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THE LINK BETWEEN ESG, FIRM'S FINANCIAL AND MARKET PERFORMANCE IN MALAYSIA: THE MODERATING ROLE OF FIRM SIZE, INDEX RECOGNITION, AND SHARIAH COMPLIANCE

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ABSTRACT

This study investigates the relationship between Environmental, Social, and Governance (ESG) performance and firm performance among 338 firms (747 firm-year observations) listed on Bursa Malaysia from 2018 to 2023. Using a fixed-effects panel regression approach, the analysis evaluates the direct impact of ESG performance on financial performance, measured by return on equity (ROE), and market performance, measured by Tobin's Q (TQ). The results show that ESG performance alone does not significantly enhance firm outcomes, with ESG scores displaying a significant negative association with market valuation, suggesting that the high costs and complexities of implementing ESG initiatives may outweigh short-term benefits in investor assessments. Firm-specific characteristics are found to moderate the ESG - performance relationship. Larger firms show weaker market outcomes when ESG engagement is high, reflecting delayed returns and greater implementation challenges. In contrast, external validation through inclusion in the FTSE4Good Bursa Malaysia Index (F4GBM) positively moderates the ESG-TQ relationship, underscoring the importance of recognition by sustainability indices in strengthening market confidence whereas Shariah compliance does not exhibit significant moderating effects. The findings highlight the multifaceted and context-dependent nature of ESG outcomes in Malaysia, offering valuable implications for firms, investors, and regulators seeking to align sustainability with financial and market success.

Keywords: ESG performance, firm performance, Shariah compliance, FTSE4Good Bursa Malaysia index, Malaysian stock exchange.

INTRODUCTION

The concept of Environmental, Social, and Governance (ESG) which started as a peripheral element of corporate social responsibility (CSR), has gradually evolved into a mainstream framework for evaluating firms' sustainability, accountability, and long-term viability. The idea that ESG captures non-financial factors such as environmental stewardship, social responsibility, and governance quality has increasingly been recognized as a critical factor for corporate success (Friede et al., 2015; Ioannou & Serafeim, 2019). Although initially introduced as a compliance-oriented issue, ESG practices are now considered integral to risk management, competitiveness, and investor confidence. Rising global awareness of climate change, social equity, and governance integrity has pushed firms to embed ESG considerations into their strategies and disclosures, reshaping corporate behaviour and investment flows (Eccles & Youmans, 2015). Strong ESG performance may also attract long-term investors, build stakeholder confidence, and mitigate risks associated with ESG factors (Bruna et al., 2022; Friede et al., 2015; Mooneeapen et al., 2022; Wang et al., 2023). Corporations around the world are now voluntarily adopting more ESG practices, suggesting they may be receiving economic benefits from these activities (Yoon et al., 2018).

Researchers have extensively investigated the interrelationship between ESG practices and firm performance, and, interestingly, the results remain mixed. Meta-analyses suggest that most studies report a positive relationship between ESG performance and financial outcomes (Alshehhi et al., 2018; Whelan et al., 2021). Bruna et al. (2022) argued that a firm's commitment to sustainability and ethical operations is positively associated with firm performance. Firms with strong ESG scores often enjoy enhanced profitability, reduced risk exposure, and improved market valuation (Aydoğmuş et al., 2022; Yoon et al., 2018). Governance mechanisms have been shown to significantly strengthen firm performance in emerging markets (Handoyo & Anas, 2024). From the theoretical perspective, stakeholder theory (Freeman, 1994) supports this positive link by emphasizing how ESG activities foster legitimacy, trust, and long-term value creation across stakeholder groups. In contrast, agency theory (Jensen & Meckling, 1976) warns that ESG may impose costs that benefit managers rather than shareholders, potentially undermining firm value. These contrasting views explain why evidence remains inconclusive, with some studies reporting neutral or negative results (Brammer & Pavelin, 2006; Duque-Grisales & Aguilera-Caracuel, 2021; Grimaldi et al., 2020).

In ASEAN, ESG adoption is accelerating but remains uneven across member states. Singapore has established itself as a regional leader through mandatory sustainability reporting and alignment with international frameworks such as the Task Force on Climate-related Financial Disclosures (TCFD). Indonesia and Thailand have also advanced in integrating ESG into capital markets through sustainability indices and disclosure requirements. However, challenges such as regulatory fragmentation, resource constraints, and varying governance standards create divergence in ESG outcomes across the region (Ab Aziz et al., 2025; Handoyo & Anas, 2024). For firms in the ASEAN region, ESG controversies, including environmental degradation and governance failures, pose significant risks to reputation and firm value. In contrast, strong governance mechanisms such as gender-diverse boards and sustainability committees have been shown to mitigate these risks (Ab Aziz et al., 2025). These dynamics make ASEAN an important laboratory for testing the ESG-performance nexus in emerging markets.

As a developing economy, Malaysia offers a distinctive context for examining the ESG-performance nexus, characterized by a rapid transition from voluntary to mandatory disclosure (Jamal et al., 2021). This institutional evolution began with the 2014 launch of the FTSE4Good Bursa Malaysia (F4GBM)

Index and the 2015 introduction of the mandatory Sustainability Reporting Framework. Regulatory pressure was further intensified by the Malaysian Code on Corporate Governance (MCCG, updates in 2017 & 2021), which explicitly integrated ESG risks into board responsibilities. This evolving landscape creates a 'compliance-heavy' environment in which firms may prioritize meeting disclosure standards over strategic value creation, potentially explaining the disconnect between ESG efforts and immediate financial returns.

Despite these advances, empirical research on ESG and firm performance in Malaysia remains limited and outdated, with many studies relying on data prior to 2017 (Lee & Isa, 2022; Mohammad & Wasiuzzaman, 2021). Moreover, firm-specific moderators such as size, Shariah compliance, and ESG-focused investor presence remain underexplored. Given Malaysia's dual commitments to Islamic finance principles and sustainability, these factors may uniquely shape how ESG affects both financial outcomes (e.g., return on equity) and market-based performance (e.g., Tobin's Q).

