0.000)	(0.000)	(0.000)	(0.059)	(0.000)	(0.000)	(0.000)					
(9) GDPa_Growth	0.124***	−0.145***	−0.203***	−0.020***	0.002	0.195***	−0.130***	−0.204***	1.000			1.308
	(0.000)	(0.000)	(0.000)	(0.005)	(0.749)	(0.000)	(0.000)	(0.000)				
(10) CPI	0.141***	−0.049***	−0.193***	0.001	−0.099***	0.189***	−0.103***	−0.184***	0.440***	1.000		1.325
	(0.000)	(0.000)	(0.000)	(0.835)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
(11) M_score	0.219***	−0.004	−0.025***	−0.368***	−0.097***	0.101***	−0.136***	0.023***	0.036***	0.017**	1.000	1.253
	(0.000)	(0.573)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.019)		

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

http://dx.doi.org/10.21511/ppm.24(2).2026.47

3.2. Correlation matrix

Table 5 presents the Pearson correlation coefficients among the study variables and the variance inflation factor (VIF). The Pearson correlations among the independent variables do not exceed 0.5, and the VIF values range from 1.104 to 1.449, all of which are well below the commonly accepted threshold of 10 (VIF = 10). Therefore, multicollinearity does not pose a serious concern in the regression model.

3.3. The nexus between ESG and financial performance

Table 6 presents the regression results, showing that ESG has a positive and significant relationship with TOBINQ, with a coefficient of 0.802 ($p < 0.01$). This suggests that firms emphasizing ESG performance are more highly valued in the market, thereby enhancing their financial performance. These findings are consistent with the market-based valuation measure of TOBINQ (Buallay, 2019; Alareeni & Hamdan, 2020). Theoretically, this relationship supports the stakeholder theory argument, emphasizing that firms not only create value for shareholders but also generate benefits for a wide range of stakeholders, thereby enhancing long-term firm value. This finding indicates that effective ESG implementation is not merely an ethical practice but also a strategic approach to generating sustainable economic advantages. These results are consistent with prior studies, which documented the positive impact of ESG on financial performance (Thanh Nguyen et al., 2022; Chininga et al., 2024).

The analysis of the three ESG pillars reveals that ENV, SOC, and GOV all have positive and statistically significant effects on TOBINQ, with coefficients of 0.524, 0.637, and 0.293, respectively ($p < 0.01$). This reflects the effective implementation of environmental, social, and governance initiatives that are highly valued by the market. The empirical results for the control variables indicate that R&D expenditure (RD), revenue growth (GROWTH), investment spending, and average GDP growth (GDPa_Growth) show a positive and statistically significant association with financial performance. This finding is consistent with Velte (2020), who also documented a positive effect of R&D on financial performance. However, firm size and growth were found to negatively affect financial performance. The findings not only reaffirm prior evidence (Alareeni & Hamdan, 2020; Thanh Nguyen et al., 2022; Chininga et al., 2024; Alareeni & Hamdan, 2020; Le, 2024; Matemane et al., 2024; Mohammad & Wasiuzzaman, 2021) but also extend the literature by providing new empirical insights within the distinctive context of Asian economies.

Table 6. Regression results of ESG (ENV, SOC, and GOV) on TOBINQ

Variables	(1)	(2)	(3)	(4)
	TOBINQ	TOBINQ	TOBINQ	TOBINQ
ESG	0.802***			
	(10.538)			
ENV		0.524***		
		(8.906)		
SOC			0.637***	
			(9.811)	
GOV				0.293***
				(5.608)
SIZE	−0.340***	−0.333***	−0.332***	−0.299***
	(−26.116)	(−25.486)	(−26.164)	(−25.860)
LEV	−1.748***	−1.787***	−1.735***	−1.766***
	(−23.258)	(−23.757)	(−23.059)	(−23.441)
RD	3.279***	3.448***	3.262***	3.552***
	(7.912)	(8.460)	(7.870)	(8.714)
GROWTH	0.815***	0.814***	0.812***	0.815***
	(14.018)	(14.021)	(13.919)	(13.985)
CapEx	2.048***	2.127***	1.998***	2.268***
	(4.942)	(5.134)	(4.800)	(5.469)
lnAGE	−0.349***	−0.354***	−0.345***	−0.335***
	(−14.267)	(−14.384)	(−14.076)	(−13.642)
GDPa_Growth	1.229*	1.317**	1.116*	1.202*
	(1.877)	(2.007)	(1.701)	(1.827)
CPI	−1.291*	−1.211*	−1.345**	−1.398**
	(−1.927)	(−1.802)	(−2.007)	(−2.071)
Constant	9.175***	9.194***	9.114***	8.577***
	(38.101)	(37.210)	(38.177)	(38.520)
Observations	19,430	19,430	19,430	19,430
Adjusted R-squared	0.309	0.307	0.308	0.305
Country FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

