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# The influence of environmental, social, and governance factors on firm performance: Earnings quality as a moderator

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ABSTRACT

This study investigates the impact of Environmental, Social, and Governance (ESG) factors on firm performance, measured by market performance (Tobin's Q) and financial performance, with Earnings Quality (EQ) as a moderating variable. The sample includes 208 companies listed on the Stock Exchange of Thailand that remained in the Thailand Sustainability Investment (THSI) index for at least five consecutive years (2018–2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS software was employed for analysis. The results show that the Social (SOC) Score positively affects Return on Assets (ROA), indicating that social activities may enhance financial performance through increased stakeholder trust. In contrast, the Environmental (ENV) Score negatively affects ROA, suggesting that environmental investments may raise costs without short-term financial returns. The Governance (GOV) Score shows no significant effect on either ROA or Tobin's Q. EQ plays a significant moderating role by strengthening the positive effect of environmental initiatives on Tobin's Q, particularly in firms with high EQ, which benefit from improved transparency and investor confidence. These findings support Stakeholder and Agency Theory and highlight the importance of aligning ESG practices with strong financial reporting to promote sustainability and maximize market value.



## 1. Introduction

The concept of Environmental, Social, and Governance (ESG) is now widely used in the global business and investment sectors. ESG has established itself as an important tool for evaluating a company's sustainability, building in addition to financial performance to evaluate its impact on the environment, society, and corporate governance (Braun, 2021). Investors and stakeholders are increasingly more interested in ESG issues, as research shows that companies that support these principles perform financially more effectively with lower business risks and are more desirable to investors.

The Environmental dimension of ESG addresses a firm's impact on ecosystems and natural resources, encompassing compliance with environmental regulations such as those governing energy use, waste disposal, and carbon emissions. This is particularly relevant in sectors like energy and manufacturing, where environmental risks are elevated (Sherif et al., 2022; Richardson, 2009).

The Social dimension emphasizes corporate practices that influence employees, customers, and local communities, such as diversity, human rights, and corporate social responsibility (CSR). Prior studies suggest that focusing on social issues strengthens stakeholder trust, enhances brand image, and contributes to sustainable financial outcomes (Cheng et al., 2014; Fatemi et al., 2015).

The Governance dimension is essential to improving efficiency, transparency, and accountability in corporate operations. According to Agency Theory, effective governance structures, such as independent boards and audit mechanisms, reduce conflicts of interest, discourage managerial opportunism, and enhance investor confidence (Jensen and Meckling, 1976).

ESG has become an increasingly influential factor in investment decision-making, with scholars noting its growing integration into mainstream portfolios (Adams and Abhayawansa, 2022). The increasing number of interests in sustainable investment can be

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observed through the popularity of search terms related to sustainable investment. The researcher applied the Google Search Volume Index (SVI), which measures the popularity of search phrases over a certain time period. Fig. 1 shows the rising trend in Google Search Volume Index (SVI) in terms of 'Environmental, Social, and Governance' from 2016 to 2022 across Thailand, the United States, and the global average. This steady rise in interest reflects the growing significance of ESG-related investments globally. This data indicates that sustainable investment has been on a consistent upward trend over the past several years. Consequently, companies are increasingly aware of the need to operate sustainably or at least demonstrate social responsibility in their operations. The understanding reduces pressure from stakeholders and the media, which allows businesses to market themselves more effectively to their customers.

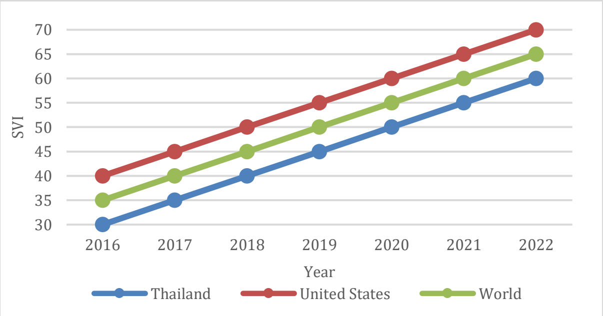


**Fig. 1:** Google search volume index (SVI) for 'environmental, social, and governance' in Thailand, the United States, and globally from 2016 to 2022

Thailand's capital market has gradually aligned with global ESG trends, although the market response remains inconsistent. As Budsaratragoon and Jitmaneeroj (2021) pointed out, even in ASEAN countries where firms adopt ESG frameworks, the impact on firm value is not uniformly observed.