In theory, firms with strong ESG performance, moderated by factors such as market capitalization, Shariah governance, and ESG-focused investors, should achieve superior financial and market outcomes. Prior research in developing markets further suggests that ESG-performance links are context-dependent, influenced by institutional quality, cultural norms, and governance mechanisms (Jamal et al., 2021; Khan, 2022). This gap underscores the need for updated, Malaysia-specific evidence to assess whether ESG initiatives truly enhance financial and market performance within an evolving regulatory and socio-economic environment.

This study addresses this gap by investigating the relationship between ESG performance and firm outcomes among Malaysian listed companies, while considering moderating factors such as firm size, Shariah governance, and ESG-oriented investors. By situating Malaysia within the broader ASEAN context, the study contributes to the global ESG literature on emerging markets. It provides practical insights for investors, managers, and policymakers seeking to balance sustainability with profitability.

This study distinguishes itself from the prior literature in three key dimensions. First, unlike prior Malaysian research that predominantly uses data prior to the 2017 MCCG reforms, this study examines the 2018–2023 period, capturing the market's specific response to the transition from voluntary to mandatory ESG disclosure. Second, while previous works often treat ESG as the only value driver, our framework incorporates a multi-dimensional moderation analysis, integrating resource capacity (Firm size), external validation (F4GBM), and ethical alignment (Shariah compliance), to isolate the specific conditions under which ESG impacts financial outcomes. Finally, by explicitly contrasting Agency theory (focusing on implementation costs) with Stakeholder theory, this research offers a robust theoretical explanation for the 'ESG discount' often observed in developing economies, interpreting it as a tension between short-term compliance burdens and long-term value realization.

LITERATURE REVIEW AND HYPOTHESES

Theoretical Background

The connection among ESG performance, corporate governance, and business outcomes can be analysed through two primary theoretical frameworks: Stakeholder theory (Freeman, 1994) and Agency theory (Jensen & Meckling, 1976). These frameworks provide divergent interpretations of the impact of ESG activities on business value, influencing the scholarly discourse regarding the financial implications of sustainability policies.

Stakeholder theory posits that firms are accountable not only to shareholders but also to a broader set of stakeholders, including employees, customers, suppliers, regulators, and the broader community (Freeman, 1994). According to this perspective, ESG initiatives are viewed as mechanisms for addressing diverse stakeholder expectations, thereby enhancing a firm's legitimacy, trust, and long-term sustainability (Donaldson & Preston, 1995; Freeman et al., 2010). For instance, environmental initiatives such as reducing carbon emissions demonstrate responsibility toward society and future generations, while strong governance practices signal accountability and fairness to investors. Friede et al. (2015) and Whelan et al. (2021) suggested that firms engaging in ESG practices can benefit from reduced risk exposure, improved stakeholder relations, and greater access to capital. Firms that score highly on ESG metrics are often more attractive to long-term, sustainability-oriented investors (Eccles & Youmans, 2015; Khan, 2022). Besides, governance structures such as independent boards and gender diversity committees are found to strengthen ESG performance and mitigate reputational risks suggesting that ESG is not simply a cost but a strategic investment that fosters enduring competitive advantage and financial resilience (Ab Aziz et al., 2025).

Unlike stakeholder theory, Agency theory views ESG initiatives more critically and emphasizes the conflict of interest between managers (agents) and shareholders (principals), where managers may pursue personal agendas that do not necessarily maximize shareholder value (Jensen & Meckling, 1976). ESG practices may be deemed as an agency cost if managers allocate resources to sustainability projects for reputational gains, personal values, or external legitimacy rather than direct financial returns (Barnea & Rubin, 2010). For example, investing heavily in environmental technologies or extensive reporting could reduce profitability if such initiatives fail to generate measurable returns. Brammer et al. (2006); Alareeni and Hamdan (2020) showed that ESG adoption can impose substantial compliance costs, lead to inefficient resource allocation, or dilute the focus on profit maximization, especially in firms operating in resource-intensive or financially constrained environments. Agency theory, thus, explains the mixed or negative results observed in parts of the ESG literature, particularly in developing economies where regulatory enforcement is weaker, and market pressures for sustainability are less pronounced (Duque-Grisales & Aguilera-Caracuel, 2021).

Recent empirical strands have reinvigorated the agency-theoretic view of ESG, particularly in the context of uncertainty and risk. Ooi et al. (2024) argue that in volatile economic environments, managers may utilize ESG activities as a hedging mechanism, potentially altering corporate risk-taking behaviours in ways that do not necessarily align with shareholder wealth maximization. This aligns with the 'over-investment' hypothesis, where ESG initiatives are pursued to buffer managerial reputation rather than to drive firm value. Furthermore, recent evidence by Brighi et al. (2025) suggests that while ESG can mitigate the impact of controversies, the direct engagement in ESG often correlates negatively with short-term financial returns, consistent with the view that high compliance and implementation costs in developing markets can exacerbate agency conflicts by diverting scarce resources away from core operational growth.

Stakeholder and Agency theories highlight the dual nature of ESG adoption. ESG can be a strategic tool for enhancing stakeholder value and long-term firm performance (stakeholder perspective), but it can also represent a diversion of resources that erodes shareholder wealth if not managed effectively (agency perspective). This conflict may underscore the importance of corporate governance mechanisms, such as board independence, Shariah governance in Islamic finance contexts, and oversight by ESG-focused investors, that can align managerial decisions with both shareholder interests and broader stakeholder expectations (Khan, 2022; Mohammad & Wasiuzzaman, 2024; Sukor & Abdul Halim, 2022). In the context of Malaysia and ASEAN, where ESG frameworks are still evolving, these theories may provide a valuable foundation for analysing the context-dependent impact of ESG practices. In summary, Stakeholder theory highlights how firms can leverage ESG to meet regulatory reforms (e.g., MCCG 2017, F4GBM Index) and attract global investors, while Agency theory cautions against overinvestment in sustainability that lacks tangible financial payoffs.

ESG Factors and Firm Performance

In recent years, ESG disclosure and performance have gained prominence among publicly listed firms, driven by rising stakeholder expectations, investor demand, competitive pressures, and the need to manage reputational and operational risks (Olsen et al., 2021). For some firms, sustainability initiatives represent a strategic tool to achieve competitive advantage, while for others, they are adopted as routine compliance practices; in both cases, ESG adoption is increasingly recognized as a dynamic and evolving process (Ioannou & Serafeim, 2019). The growing global focus on environmental risks, social responsibility, and governance integrity has pressured firms to allocate resources toward ESG initiatives and report their outcomes transparently. From the firm's perspective, however, ESG adoption entails significant investment, raising a key question for boards and executives: do ESG initiatives create sufficient financial~~,~~ and market returns to justify their costs?