3.4. The moderating effect of M_score on the ESG–financial performance relationship

Table 7 presents the moderating effect of M_score on the ESG–financial performance relationship, to test hypothesis H2. The ESG variable is not

statistically significant for TOBINQ (coefficient = 0.101, $p > 0.1$). However, the interaction term ESG×M_score has a positive and statistically significant impact (coefficient = 0.755, $p < 0.05$), indicating that M_score positively moderates and increases the impact of ESG on financial performance. For the individual ESG pillars, the ENV pillar has a positive and highly significant effect on financial performance (0.435, $p < 0.01$), indicating that environmental performance makes a substantial contribution to financial performance. Furthermore, the positive interaction term of GOV×M_score (0.538, $p < 0.1$) indicates that M_score plays a critical role in enhancing the effectiveness of the GOV pillar in improving financial performance. Regarding the moderating variable (M_score) in all four models, M_score has a positive impact on TOBINQ, with coefficients ranging from 1.320 to 1.626 and highly statistically significant at $p < 0.01$. This finding emphasizes that M_score serves as a critical determinant in enhancing financial performance. For the control variables, most results are highly statistically significant, consistent with prior research, and reinforcing the reliability of the model. These findings align with the agency theory perspective, which posits that managerial efficiency can mitigate conflicts of interest and allocate ESG-related resources optimally to generate shareholder value. Moreover, among the three ESG pillars, only the GOV × M_score demonstrates a significant moderating effect, emphasizing the pivotal role of governance capability in translating policies into tangible financial performance. This finding reinforces the view that sound governance practices are not merely symbolic but require active and effective managerial involvement to maximize financial performance. According to Singh and Gaur (2009), corporate governance not only contributes to organizational stability and transparency but also serves as a fundamental basis for achieving substantial long-term growth.

Table 7. Moderating role of managerial efficiency (M_score)

Variables	(1)	(2)	(3)	(4)
	TOBINQ	TOBINQ	TOBINQ	TOBINQ
ESG	0.101			
	(0.427)			
ENV		0.435***		
		(2.592)		
M_score_ENV		0.047		
		(0.194)		
SOC			0.186	
			(0.924)	
M_score_SOC			0.472	
			(1.624)	
GOV				−0.190
				(−0.929)
M_score_GOV				0.538*
				(1.859)
M_score	1.320***	1.626***	1.446***	1.398***
	(7.957)	(13.233)	(9.811)	(8.724)
M_score_ESG	0.755**			
	(2.229)			
SIZE	−0.320***	−0.319***	−0.315***	−0.286***
	(−25.046)	(−24.715)	(−25.204)	(−24.836)
LEV	−0.991***	−1.010***	−0.981***	−0.993***
	(−13.040)	(−13.309)	(−12.880)	(−13.040)
RD	5.078***	5.226***	5.072***	5.337***
	(12.171)	(12.709)	(12.125)	(12.965)
GROWTH	0.683***	0.680***	0.681***	0.678***
	(12.027)	(11.992)	(11.955)	(11.892)
CapEx	3.561***	3.595***	3.512***	3.738***
	(8.678)	(8.757)	(8.536)	(9.075)
LnAGE	−0.347***	−0.351***	−0.344***	−0.335***
	(−14.487)	(−14.567)	(−14.360)	(−13.894)
GDPa_Growth	1.415**	1.498**	1.316**	1.399**
	(2.193)	(2.320)	(2.036)	(2.160)
CPI	−1.467**	−1.369**	−1.506**	−1.522**
	(−2.241)	(−2.085)	(−2.300)	(−2.310)
Constant	7.644***	7.496***	7.515***	7.091***
	(27.476)	(28.130)	(28.007)	(27.588)
Observations	19,430	19,430	19,430	19,430
Adjusted R-squared	0.337	0.337	0.337	0.335
Country FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

3.5. Robustness tests

3.5.1. *Alternative measures of the dependent variable*

A robustness test was conducted to enhance the reliability of the research model; specifically, to examine the consistency of the results under alternative measures of financial performance. This study employed ROE as a substitute dependent variable, following prior studies such as Friede et al. (2015) and Nareswari et al. (2023).