There are so many studies that have found a positive relationship between ESG practices and corporate performance, particularly in terms of firm value and profitability. The primary financial indicators used to evaluate the effects of ESG on corporate performance include:

- Tobin's Q: A measure of a company's market value relative to the replacement cost of its assets. Companies with higher Tobin's Q values are perceived as having strong growth potential.
- Return on Assets (ROA): A profitability metric that evaluates how efficiently a company generates earnings from its assets.

Research by Wong et al. (2021) found that firms that display ESG information experienced a 31.9% higher Tobin's Q compared to those that did not disclose such data. Additionally, Cheng et al. (2014) indicated that higher corporate social responsibility improves corporate transparency by reducing information asymmetry, then improves access to capital, which contributes to long-term firm value growth. Given this context, the present study hypothesizes that ESG performance positively influences corporate performance. Moreover, firms with higher Environmental (ENV), Social (SOC), and Governance (GOV) scores are expected to have higher Tobin's Q and ROA.

Although ESG performance is predicted to positively improve the firm's value. Earnings Quality (EQ), often known as the transparency, consistency, and reliability of a company's reported earnings which it is critical in strengthening or weakening this relationship.

According to a study, when evaluating ESG-related values as investors are increasingly taking into account profitability quality (Tohang et al., 2024). Additionally, organizations with high profit quality take pleasure in lower information asymmetry and fewer expenditures on capital, which means strengthening the positive effect of ESG on corporate performance. Furthermore, Strong corporate governance systems in emerging economies play an important role in limiting earnings management then increasing earnings quality and company value.

## 2. Literature review

This chapter represents a comprehensive review of existing literature on the relationship between ESG performance and firm performance with a particular focus on the moderating role of EQ. The discussion incorporates relevant theories, empirical studies, and conceptual frameworks to provide a solid foundation for the study.

Fig. 2 illustrates the research framework of this study. The framework is grounded in relevant theories and key conceptual foundations, which support the hypothesized relationships as follows: "These theoretical foundations and key concepts are discussed in greater detail in the following sections."

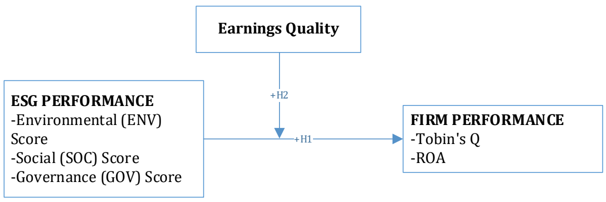


**Fig. 2:** Research framework showing hypothesized relationships among ESG, EQ, and firm performance

### 2.1. Agency theory

Agency Theory describes the relationship between shareholders (principals) and managers (agents), emphasizing the conflict of interest that arises when managers pursue personal gain over maximizing shareholder value (Jensen and Meckling, 1976). According to this concept, agency difficulties are made worse by ineffective governance processes, which might result in less openness and lower EQ, which would undermine the accuracy of financial reporting. In the context of ESG (Environmental, Social, and Governance) activities, there are several studies that indicate that managers may utilize ESG strategically to create a positive image or divert stakeholder attention away from poor profitability quality. Research by Tohang et al. (2024), Almubarak et al. (2023), and Kolsi et al. (2023) indicated that without powerful governance, ESG practices may serve as symbolic instruments rather than genuine initiatives, revealing deep-rooted agency issues within corporate organizations.