The notion of ESG was officially highlighted in the United Nations' Principles of Responsible Investment, which urged investors to incorporate ESG factors into their portfolio selections. Since then, ESG scores have become widely used by analysts, consultants, and investors as indicators of a company's overall sustainability and responsibility. ESG performance is typically evaluated across three dimensions: environmental practices (e.g., emissions reduction and resource efficiency), social responsibility (e.g., labor practices, human rights, and community engagement), and corporate governance (e.g., board structure, shareholder rights, and accountability). While relatively recent in origin, ESG has attracted significant academic attention, with numerous studies examining its relationship with firm value and operating performance (Han et al., 2016; Miralles-Quirós et al., 2018).

Investigation on the ESG-firm performance nexus has expanded considerably. Eccles and Youmans (2015) highlight ESG as a material factor in governance and investment decision-making, while Friede et al. (2015) provide one of the most comprehensive meta-analyses of over 2,200 studies, finding that approximately 90% reported a non-negative relationship between ESG and financial performance, with the majority showing positive effects. Similarly, Alshehhi et al. (2018) reviewed 132 studies and found that 78% identified a positive relationship between sustainability practices and financial outcomes. More recently, Whelan et al. (2021) aggregated over 1,000 studies published between 2015 and 2020 and found that while 58% reported positive links, 8% reported negative links, 13% showed no relationship, and 21% produced mixed results, underscoring the complexity and context-dependence of ESG's impact.

Two main dimensions have been highlighted in this literature: ESG disclosure and ESG performance. ESG disclosure involves transparent reporting of a firm's ESG activities, allowing stakeholders, ranging from investors to regulators, to evaluate corporate sustainability practices (Alareeni & Hamdan, 2020; Chen & Xie, 2022; Mohammad & Wasiuzzaman, 2021). ESG performance, by contrast, reflects the actual effectiveness of those practices, as captured by tangible outcomes such as reduced carbon emissions, improved labor conditions, or stronger governance mechanisms (Bruna et al., 2022; Mooneeapen et al., 2022; Wang et al., 2023). Both are increasingly viewed as critical for aligning business practices with sustainable development goals and maintaining competitive legitimacy.

Findings on ESG's impact, however, remain mixed. Studies reporting positive associations argue that robust ESG practices attract long-term investors, reduce risk exposure, and improve reputational standing (Chua et al., 2023; Duque-Grisales & Aguilera-Caracuel, 2021; Suttipun, 2023). For example, firms prioritizing environmental sustainability through energy-efficient technologies can achieve cost reductions while enhancing brand equity among environmentally conscious consumers. On the other hand, some studies report neutral or even negative relationships, suggesting that ESG investments may impose financial burdens, especially on smaller firms or those in resource-intensive sectors (Alareeni & Hamdan, 2020; Whelan et al., 2021). The costs of compliance, reporting, and technological adoption can be substantial, raising concerns about the short-term financial viability of ESG adoption in certain contexts (Bruna et al., 2022).

Within this debate, the role of ESG-focused investors has become increasingly prominent. Investors who prioritize ESG not only shape firms' access to capital but also act as gatekeepers of sustainable practices, amplifying the potential positive link between ESG and firm performance (Chen & Xie, 2022; Khan, 2022). In Malaysia, the establishment of the FTSE4Good Bursa Malaysia Index (F4GBM) in 2014 represents a significant step toward incentivizing ESG adoption by rewarding listed companies that demonstrate strong ESG practices and enhancing their visibility to global investors (Bursa Malaysia, 2024).

These findings highlight ESG as a critical determinant of firm outcomes, yet one with highly context specific outcomes. While evidence from developed economies is relatively robust, gaps remain in understanding how ESG affects firm financial and market performance in emerging markets such as Malaysia. By addressing this gap and considering moderating factors such as firm size, Shariah governance, and ESG-oriented investors, this study seeks to deepen insights into the ESG - performance relationship in a developing market context.

Hypothesis Development

Building on the theoretical perspectives and empirical evidence reviewed, this study examines how ESG performance influences firm outcomes in Malaysia, and how firm-specific characteristics shape this relationship. The stakeholder perspective suggests that ESG practices enhance legitimacy, trust, and risk management, thereby improving financial and market outcomes (Freeman, 1994; Friede et al., 2015). Conversely, the agency perspective highlights potential costs associated with ESG adoption that may erode firm value (Barnea & Rubin, 2010; Jensen & Meckling, 1976). This duality underscores the need to empirically test the ESG-performance link in the Malaysian context, where regulatory reforms (e.g., MCCG 2017, F4GBM Index) are still evolving.

Prior studies have yielded mixed results, with some showing that ESG enhances profitability and valuation (Alshehhi et al., 2018; Aydoğmuş et al., 2022), while others report insignificant or negative effects, particularly in emerging markets (Alareeni & Hamdan, 2020; Duque-Grisales & Aguilera-Caracuel, 2021). Moreover, firm-specific characteristics such as size, Shariah compliance (SC), and ESG-focused investors are likely to moderate this relationship. Larger firms may have more resources and visibility to capitalize on ESG initiatives (Velte, 2017) drawing on the Resource-Based View of Barney (1991), Shariah-compliant firms may integrate ethical and governance principles that align closely with ESG (Khan, 2022), and ESG-focused investors may provide both capital and monitoring that amplify ESG's positive effects (Chen & Xie, 2022) all of which are grounded in the Legitimacy theory of Suchman (1995) which posits that firms seek to establish congruence between their social values and those of the broader society to ensure survival.

To address these gaps and theoretical foundations, the study proposes the following hypotheses:

H1: There is a significant positive relationship between ESG performance, and the financial and market performance of companies listed on the Malaysian stock exchange.

H2: Firm size moderates the relationship between ESG performance and firm performance, such that the positive effect of ESG is stronger for larger firms.

H3: Shariah compliance (SC) moderates the relationship between ESG performance and firm performance, such that the positive effect of ESG is stronger for Shariah-compliant firms.