http://dx.doi.org/10.21511/ppm.24(2).2026.47

Table 8. Alternative measurement of financial performance using ROE

Variables	(1)	(2)	(3)	(4)
	ROE	ROE	ROE	ROE
ESG	0.041***			
	(5.122)			
ENV		0.012**		
		(2.048)		
SOC			0.028***	
			(4.130)	
GOV				0.029***
				(4.956)
SIZE	0.003**	0.005***	0.004**	0.005***
	(1.961)	(3.008)	(2.427)	(3.345)
LEV	−0.227***	−0.228***	−0.226***	−0.227***
	(−16.933)	(−17.134)	(−16.880)	(−16.972)
RD	−0.577***	−0.564***	−0.576***	−0.566***
	(−14.339)	(−14.095)	(−14.328)	(−14.154)
GROWTH	0.103***	0.103***	0.103***	0.103***
	(13.187)	(13.176)	(13.163)	(13.213)
CapEx	0.275***	0.284***	0.275***	0.285***
	(6.377)	(6.569)	(6.346)	(6.616)
LnAGE	0.001	0.002	0.002	0.002
	(0.575)	(0.690)	(0.698)	(0.864)
GDPa_ Growth	0.177**	0.178**	0.172**	0.177**
	(2.404)	(2.410)	(2.330)	(2.397)
CPI	0.158**	0.158**	0.155**	0.152**
	(2.114)	(2.105)	(2.073)	(2.022)
Constant	0.059**	0.041	0.052*	0.031
	(2.166)	(1.505)	(1.909)	(1.243)
Observations	19,430	19,430	19,430	19,430
Adjusted R-squared	0.122	0.121	0.122	0.122
Country FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 8 presents the robustness test results using ROE as an alternative measure of financial performance. The findings indicate that ESG has a positive and significant effect on ROE (0.041, $p < 0.01$). When examined by individual pillars, ENV shows a positive and statistically significant impact ($p < 0.05$), suggesting that environmental activities can enhance capital efficiency. SOC demonstrates a positive and highly significant effect ($p < 0.01$), reflecting the benefits of improved labor relations, social welfare, and corporate reputation. GOV continues to play a prominent role (0.029, $p < 0.01$), affirming that effective governance not only strengthens investor confidence but also directly enhances shareholder returns and sustains financial performance. The coefficients for the control variables largely align with expectations from agency theory and prior studies (Jensen et al., 1976; Alareeni & Hamdan, 2020; Nareswari et al., 2023; Thanh Nguyen et al., 2022).

3.5.2. Sub-sample analysis: Comparing the impact of ESG on financial performance between developed and developing countries

Table 9 presents the regression results by country groups, where we conduct a sub-sample analysis between firms from developed and developing economies. Based on the classification framework of the Organisation for Economic Cooperation and Development (OECD), the International Monetary Fund (IMF) and the level of capital market development in Asia, the countries in the study sample were divided into two groups: developed economies, comprising Japan, Singapore, South Korea, Hong Kong, China and Taiwan; and developing economies, including India, Indonesia, Malaysia, the Philippines, Thailand and Vietnam. This approach enables a comparison of the magnitude and significance of ESG in contexts characterized by varying levels of transparency and stakeholder expectations.

For firms in developed countries, ESG performance is positively associated with TOBINQ, indicating that the market places a high value on ESG implementation efforts. Regarding each ESG pillar, both GOV and SOC have a positive impact on TOBINQ. This finding indicates that effective governance enhances financial performance, while social activities are also becoming an increasingly important factor in creating value for firms. In contrast, the ENV pillar has no significant impact, which may be explained by the institutionalization of environmental standards in developed markets, thereby limiting the ability to differentiate between firms. For firms in developing countries, ESG performance is also positively associated with TOBINQ, indicating that firms with higher ESG scores tend to be valued more highly by the market, even in the context of weaker institutional frameworks and regulatory environments. When analyzing each pillar, ENV, SOC and GOV factors have a

Table 9. ESG effect on financial performance for developed and developing countries

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Developed countries				Emerging countries			
	TOBINQ	TOBINQ	TOBINQ	TOBINQ	TOBINQ	TOBINQ	TOBINQ	TOBINQ
ESG	0.293***				1.687***			
	(4.446)				(10.218)			
SIZE	–0.263***	–0.249***	–0.263***	–0.249***	–0.448***	–0.464***	–0.426***	–0.369***
	(–16.618)	(–15.788)	(–17.094)	(–16.717)	(–19.636)	(–19.589)	(–19.133)	(–18.802)
LEV	–0.911***	–0.918***	–0.906***	–0.906***	–2.610***	–2.680***	–2.592***	–2.720***
	(–12.342)	(–12.419)	(–12.279)	(–12.212)	(–18.586)	(–19.134)	(–18.357)	(–19.476)
RD	4.602***	4.703***	4.599***	4.667***	2.084***	2.349***	1.877**	2.695***
	(9.502)	(9.848)	(9.511)	(9.674)	(2.611)	(2.988)	(2.354)	(3.437)
GROWTH	0.858***	0.854***	0.857***	0.855***	0.731***	0.732***	0.724***	0.744***
	(9.895)	(9.832)	(9.880)	(9.834)	(9.388)	(9.415)	(9.292)	(9.624)
CapEx	2.106***	2.194***	2.065***	2.204***	4.560***	4.368***	4.316***	4.486***
	(5.459)	(5.667)	(5.351)	(5.708)	(3.281)	(3.134)	(3.069)	(3.184)
lnAGE	–0.346***	–0.342***	–0.347***	–0.337***	–0.315***	–0.317***	–0.301***	–0.313***
	(–12.890)	(–12.650)	(–12.934)	(–12.592)	(–7.488)	(–7.523)	(–7.087)	(–7.391)
GDPa_Growth	–0.320	–0.281	–0.388	–0.291	5.075***	5.130***	5.001***	4.481***
	(–0.405)	(–0.356)	(–0.490)	(–0.368)	(3.827)	(3.842)	(3.752)	(3.340)
CPI	–1.453*	–1.493**	–1.452*	–1.529**	–10.210***	–9.834***	–10.346***	–10.422***
	(–1.947)	(–2.007)	(–1.948)	(–2.055)	(–5.186)	(–4.981)	(–5.223)	(–5.185)
ENV		0.077				1.310***		
		(1.492)				(10.215)		
SOC			0.277***				1.230***	
			(5.032)				(8.788)	
GOV				0.136**				0.535***
				(2.465)				(5.436)
Constant	7.589***	7.401***	7.616***	7.349***	11.123***	11.653***	10.907***	10.169***
	(24.101)	(23.294)	(24.508)	(24.635)	(28.639)	(28.197)	(28.334)	(28.172)
Observations	11,151	11,151	11,151	11,151	8,279	8,279	8,279	8,279
Adjusted R-squared	0.294	0.292	0.294	0.293	0.296	0.295	0.293	0.286
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