H4: The presence of ESG-focused investors moderates the relationship between ESG performance and firm performance, amplifying the positive association.

METHODOLOGY AND DATA

Sample Data Collection

To study the research hypotheses, this study examines all Malaysian firms listed on Bursa Malaysia with available ESG data between 2018 and 2023. This timeframe was chosen for its ample historical coverage and the latest findings, along with the period of maximum availability of ESG disclosures. 747 firm-year observations from 338 firms with reliable paired data make up the final dataset. Data about ESG performance, financial and market indicators, and Shariah compliance status was obtained from S&P Capital IQ, Thomson Reuters DataStream, and other publicly available sources. The selected timeframe demonstrates a notable enhancement in ESG data accessibility, with reporting experiencing considerable acceleration in recent years, particularly in 2021, which accounted for 313 firm-year observations. This guarantees that the dataset is both comprehensive and dependable for subsequent empirical analysis.

Time-lagged Panel Regression Models

To examine the relationship between ESG performance and firm outcomes, this study employs time-lagged panel regression models, where firm financial performance is proxied by Return on Equity (ROE) and market performance by Tobin's Q (TQ). The key independent variable is the ESG score, with additional explanatory variables including firm size (total assets), liquidity (average daily traded value), financial leverage, asset turnover, Shariah compliance (SC) status[1], and membership in the FTSE4Good Bursa Malaysia Index (F4GBM), the latter serving as a proxy for ESG-focused investors, liquidity, leverage, and asset turnover are incorporated as control variables, given their established influence on the ESG - performance nexus in prior studies (Chen & Xie, 2022; Lee & Isa, 2022).

Market Liquidity (ADTV) is included as a control variable for both market and accounting performance models. Theoretically, higher liquidity is associated with lower information asymmetry and enhanced external monitoring by market participants (Fang et al., 2009). This increased scrutiny exerts pressure on management to improve operational efficiency and reduce agency costs, thereby positively influencing accounting profitability (ROE).

[1]The Shariah compliance status of each firm was obtained from the official List of Shariah-Compliant Securities issued semi-annually by the Securities Commission Malaysia (SC). A firm is classified as Shariah-compliant (coded as 1) if it appears on the SC's list during the respective financial year; otherwise, it is classified as non-compliant (coded as 0).

The F4GBM is a sustainability index introduced by Bursa Malaysia in collaboration with FTSE Russell in 2014 to benchmark the performance of companies with strong environmental, social, and governance (ESG) practices (Bursa Malaysia, 2018). In this study, F4GBM inclusion is operationalized as a dummy variable, coded 1 if the firm is a constituent of the F4GBM Index and 0 otherwise. This variable serves as a proxy for external ESG validation and the presence of ESG-oriented investors, allowing the analysis to test whether recognition by a credible sustainability index moderates the relationship between ESG performance and firm outcomes.

The study specifies four regression models: the first two exclude interaction terms, while the third and fourth include them to test moderating effects. Interaction terms, constructed as the product of two variables, enable the identification of whether moderating variables alter the strength or direction of the ESG - performance relationship, or generate synergistic effects when combined with ESG scores (Chen & Xie, 2022; Lee & Isa, 2022).

Three moderators are hypothesized to exert positive moderating effects: firm size, SC status, and F4GBM inclusion. To test these, three interaction terms are included in the models with interactions. ROE serves as the dependent variable in the first and third models, while Tobin's Q is used in the second and fourth. By comparing models with and without interaction terms, the analysis provides deeper insights into the conditional effects of firm-specific characteristics on the ESG-performance relationship, thereby clarifying the nuanced dynamics of sustainability and firm success in the Malaysian market.

Model 1: Financial Performance without interaction term

$$ROE_{it} = \beta_0 + \beta_1 ESG_{it-1} + \beta_2 LN\_TA_{it} + \beta_3 ADTV_{it} + \beta_4 FL_{it} + \beta_5 AT_{it} + \beta_6 D\_SC_{it} + \beta_7 D\_F4GBM_{it} + \varepsilon_0 \tag{1}$$

Model 2: Market Performance without interaction term

$$TQ_{it} = \beta_0 + \beta_1 ESG_{it-1} + \beta_2 LN\_TA_{it} + \beta_3 ADTV_{it} + \beta_4 FL_{it} + \beta_5 AT_{it} + \beta_6 D\_SC_{it} + \beta_7 D\_F4GBM_{it} + \varepsilon_0 \tag{2}$$

Model 3: Financial Performance with interaction term

$$ROE_{it} = \beta_0 + \beta_1 ESG_{it-1} + \beta_2 LN\_TA_{it} + \beta_3 ADTV_{it} + \beta_4 FL_{it} + \beta_5 AT_{it} + \beta_6 D\_SC_{it} + \beta_7 D\_F4GBM_{it} + \beta_1 ESG_{it-1} * LN\_TA_{it} + \beta_1 ESG_{it-1} * D_{SC_{it}} + \beta_1 ESG_{it-1} * D\_F4GBM_{it} + \varepsilon_0 \tag{3}$$

Model 4: Market Performance with interaction term

$$TQ_{it} = \beta_0 + \beta_1 ESG_{it-1} + \beta_2 LN\_TA_{it} + \beta_3 ADTV_{it} + \beta_4 FL_{it} + \beta_5 AT_{it} + \beta_6 D\_SC_{it} + \beta_7 D\_F4GBM_{it} + \beta_1 ESG_{it-1} * LN\_TA_{it} + \beta_1 ESG_{it-1} * D_{SC_{it}} + \beta_1 ESG_{it-1} * D\_F4GBM_{it} + \varepsilon_0 \tag{4}$$

Return on Equity (ROE) captures a firm's capacity to generate profits from shareholders' equity [Eq. 5], making it a central measure of financial performance. In contrast, Tobin's Q (TQ) reflects the market's valuation of a firm relative to its book value, thereby serving as an indicator of market performance [Eq. 6].

$$ROE = \frac{Net\ Income}{Shareholder\ Equity} \quad (5)$$

$$Tobin's\ Q = \frac{Equity\ Market\ Value}{Equity\ Book\ Value} \quad (6)$$

ESG performance is measured using the aggregate ESG score obtained from the DataStream database, which reflects the extent of a firm's environmental, social, and governance practices for firm i in period t. To capture the delayed impact of sustainability initiatives, the ESG score is lagged by one period ($t-1$), recognizing that financial and market outcomes typically respond to ESG activities with a time lag. This approach is consistent with prior studies, which argue that the benefits of ESG practices, such as enhanced reputation, improved stakeholder trust, and risk mitigation, require time to materialize in financial performance (Friede et al., 2015; Whelan et al., 2021).