positive impact on TOBINQ. Notably, the GOV pillar continues to demonstrate a critical role, underscoring the importance of effective governance in enhancing financial performance. Thus, in developed countries, focusing on enhancing corporate governance and social activities may represent an optimal strategy for increasing financial performance. By contrast, in developing economies, comprehensive investments across all ESG dimensions contribute to improved financial performance and reinforce investor confidence, thereby providing a basis for more informed and optimal investment decisions tailored to different groups of firms.

3.5.3. Comparing the impact of ESG on financial performance between the full sample and the sample excluding Chinese firms

Since Chinese observations account for a substantial proportion of the research sample, we conduct an additional analysis to evaluate the influence and stability of the research results. Specifically, we compare the impact of ESG on financial performance between the full sample and the sample excluding Chinese observations. Given the large scale of the Chinese economy and its unique institutional and business environment, Chinese firms may introduce bias into

http://dx.doi.org/10.21511/ppm.24(2).2026.47

Table 10. Comparative impact of ESG on financial performance in the full sample and the sample excluding Chinese firms

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	China				Without China			
	TOBINQ	TOBINQ	TOBINQ	TOBINQ	TOBINQ	TOBINQ	TOBINQ	TOBINQ
ESG	0.675***				0.162**			
	(3.112)				(2.202)			
SIZE	−0.722***	−0.741***	−0.707***	−0.659***	−0.407***	−0.402***	−0.414***	−0.394***
	(−6.318)	(−6.511)	(−6.312)	(−6.068)	(−6.473)	(−6.390)	(−6.612)	(−6.411)
LEV	−0.990***	−0.985***	−1.016***	−1.074***	−1.273***	−1.276***	−1.267***	−1.273***
	(−3.879)	(−3.869)	(−3.955)	(−4.182)	(−9.541)	(−9.565)	(−9.491)	(−9.524)
RD	−8.387***	−8.468***	−8.441***	−8.381***	−3.634***	−3.627***	−3.660***	−3.622***
	(−4.274)	(−4.319)	(−4.308)	(−4.307)	(−3.505)	(−3.498)	(−3.523)	(−3.493)
GROWTH	0.460***	0.463***	0.462***	0.466***	0.298***	0.299***	0.298***	0.300***
	(5.684)	(5.720)	(5.694)	(5.749)	(6.423)	(6.432)	(6.407)	(6.442)
CapEx	−9.410	−8.688	−9.461	−9.053	1.458***	1.461***	1.441***	1.447***
	(−0.915)	(−0.906)	(−0.903)	(−0.887)	(4.067)	(4.076)	(4.022)	(4.036)
lnAGE	−0.474***	−0.510***	−0.421***	−0.347***	−0.171**	−0.153**	−0.194***	−0.122*
	(−3.884)	(−4.133)	(−3.376)	(−2.874)	(−2.576)	(−2.294)	(−2.899)	(−1.806)
GDPa_Growth	2.522**	2.653**	2.298**	1.881*	0.294	0.291	0.297	0.283
	(2.261)	(2.369)	(2.069)	(1.745)	(1.127)	(1.118)	(1.138)	(1.086)
CPI	−5.349***	−5.489***	−5.096***	−4.613***	0.499	0.507	0.478	0.507
	(−3.864)	(−3.938)	(−3.692)	(−3.393)	(1.281)	(1.302)	(1.228)	(1.304)
ENV		0.600***				0.071		
		(3.882)				(1.246)		
SOC			0.448**				0.200***	
			(2.284)				(3.589)	
GOV				−0.037				−0.072
				(−0.299)				(−1.352)
Constant	16.348***	16.831***	16.090***	15.226***	10.355***	10.242***	10.549***	10.055***
	(9.276)	(9.483)	(9.348)	(9.283)	(9.899)	(9.755)	(10.119)	(10.011)
Observations	4,241	4,241	4,241	4,241	15,189	15,189	15,189	15,189
Adjusted R−squared	0.810	0.811	0.810	0.810	0.821	0.821	0.821	0.821
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

the full-sample regression results. This analysis, therefore, examines whether the findings are overly dominated by Chinese firms. Table 10 presents the results for the full sample, indicating that ESG has a positive and significant impact on financial performance (0.675, $p < 0.01$). When excluding observations from China, ESG continues to demonstrate a positive impact on financial performance (0.162, $p < 0.05$). Although the coefficient value decreases, both models show positive and statistically significant effects, while the direction of the ESG variable's effects remains unchanged. This suggests that the findings are not driven by the specific characteristics of China and reinforces the robustness and reliability of the ESG–financial performance relationship within the Asian context.

3.6. Robustness test using a one-period lagged ESG variable

To mitigate concerns regarding endogeneity arising from potential reverse causality between ESG performance and financial performance, a robustness test is conducted by replacing the contemporaneous ESG variable with its one-year lagged value. The results presented in Table 11 indicate that the one-year lagged ESG variable continues to exert a positive and statistically significant effect on TOBINQ ($\beta = 0.621$, $p < 0.01$). Similarly, all three ESG pillars (ENV, SOC, and GOV) maintain positive and statistically significant effects at the 1% level. The consistency in coefficient signs, relative magnitudes, and statistical significance across both the baseline model and the lagged ESG model

provides strong evidence of the robustness of the study's findings. Moreover, the use of a one-year lagged ESG variable helps ensure that ESG activities precede the measurement of financial performance, thereby reducing the likelihood of reverse causality. Therefore, the main findings regarding the positive impact of ESG performance on financial performance remain robust after accounting for potential endogeneity concerns.

Table 11. Results using the one-period lagged ESG variable

Variables	(1)	(2)	(3)	(4)
	TOBINQ	TOBINQ	TOBINQ	TOBINQ
L.ESG	0.621***			
	(7.845)			
L.ENV		0.383***		
		(6.211)		
L.SOC			0.495***	
			(7.295)	
L.GOV				0.257***
				(4.764)
SIZE	−0.316***	−0.308***	−0.310***	−0.286***
	(−22.233)	(−21.681)	(−22.404)	(−22.691)
LEV	−1.664***	−1.692***	−1.654***	−1.671***
	(−21.565)	(−21.925)	(−21.417)	(−21.605)
RD	2.924***	3.068***	2.922***	3.124***
	(6.920)	(7.391)	(6.919)	(7.510)
GROWTH	0.849***	0.845***	0.845***	0.844***
	(13.024)	(12.982)	(12.925)	(12.931)
CapEx	2.224***	2.287***	2.192***	2.398***
	(5.117)	(5.262)	(5.021)	(5.519)
lnAGE	−0.281***	−0.284***	−0.277***	−0.266***
	(−10.777)	(−10.846)	(−10.628)	(−10.195)
GDPa_Growth	−0.038	0.050	−0.105	−0.094
	(−0.052)	(0.069)	(−0.144)	(−0.128)
CPI	−1.543**	−1.471**	−1.592**	−1.507**
	(−2.076)	(−1.976)	(−2.141)	(−2.021)
Constant	8.627***	8.606***	8.573***	8.151***
	(32.321)	(31.466)	(32.476)	(33.351)
Observations	16,499	16,499	16,499	16,499
Adjusted R-squared	0.289	0.287	0.288	0.286
Country FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

4. DISCUSSION

The empirical results are largely in accordance with the predictions of stakeholder theory and agency theory, and they correspond with an increasing body of international evidence regarding the ESG–financial performance relationship. The positive and statistically significant effect of ESG performance on Tobin's Q (coefficient = 0.802, $p < 0.01$) confirms that firms with stronger ESG practices are rewarded by the market with higher valuations. This finding is in line with prior studies (Alareeni & Hamdan, 2020; Thanh Nguyen et al., 2022; Le, 2024), suggesting that the value-enhancing effect of ESG extends to the heterogeneous institutional environment of Asia. The effect is considerably larger for developing economies (coefficient = 1.687) than for developed economies (coefficient = 0.293) within the Asian sample. This differential likely reflects the scarcity premium that accrues to early ESG adopters in markets where such practices remain uncommon, amplifying the reputational and signaling benefits of ESG engagement.

The pillar-level analysis reveals that ENV, SOC, and GOV scores are each positively and significantly associated with Tobin's Q across the full sample, which contrasts with evidence from developed markets where the environmental pillar often fails to generate incremental market value (Velte, 2017; Buallay, 2019). This divergence may reflect the fact that, unlike in Europe or North America, environmental accountability remains a genuinely differentiating factor in Asia, where standards are still evolving. The sub-sample analysis reinforces this interpretation: in developed Asian markets, the ENV pillar shows no significant effect on financial performance, while GOV and SOC continue to drive value creation. This pattern mirrors findings from Western contexts and suggests that as institutional frameworks mature, the marginal informational value of environmental practices diminishes. Conversely, companies in developing Asian economies gain from enhancements in all three ESG dimensions, highlighting the necessity of thorough ESG engagement in contexts of insufficient regulatory oversight.