Additionally, the interaction between current firm characteristics (at t) and lagged ESG performance ($t-1$) is specified to capture the realization of sustainability benefits. We argue that while ESG initiatives are implemented in the previous period, a firm's current operational capacity and institutional standing determine its ability to capitalize on those past efforts and translate them into present market outcomes. This temporal separation reflects the practical lag between implementation and benefit realization while simultaneously mitigating potential endogeneity concerns.

Table 1

Operationalization of the Variables

Notation	Variables	Definition/Operationalization
ROE_{it}	Return of Equity	$ROE = \frac{Net\ Income}{Shareholder\ Equity}$
TQ_{it}	Tobin's Q	$Tobin's\ Q = \frac{Equity\ Market\ Value}{Equity\ Book\ Value}$
ESG_{it-1}	ESG	Aggregate ESG score obtained from Thomson Reuters DataStream.
LN_TA_{it}	Size	Natural logarithm of total assets of firm i during period t.
$ADTV_{it}$	Average Daily Traded Value	Average number of shares traded daily for firm i during period t.
FL_{it}	Financial Leverage	Ratio of total debt to total assets for firm i during period t.
AT_{it}	Asset Turnover	Ratio of net sales to total assets for firm i during period t.
D_SC_{it}	Shariah compliance Dummy	1 indicates that the firm i was Shariah compliant for at least one review in the given year, and 0 otherwise.
D_F4GBM	F4GBM Dummy	1 if the firm is a constituent of the F4GBM Index and 0 otherwise.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2 presents the descriptive statistics of the variables employed in this study, including the number of observations, minimum and maximum values, means, standard deviations (SD), skewness, and kurtosis.

The ESG scores, based on 747 observations, range from 2.60 to 90.99, with a mean of 45.18 and an SD of 18.71, reflecting moderate variability in firms' ESG practices. The skewness (0.22) and kurtosis (-0.81) suggest an approximately normal distribution.

The ROE, calculated from 1,690 observations, spans from -179.14 to 224.87, with a mean of 7.94 and a relatively high SD of 19.13, indicating wide variation in financial performance. However, skewness (4.20) and kurtosis (46.51) reveal the presence of extreme outliers and a highly non-normal distribution. Similarly, TQ, with 1,690 observations, varies between 0.01 and 20.50, with a mean of 1.06 and an SD of 1.66. The high skewness (4.61) and kurtosis (31.11) indicate a right-skewed, leptokurtic distribution, suggesting that a small number of firms exhibit exceptionally high market valuations.

For total assets (LN_TA), representing firm size, the 1,690 observations range from 3.14 to 13.84. The mean is 9.62, while the SD is notably high at 11.18, reflecting substantial disparities in firm sizes. Skewness (9.12) and kurtosis (96.46) confirm the presence of heavy tails and significant outliers. Average Daily Traded Value (ADTV) also displays considerable spread, ranging from 0 to 330.42, with a mean of 6.12 and an SD of 15.78. Its skewness (9.72) and kurtosis (153.23) highlight extreme asymmetry and large outliers, reflecting pronounced differences in liquidity across firms.

The financial leverage (FL) variable, with 1,690 observations, ranges between 0 and 3.48, with a mean of 0.21 and an SD of 0.19. Skewness (3.42) and kurtosis (48.58) suggest a right-skewed, highly non-normal distribution. In comparison, asset turnover (AT) ranges from 0 to 3.88, with a mean of 0.63 and an SD of 0.55. Its skewness (1.90) and kurtosis (5.67) point to some asymmetry and peakiness, though the distribution is less extreme than other financial indicators.

The Dummy variables are used to provide additional firm characteristics. Shariah compliance (SC), coded as 0 or 1, records a mean of 0.80, indicating that 80% of the firms are Shariah-compliant. Meanwhile, F4GBM membership has a mean of 0.26, showing that only 26% of firms are included in the FTSE4 Good Bursa Malaysia Index, underscoring its selective nature.

The descriptive analysis highlights significant variability across the study variables, with several, particularly ROE, TQ, TA, ADTV, and FL, exhibiting high skewness and kurtosis due to outliers. To address these distributional issues, a natural logarithmic transformation will be applied to continuous variables, while binary variables such as SC and F4GBM will remain unchanged.

Table 2

Descriptive Statistics

	Observation	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
ESG	747	2.60	90.99	45.18	18.71	0.22	-0.81
ROE	1690	-179.14	224.87	7.94	19.13	4.20	46.51
TQ	1690	0.01	20.50	1.06	1.66	4.61	31.11
LN_TA	1690	3.14	13.84	9.62	11.18	9.12	96.46
ADTV	1690	0.00	330.42	6.12	15.78	9.72	153.23
FL	1690	0.00	3.48	0.21	0.19	3.42	48.58
AT	1690	0.00	3.88	0.63	0.55	1.90	5.67
D_SC	1690	0	1	0.80	0.40	-1.46	0.16
D_F4GBM	1690	0	1	0.26	0.43	1.12	-0.74

Correlation Analysis

A Pearson correlation analysis was conducted to examine the bivariate relationships among the study variables, with the results presented in Table 3. The table reports Pearson correlation coefficients, with statistical significance at $p \leq 0.05$ indicated by asterisks. These coefficients capture the strength and direction of linear associations between variable pairs.

The results show that ESG performance scores are positively and significantly correlated with ROE (0.332), suggesting a strong association with financial performance. However, the correlation between ESG scores and Tobin's Q (TQ) is positive but not significant (0.019), indicating no clear relationship with market performance at this stage. These preliminary findings point to a robust ESG - financial performance link but an inconclusive connection with market valuation, warranting further testing through regression analysis.

Regarding the moderating variables, total assets (0.490) and ESG-focused investor status (F4GBM membership) (0.489) are both positively and significantly correlated with ESG scores, highlighting their potential as positive moderators. By contrast, Shariah compliance (SC) is negatively and significantly correlated with ESG scores (-0.141), suggesting it may act as a negative moderator.