The moderating role of M_score is a substantive contribution of this study. The significant positive interaction term (ESG × M_score = 0.755, $p < 0.05$) indicates that managerial efficiency amplifies the financial returns to ESG investment, extending the findings of Mahanta et al. (2024) and Welch and Yoon (2023), who document that capable managers are more effective at selecting and executing ESG projects that create shareholder value. From the standpoint of agency theory, high-ability managers

http://dx.doi.org/10.21511/ppm.24(2).2026.47

mitigate principal-agent conflicts by more convincingly committing to ESG strategies and converting ESG resources into quantifiable performance outcomes. The finding that only the GOV × M_score interaction is significant at the pillar level (coefficient = 0.538, $p < 0.1$) further implies that governance improvements require active and competent managerial involvement to generate real financial value, rather than constituting symbolic compliance alone. This result is consistent with the argument of Singh and Gaur (2009) that corporate governance effectiveness depends critically on the human capital of firm leadership.

The robustness analyses further reinforce these conclusions. Replacing Tobin's Q with ROE yields qualitatively consistent results across all ESG pillars, confirming that the positive ESG–financial performance relationship is not confined to market-based valuations but also manifests in accounting-based performance measures. The stability of the ESG coefficient after excluding Chinese observations (full sample: 0.675; excluding China: 0.162, both positive and significant) further confirms that the findings are not artificially driven by the disproportionate weight of Chinese firms and that the ESG–financial performance relationship holds robustly across the broader Asian institutional context. Notwithstanding this robustness check, it is acknowledged that Japan, Hong Kong, and Taiwan together account for a further 47% of the sample, and their institutional characteristics – including more mature ESG disclosure frameworks, stronger investor protection, and earlier adoption of corporate governance reforms – may exert disproportionate influence on the full-sample estimates. The sub-sample analysis separating developed and developing economies partially addresses this concern by isolating the ESG–financial performance relationship within each institutional context. The consistently positive and significant coefficients across both sub-samples suggest that the findings are not confined to any single institutional setting, although future research employing country-by-country estimation or multilevel modeling would provide a more granular assessment of cross-country heterogeneity.

CONCLUSION

This study examined the impact of ESG performance on financial performance and the moderating role of M_score, using an unbalanced panel of 19,430 observations from publicly listed firms across 12 Asian economies over the period 2004–2023.

There are three main findings. First, ESG performance exerts a positive and statistically significant impact on financial performance as measured by Tobin's Q and ROE, with each of the three individual pillars – environmental, social, and governance – contributing independently to this outcome. Second, M_score positively moderates the ESG–financial performance relationship, confirming that managerial efficiency is a critical boundary condition: firms led by more capable managers generate greater financial returns from ESG investment. Third, sub-sample analyses reveal that the magnitude of the ESG effect is stronger in developing economies, where all three pillars drive value creation, whereas in developed Asian markets, only the governance and social pillars generate significant market premiums.

These findings carry important implications for both theory and practice. The results support stakeholder theory by demonstrating that ESG activities generate value through enhanced reputation and broadened stakeholder relationships, while also validating agency theory by showing that managerial capability is essential to realizing those benefits. For policymakers, the findings suggest that regulatory efforts to strengthen ESG disclosure and governance quality in Asian markets are likely to yield measurable financial benefits, particularly in developing economies where institutional frameworks are still maturing. For firm managers and investors, the results indicate that ESG investment strategies should be accompanied by attention to managerial quality and that optimal investment priorities differ between developed and developing country contexts. Future research could extend this evidence by exploring non-linear ESG–financial performance dynamics, examining sector-specific moderating factors, and incorporating financial institutions currently excluded from the sample.

AUTHOR CONTRIBUTIONS

Conceptualization: Ngoc Bich Thi Duong, Ngoc Tien Nguyen.
Data curation: Ngoc Bich Thi Duong, Vinh Khuong Nguyen, Ngoc Tien Nguyen.
Formal analysis: Ngoc Bich Thi Duong, Vinh Khuong Nguyen, Ngoc Tien Nguyen.
Investigation: Ngoc Bich Thi Duong, Vinh Khuong Nguyen, Ngoc Tien Nguyen.
Methodology: Ngoc Bich Thi Duong, Vinh Khuong Nguyen, Ngoc Tien Nguyen.
Project administration: Ngoc Bich Thi Duong, Ngoc Tien Nguyen.
Resources: Ngoc Bich Thi Duong, Ngoc Tien Nguyen.
Software: Ngoc Bich Thi Duong, Vinh Khuong Nguyen, Ngoc Tien Nguyen.
Supervision: Ngoc Bich Thi Duong, Vinh Khuong Nguyen, Ngoc Tien Nguyen.
Validation: Ngoc Bich Thi Duong, Ngoc Tien Nguyen.
Visualization: Ngoc Bich Thi Duong, Ngoc Tien Nguyen.
Writing – original draft: Ngoc Bich Thi Duong, Ngoc Tien Nguyen.
Writing – review & editing: Ngoc Bich Thi Duong, Vinh Khuong Nguyen, Ngoc Tien Nguyen.

REFERENCES

1. Ahmad, S., Mohti, W., Khan, M., Irfan, M., & Bhatti, O. K. (2024). Creating a bridge between ESG and firm's financial performance in Asian emerging markets: Catalytic role of managerial ability and institutional quality. *Journal of Economic and Administrative Sciences, 421*(2), 496-518. https://doi.org/10.1108/JEAS-01-2024-0004
2. Al Amosh, H., Khatib, S. F. A., & Ananzeh, H. (2023). Environmental, social and governance impact on financial performance: Evidence from the Levant countries. *Corporate Governance, 23*(3), 493-513. https://doi.org/10.1108/CG-03-2022-0105
3. Al Azizah, U. S., & Haron, R. (2025). The sustainability imperative: Evaluating the effect of ESG on corporate financial performance before and after the pandemic. *Discover Sustainability, 6*(1), Article 529. https://doi.org/10.1007/s43621-025-01401-8
4. Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance, 20*(7), 1409-1428. https://doi.org/10.1108/CG-06-2020-0258
5. Andreou, P. C., Ehrlich, D., Karasamani, I., & Louca, C. (2015). Managerial ability and firm performance: Evidence from the global financial crisis. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2633216
6. Atan, R., Alam, M. M., Said, J., & Zamri, M. (2018). The impacts of environmental, social, and governance factors on firm performance: Panel study of Malaysian companies. *Management of Environmental Quality: An International Journal, 29*(2), 182-194. https://doi.org/10.1108/MEQ-03-2017-0033
7. Aydoğmuş, M., Gülay, G., & Ergun, K. (2022). Impact of ESG performance on firm value and profitability. *Borsa Istanbul Review, 22*(suppl_2), S119-S127. https://doi.org/10.1016/j.bir.2022.11.006
8. Bagh, T., Fuwei, J., & Khan, M. A. (2024). From risk to resilience: Climate change risk, ESG investments engagement and firm's value. *Heliyon, 10*(5). https://doi.org/10.1016/j.heliyon.2024.e26757
9. Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal, 30*(1), 98-115. https://doi.org/10.1108/MEQ-12-2017-0149
10. Chininga, E., Alhassan, A. L., & Zeka, B. (2024). ESG ratings and corporate financial performance in South Africa. *Journal of Accounting in Emerging Economies, 14*(3), 692-713. https://doi.org/10.1108/JAEE-03-2023-0072
11. Demerjian, P., Lev, B., & McVay, S. (2011). Quantifying managerial ability: A new measure and validity tests. *Management Science, 58*(7), 1229-1248. https://doi.org/10.1287/mnsc.1110.1487
12. Dkhili, H. (2024). Does environmental, social and governance (ESG) affect market performance? The moderating role of competitive advantage. *Competitiveness Review, 34*(2), 327-352. https://doi.org/10.1108/CR-10-2022-0149
13. Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of multilatinas: Moderating effects of geographic international diversification and financial slack. *Journal of Business Ethics, 168*(2), 315-334. https://doi.org/10.1007/s10551-019-04177-w
14. El Khoury, R., Nasrallah, N., & Alareeni, B. (2023). ESG and financial performance of banks in the MENAT region: Concavity-convexity patterns. *Journal of Sustainable Finance and Investment, 13*(1), 406-430. https://doi.org/10.1080/20430795.2021.1929807
15. Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston, MA: Pitman.
16. Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance and Investment, 5*(4), 210-233. https://

http://dx.doi.org/10.21511/ppm.24(2).2026.47

doi.org/10.1080/20430795.2015.1118917

17. Garcia, A. S., & Orsato, R. J. (2020). Testing the institutional difference hypothesis: A study about environmental, social, governance, and financial performance. *Business Strategy and the Environment, 29*(8), 3261-3272. https://doi.org/10.1002/bse.2570

18. Handoyo, S., & Anas, S. (2024). The effect of environmental, social, and governance (ESG) on firm performance: The moderating role of country regulatory quality and government effectiveness in ASEAN. *Cogent Business and Management, 11*(1). https://doi.org/10.1080/23311975.2024.2371071

19. Ho, L., Nguyen, V. H., & Dang, T. L. (2024). ESG and firm performance: Do stakeholder engagement, financial constraints and religiosity matter? *Journal of Asian Business and Economic Studies, 31*(4), 263-276. https://doi.org/10.1108/JABES-08-2023-0306