Additional correlations further enrich the analysis. ROE shows significant positive associations with total assets (0.183), average daily traded value (liquidity) (0.343), asset turnover (0.172), and F4GBM membership (0.278), indicating that larger firm size, stronger liquidity, operational efficiency, and ESG index inclusion tend to enhance financial performance. Conversely, ROE has a slight but significant negative correlation with financial leverage (-0.060), suggesting that higher leverage marginally reduces profitability. No significant correlation is observed between ROE and SC.

For TQ, the findings reveal negative correlations with total assets (-0.439) and financial leverage (-0.169), implying that firms with greater market valuation often have smaller asset bases and lower leverage. On the other hand, TQ is positively and significantly correlated with liquidity (0.212), asset turnover (0.418), SC (0.180), and F4GBM membership (0.044), suggesting that greater liquidity, higher operational efficiency, Shariah compliance, and ESG recognition are associated with stronger market performance.

Table 3

Pearson Correlation Matrix

	LN_ROE	LN_TQ	LAG (LN_ESG)	LN_TA	LN_ADTV	LN_FL	LN_AT	SC	F4GBM
LN_ROE	1.000	-							
LN_TQ	0.619**	1.000							
LAG (LN_ESG)	0.332**	0.019	1.000						
LN_TA	0.183**	-0.439**	0.490**	1.000					
LN_ADTV	0.343**	0.212**	0.430**	0.491**	1.000				
LN_FL	-0.060**	-0.169**	0.035	0.080**	0.003	1.000			
LN_AT	0.172**	0.418**	-0.208**	-0.453**	-0.115**	-0.028	1.000		
D_SC	0.000	0.180**	-0.141**	-0.237**	-0.036**	-0.044**	0.260**	1.000	
D_F4GBM	0.278**	0.044**	0.489**	0.443**	0.396**	0.002	-0.192**	-0.089**	1.000

Notes. The value in the bracket indicates the p-value. Significance level is indicated by ** for p ≤ 0.05.

The correlation results provide preliminary support for H1, indicating that ESG performance is significantly linked to financial performance (ROE), though its relationship with market performance (TQ) remains inconclusive. The significant associations between ESG and the moderating variables, firm size (TA), Shariah compliance (SC), and F4GBM membership, further support the rationale for H2–H4, suggesting that these firm-specific characteristics may shape the ESG-performance relationship. These findings reinforce the need for regression analysis to test the hypothesized direct and moderating effects more robustly.

While F4GBM membership correlates with ESG performance (0.489), the correlation is below the threshold for multicollinearity. We retain both to distinguish between the internal intensity of ESG efforts (ESG Score) and the external signalling value of index inclusion (F4GBM).

Hausman Test (HT)

The HT, introduced by Hausman (1978), was employed to determine the appropriate estimator between fixed effects (FE) and random effects (RE). The null hypothesis assumes that the RE estimator is consistent and efficient, whereas the alternative hypothesis posits that only the FE estimator is consistent. In this study, the HT was conducted separately for all four models, and in each case, the test yielded a p-value of 0.0000, which is highly significant. Accordingly, the null hypothesis was rejected in favour of the alternative, confirming that the fixed-effects model is the more suitable specification for this analysis.

The preference for the fixed-effects model is theoretically justified, as it accounts for unobserved firm-specific effects and time-invariant heterogeneity that could otherwise bias the results. By controlling for these unobserved factors, the FE approach mitigates omitted variable bias and yields more reliable and robust parameter estimates. Moreover, the FE model captures firm-specific characteristics that remain constant over time but differ across firms, thereby offering a more precise assessment of the relationships between ESG performance, financial outcomes, and moderating factors. Thus, adopting the FE specification aligns closely with the study's objectives and provides a stronger foundation for interpreting the regression results.

For robustness, pooled OLS estimation was also performed; however, the findings confirmed its unsuitability due to well-known limitations. Pooled OLS assumes homogeneity across firms and disregards unobserved heterogeneity, which can produce biased and inconsistent estimates when panel data is used. Specifically, it ignores firm-level characteristics that vary across entities but remain stable over time, factors particularly relevant in ESG research, leading to a heightened risk of omitted variable bias. The rejection of pooled OLS further reinforces the appropriateness of the fixed-effects approach for this study.

Regression Analysis

Fixed Effect Panel Regression

Table 4 presents the results of the regression models. The effect of ESG performance (LAG(LN_ESG)) appears mixed across specifications. In Model 1 (LN_ROE), the ESG coefficient is positive but not statistically significant, suggesting that ESG practices alone do not directly enhance financial performance as measured by ROE. In contrast, Model 2 (LN_TQ) shows a significant negative effect of ESG on market performance (TQ), implying that higher ESG scores may reduce market valuation, potentially due to implementation costs or investor scepticism regarding the short-term benefits of ESG initiatives. Notably, once interaction terms are included in Models 3 and 4, ESG performance itself does not have a direct significant effect on either ROE or TQ.

The introduction of interaction terms reveals several moderating effects. Firm size (LN_TA) significantly interacts with ESG performance in Model 4 (LN_TQ), where the negative coefficient suggests that larger firms with higher ESG scores experience weaker market performance. This outcome may reflect the substantial costs and complexity of ESG implementation in large organizations, which do not always translate into immediate market recognition. In contrast, the interaction between ESG performance and F4GBM inclusion (D_F4GBM) is both significant and positive in Model 4, with a coefficient of 0.248 (p = 0.026). This finding underscores the importance of external validation: firms listed on the F4GBM Index appear to benefit from improved market valuation, as sustainability recognition strengthens investor confidence. In Model 3 (LN_ROE), the ESG - F4GBM interaction is also positive (0.448) but only marginally significant (p = 0.081), suggesting a weaker moderating effect on financial performance. By contrast, the interaction between ESG and Shariah compliance (D_SC) is not significant in either Model 3 or Model 4, indicating that SC status does not moderate the ESG - performance link.