20. Inam Bhutta, A., Sheikh, M. F., Munir, A., Naz, A., & Saif, I. (2021). Managerial ability and firm performance: Evidence from an emerging market. *Cogent Business and Management, 8*(1). https://doi.org/10.1080/23311975.2021.1879449

21. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

22. Jung, Y. L., & Yoo, H. S. (2023). Environmental, social, and governance activities and firm performance: Global evidence and the moderating effect of market competition. *Corporate Social Responsibility and Environmental Management, 30*(6), 2830-2839. https://doi.org/10.1002/csr.2518

23. Le, L. T. (2024). Impact of environmental, social and governance practices on financial performance: Evidence from listed companies in Southeast Asia. *Cogent Business and Management, 11*(1). https://doi.org/10.1080/23311975.2024.2379568

24. Lee, M. T., Raschke, R. L., & Krishen, A. S. (2022). Signaling green! firm ESG signals in an interconnected environment that promote brand valuation. *Journal of Business Research, 138,* 1-11. https://doi.org/10.1016/J.JBUSRES.2021.08.061

25. Mahanta, A., Chandra Sahu, N., Kumar Behera, P., & Kumar, P. (2024). Variations in financial performance of firms with ESG integration in business: The mediating role of corporate efficiency using DEA. *Green Finance, 6*(3), 518-562. https://doi.org/10.3934/gf.2024020

26. Maji, S. G., & Lohia, P. (2023). Environmental, social and governance (ESG) performance and firm performance in India. *Society and Business Review, 18*(1), 175-194. https://doi.org/10.1108/SBR-06-2022-0162

27. Matemane, R., Msomi, T., & Ngundu, M. (2024). Environmental, social and governance and financial performance nexus in South African listed firms. *South African Journal of Economic and Management Sciences, 27*(1). https://doi.org/10.4102/sajems.v27i1.5387

28. Mohammad, W. M. W., & Wasiuzzaman, S. (2021). Environmental, social and governance (ESG) disclosure, competitive advantage and performance of firms in Malaysia. *Cleaner Environmental Systems, 2*. https://doi.org/10.1016/j.cesys.2021.100015

29. Naeem, N., Cankaya, S., & Bildik, R. (2022). Does ESG performance affect the financial performance of environmentally sensitive industries? A comparison between emerging and developed markets. *Borsa Istanbul Review, 22*(suppl_2), S128-S140. https://doi.org/10.1016/J.BIR.2022.11.014

30. Nareswari, N., Tarczynska-Luniewska, M., & Al Hashfi, R. U. (2023). Analysis of environmental, social, and governance performance in Indonesia: Role of ESG on corporate performance. *Procedia Computer Science, 225,* 1748-1756. https://doi.org/10.1016/j.procs.2023.10.164

31. Qian, W., Dissanayake, D., Leong, S., Kuruppu, S., & Tilt, C. (2025). Sustainability reporting in Indo-Pacific countries: An integrative response to local and global frameworks. *Meditari Accountancy Research, 33*(7), 157-198. https://doi.org/10.1108/MEDAR-06-2024-2540

32. Singh, D. A., & Gaur, A. S. (2009). Business group affiliation, firm governance, and firm performance: Evidence from china and India. *Corporate Governance: An International Review, 17*(4), 411-425. https://doi.org/10.1111/j.1467-8683.2009.00750.x

33. Singhania, M., & Saini, N. (2022). Quantification of ESG regulations: A cross-country benchmarking analysis. *Vision: The Journal of Business Perspective, 26*(2), 163-171. https://doi.org/10.1177/09722629211054173

34. Tahtamoni, T., Kabir Hassan, M., & Sohag, K. (2025). Impact of ESG practices and economic volatility on firm performance in the US IT Sector: Evidence from 2010–2022. *Journal of Environmental Management, 393*. https://doi.org/10.1016/j.jenvman.2025.127048

35. Thanh Nguyen, D., Gia Hoan, T., & Gia Tran, H. (2022). Help or hurt? The impact of ESG on firm performance in S&P 500 non-financial firms. *Australasian Accounting, Business and Finance Journal, 16*(2). Retrieved from https://www.uowoa-journals.org/aabfj/article/id/988/

36. Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility, 8*(2), 169-178. https://doi.org/10.1108/JGR-11-2016-0029

37. Velte, P. (2020). Does CEO power moderate the link between ESG performance and financial performance? A focus on the German two-tier system. *Management Research Review, 43*(5), 497-520. https://doi.org/10.1108/MRR-04-2019-0182

38. Welch, K., & Yoon, A. (2023). Do high-ability managers choose ESG projects that create shareholder value? Evidence from employee opinions. *Review of Accounting Studies, 28*(4), 2448-2475. https://doi.org/10.1007/s11142-022-09701-4

39. Wooldridge, J. M. (2012). *Introductory econometrics. A modern approach* (5th ed.). South-Western Cengage Learning. Retrieved from https://cbpbu.ac.in/userfiles/file/2020/STUDY_MAT/ECO/2.pdf