Beyond ESG, several firm-specific variables display consistent and significant effects on performance. Firm size (LN_TA) exerts a positive and significant influence on ROE in Model 1, highlighting economies of scale and operational efficiency in larger firms. Liquidity (LN_ADTV) is positively and significantly related to both ROE and TQ across all models, reinforcing its critical role in enhancing financial outcomes. Asset turnover (LN_AT) also shows a strong and positive association in every model, confirming its importance in driving revenue generation. Interestingly, while F4GBM membership (D_F4GBM) alone does not significantly affect performance when considered independently, its significant interaction with ESG performance illustrates the value of recognition through sustainability indices in amplifying the market impact of ESG initiatives.

Table 4

Fixed Effect Panel Regression

Independent variables	Without Interaction Term		With Interaction Terms	
	Model 1 LN_ROE	Model 2 LN_TQ	Model 3 LN_ROE	Model 4 LN_TQ
LAG (LN_ESG)	0.134 (0.277)	-0.224** (0.000)	-0.654 (0.437)	0.426 (0.243)
LN_TA	0.289** (0.008)	0.381 (0.305)	0.110 (0.760)	0.397** (0.011)
LN_ADTV	0.110** (0.006)	0.113** (0.000)	0.111** (0.005)	0.110** (0.000)
LN_FL	0.011 (0.864)	-0.052 (0.075)	0.019 (0.780)	-0.048 (0.101)
LN_AT	1.110** (0.000)	0.381** (0.000)	1.081** (0.000)	0.393** (0.000)
D_SC	-0.008 (0.963)	-0.096 (0.244)	-0.409 (0.680)	-0.220 (0.610)
D_F4GBM	-0.019 (0.872)	0.063 (0.235)	-1.785 (0.078)	-0.905** (0.040)
LN_TA × LAG (LN_ESG)	-	-	0.042 (0.642)	-0.093** (0.019)
D_SC × LAG (LN_ESG)	-	-	0.114 (0.672)	0.034 (0.768)
D_F4GBM × LAG (LN_ESG)	-	-	0.448 (0.081)	0.248** (0.026)
Constant	-0.356 (0.707)	0.024 (0.953)	2.690 (0.399)	-2.341 (0.092)
Observation	747	747	747	747
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
R-squared	0.234	0.291	0.245	0.306
Adjusted R-squared	0.227	0.284	0.235	0.297

Notes. The value in the bracket indicates the p-value. Significance level is indicated by ** for $p \leq 0.05$.

DISCUSSION AND ANALYSIS

ESG Performance and Firm's Performance

Contrary to Hypothesis 1 (H1), the FE panel regression results do not consistently confirm a significant positive relationship between ESG performance and financial performance, contrary to earlier studies' findings. In Model 1 (LN_ROE), the ESG coefficient is positive but statistically insignificant, suggesting that ESG initiatives alone may not directly influence ROE, an accounting-based indicator of financial performance. This may be explained by the high upfront costs of implementing ESG measures, such as restructuring operations, adopting sustainable technologies, or enhancing governance systems, which can temporarily offset potential benefits. While ESG investments are expected to generate intangible and long-term advantages, such as enhanced reputation, stronger stakeholder relationships, and risk mitigation, these gains are not always captured in short-term financial metrics like ROE across different industries.

The mixed results also point to potential sectoral and firm-specific variations in how ESG initiatives affect financial outcomes. Firms in industries with greater exposure to environmental and social risks may benefit more strongly from ESG adoption than those in less exposed sectors. Likewise, differences in operational efficiency, resource capacity, or managerial commitment could influence the success of ESG strategies. This aligns with Whelan et al. (2021), who noted that the financial impact of ESG is not uniform but context-dependent, varying across industries and organizational settings.

With respect to market performance, Model 2 (LN_TQ) reveals a statistically significant but negative coefficient for ESG performance (LAG(LN_ESG)). This suggests that higher ESG scores are associated with lower Tobin's Q, a proxy for market performance and investor valuation. These results directly contradict the hypothesis and suggest that the Malaysian market may view ESG engagement more critically, indicating a complex relationship between ESG and firm valuation. This finding diverges from the positive association often observed in developed markets (e.g., Friede et al., 2015; Freeman, 1994) but aligns with recent evidence from developing economies (Alareeni & Hamdan, 2020; Duque-Grisales & Aguilera-Caracuel, 2021).

This discrepancy can be explained by Agency Theory which suggests that the negative relationship stems from the short-term financial burden of ESG adoption. Robust ESG practices typically demand large-scale investments in sustainable technologies, energy-efficient infrastructure, compliance mechanisms, and reporting frameworks (HMSA Consultancy, 2023). Another possibility is market skepticism and limited awareness of ESG's long-term benefits in emerging economies. Unlike developed markets, where ESG integration is well established and widely recognized, Malaysia remains in a transitional phase. Investors may not yet fully appreciate the strategic value of ESG efforts, particularly when immediate financial payoffs are not visible (The Financial Analyst, 2024).

The findings highlight the importance of external validation mechanisms. In emerging markets, firms may struggle to communicate ESG achievements effectively, leading to a gap between actual performance and investor perceptions (Clyde & Co, 2024). The moderating analysis confirms this, as F4GBM Index inclusion significantly improves market valuation, underscoring the role of sustainability indices in building credibility and investor confidence.

These results underscore the complexities of ESG adoption in emerging markets. High implementation costs, limited investor awareness, and short-term valuation pressures may overshadow ESG's potential benefits in the immediate term. To address these challenges, firms must focus on transparent, strategic communication of ESG achievements. At the same time, policymakers and regulators should strengthen ESG frameworks and raise awareness to foster greater investor confidence and recognition of long-term value.

Firm-specific Characteristics Moderating Effect Analysis

The analysis shows that firm size (LN_TA) significantly moderates the relationship between ESG performance and market valuation (Tobin's Q), with a negative interaction effect observed in Model 4. This suggests that larger firms experience weaker market performance when ESG scores are high, a finding that contrasts with prior studies. The result may be attributed to the greater complexity and higher costs of implementing ESG initiatives across large, diversified operations, which often delay observable market benefits (Maveric Systems, 2025). Furthermore, heightened stakeholder scrutiny may cause ESG activities in larger firms to be perceived as compliance-driven rather than strategic, thereby dampening investor confidence (Deloitte, 2022). Nonetheless, firm size exerts a significant positive direct effect on financial performance (ROE) in Model 1, indicating operational efficiencies exist. However, these efficiencies do not necessarily translate into improved market valuation within the ESG context. This underscores the unique challenges larger firms face in aligning ESG commitments with investor expectations.

With respect to Shariah compliance (D_SC), the results show no significant moderating effect on the relationship between ESG performance and either financial performance (ROE) or market performance (Tobin's Q) in Models 3 and 4. This implies that Shariah-compliant status does not meaningfully influence the ESG - performance link, contradicting previous findings. A possible explanation is that Shariah-compliant firms already embed ethical and sustainable principles consistent with ESG, thereby reducing the incremental value of ESG initiatives (Standard Chartered, 2020). Investors in these firms may prioritize adherence to religious and ethical standards over ESG disclosures, perceiving Shariah compliance as sufficient assurance of responsible conduct. Consequently, additional ESG practices may not substantially alter firm performance or investor perceptions.

Among ESG-focused investors, the analysis reveals a significant positive interaction between ESG performance and inclusion in the F4GBM Index (D_F4GBM) on market performance (Tobin's Q) in Model 4. This emphasizes the role of external validation and sustainability-oriented investors in amplifying the market impact of ESG efforts, consistent with prior evidence. Inclusion in the FTSE4Good Bursa Malaysia Index provides credible recognition of a firm's ESG commitment, bolstering investor confidence and enhancing market valuation (Chen & Xie, 2022). Although F4GBM membership alone does not directly affect performance, its interaction with ESG scores highlights its moderating importance. In Malaysia's emerging ESG landscape, such recognition provides much-needed transparency and legitimacy. Firms aiming to maximize ESG-related market gains should therefore prioritize index inclusion, as it signals authentic ESG engagement and attracts socially responsible investment.

In summary, the results confirm that firm-specific characteristics significantly moderate the ESG performance relationship, though their effects differ. First, firm size negatively moderates the link between ESG and market performance, reflecting the cost and perception challenges faced by larger firms. Second, Shariah compliance does not significantly moderate the relationship, likely because it aligns with ethical norms. Third, ESG-focused investors, as captured by F4GBM inclusion, strengthen the positive impact of ESG on market valuation, highlighting the importance of external validation. Collectively, these findings demonstrate that market perceptions of ESG remain context-dependent, shaped by firm characteristics, ethical frameworks, and credible external endorsements.

CONCLUSION AND IMPLICATIONS

This study provides important evidence on the relationship between ESG performance and firm outcomes among companies listed on the Malaysian stock exchange, while also evaluating the moderating influence of firm-specific characteristics such as firm size and Shariah compliance and external validation through the FTSE4Good Bursa Malaysia Index (F4GBM). The findings indicate that ESG performance alone does not consistently enhance financial or market outcomes. In fact, in some cases, notably with Tobin's Q, higher ESG scores are associated with lower market valuation, reflecting both the costs and complexities of ESG implementation and lingering market skepticism about its immediate benefits.

The inclusion of moderating factors, however, provides valuable insight. Firm size significantly moderates the ESG-performance relationship negatively, suggesting that large firms may struggle to convert ESG initiatives into immediate market rewards due to higher costs and operational challenges. In contrast, external validation through F4GBM inclusion exerts a strong positive moderating effect, emphasizing the importance of credible recognition in shaping investor sentiment and market perceptions. Although Shariah compliance does not significantly moderate the ESG-performance relationship, other firm-level factors such as liquidity and asset turnover consistently contribute positively to financial and market performance, underscoring the role of operational efficiency and market activity alongside ESG considerations.

The study underscores the complex and context-dependent nature of the ESG-performance link. ESG initiatives are not universally beneficial; their impact depends on firm characteristics, industry dynamics, and external recognition mechanisms. As ESG continues to gain prominence in Malaysia, firms should adopt a more strategic approach to ESG, focusing on effective implementation, external validation, and operational excellence to achieve sustainable improvements in both financial and market outcomes. Future research should extend the timeframe, expand the sample, and employ advanced econometric methods to deepen the understanding of ESG's role in supporting long-term firm growth. By addressing these issues, this study not only contributes to the growing ESG literature but also provides actionable insights for firms, investors, and policymakers seeking to balance sustainability with financial success in a developing market context.

The implications of this study's findings are manifold. For firms, the results emphasize that ESG adoption should not be treated as a uniform compliance exercise but as a strategic initiative. Larger firms need to balance the high costs and complexities of ESG implementation with transparent communication of long-term benefits to avoid negative market perceptions. Inclusion in recognized sustainability indices, such as the FTSE4Good Bursa Malaysia Index (F4GBM) is a critical pathway to building credibility, improving visibility, and attracting sustainability-focused investors. Firms should also prioritize operational efficiency and liquidity management, as these remain consistent drivers of firm performance alongside ESG efforts.

For investors, the study highlights the importance of considering both ESG performance and firm-specific characteristics when making investment decisions. Rather than relying solely on raw ESG scores, investors should evaluate whether firms have secured credible external validation and demonstrate strong fundamentals such as liquidity and asset turnover. This approach helps distinguish between firms that engage in substantive ESG practices and those that adopt ESG for symbolic or compliance-driven reasons.

For policymakers and regulators, the results underscore the need to strengthen ESG reporting frameworks and awareness in Malaysia. Market skepticism regarding ESG's value suggests that stronger disclosure standards, third-party verification, and investor education are necessary to enhance confidence in ESG initiatives. Expanding recognition platforms like F4GBM and aligning ESG standards with international best practices can further support the development of a transparent and credible ESG ecosystem, ultimately promoting sustainable capital markets.

Despite its contributions, the study has several limitations. The analysis covers the period 2018 - 2023, which may not fully capture long-term ESG dynamics. Reliance on secondary ESG databases introduces variation in measurement methodologies, while the scope of moderating variables is limited to firm size, Shariah compliance, and F4GBM inclusion. Furthermore, the findings are specific to Malaysia and may not be directly generalizable to other contexts.

Future research should extend the timeframe, incorporate additional firm- and industry-level variables (such as board composition, ownership structure, or regulatory intensity), and employ advanced econometric methods to address potential endogeneity. Comparative cross-country studies, particularly within ASEAN, would further clarify whether institutional and cultural factors shape the ESG - performance link differently across markets.

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