### 2.2. Stakeholder theory

According to Stakeholder Theory, organizations should create value for all stakeholders, not just shareholders. A stakeholder is defined as any individual or organization that is affected or has the potential to influence the firm's operations. This interaction is fundamentally bidirectional and interdependent (Tohang et al., 2024; Almubarak et al., 2023; Kolsi et al., 2023). This concept aligns with Carroll's (1991) framework, which proposes that CSR should include economic, legal, ethical, and philanthropic responsibilities to balance stakeholder interests. Firms that successfully engage in ESG or CSR programs typically benefit from improved reputation, trust, and long-term financial performance. However, some research, such as Lin et al. (2023), suggested that environmental activities may be viewed as costly, thereby lowering profitability. These findings underscore the complexities of aligning stakeholder expectations with financial aims, emphasizing the necessity for enterprises to operate in a way that connects sustainability and stakeholder satisfaction.

### 2.3. Environmental, social, and governance (ESG)

The ESG concept gained prominence following the Global Financial Crisis (GFC) of 2007–2009, which exposed the shortcomings of financial capitalism, particularly the neglect of environmental risk, sustainability, and social responsibility (Richardson, 2013). In response, the United Nations introduced the Principles for Responsible Investment (PRI) in 2006 to encourage the integration of ESG factors into investment decisions. ESG has become a global framework extensively adopted by investors, financial institutions, and regulatory organizations for monitoring corporate behavior and future performance (Sherif et al., 2022; Braun, 2021). It also aligns with the United Nations' Sustainable Development Goals (SDGs), which address poverty, inequality, and climate change in an integrated manner. In this study, ESG data comprising ENV, SOC, and GOV dimensions were obtained from Bloomberg using the Bloomberg ESG Disclosure Scores. These scores measure the extent to which publicly listed companies disclose ESG-related information, based on international reporting frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB). The scores range from 0 to 100 and are disclosure-based, meaning they reflect a firm's level of transparency in ESG reporting rather than the actual quality or effectiveness of its ESG performance. The three ESG dimensions are defined as follows: The ENV dimension covers greenhouse gas emissions, energy consumption, natural resource management, and environmental policies; the SOC dimension includes workforce diversity, occupational health and safety, human rights, and community involvement; and the GOV dimension encompasses board structure, independence, audit mechanisms, transparency, and shareholder rights.

### 2.4. Earnings quality (EQ)

The Modified Jones's (1991) Model, developed by Dechow et al. (1995) as the original Jones's (1991) Model, is refined to improve the identification of discretionary accruals by correcting for variations in credit sales (ΔREC). This modification strengthens the dependability of accrual-based earnings management forecasts, particularly in scenarios including revenue manipulation. The model is widely applied in accounting research, and its regression equation is typically represented as:

$$(TAt/A_{t-1}) = \alpha + \beta_1(1/A_{t-1}) + \beta_2((\Delta REV_t - \Delta REC_t)/A_{t-1}) + \beta_3(PPE_t/A_{t-1}) + \varepsilon_t$$

where, $TAt$ is the total accruals in year $t$. $A_{t-1}$ is the total assets at the end of the year $t-1$ (lagged total assets). $\Delta REV_t$ is the change in revenues in year $t$. $\Delta REC_t$ is the change in receivables in year $t$. $PPE_t$ is gross property, plant, and equipment in year $t$. $\alpha$, $\beta 1$, $\beta 2$, $\beta 3$ are estimated regression coefficients, and $\varepsilon_t$ is the error term.

Interpreting EQ: EQ refers to how accurately and transparently a company's reported earnings reflect its true financial performance. In this study, EQ is measured using Discretionary Accruals (DAC) estimated through the Modified Jones's (1991) Model (Dechow et al., 1995). This method helps detect potential earnings management activities that may misrepresent the company's financial position.

When DAC values are near zero, it indicates that the corporation does not engage in major earnings manipulation. A DAC approaching 0 suggests strong earnings quality, which means that the financial accounts accurately reflect actual Performance without artificial inflation or deflation of earnings. In other words, the closer the EQ (or DAC) gets to zero, the more reliable and transparent the stated earnings are.

Even in cases where the statistical coefficient (β) is negative, if DAC remains close to zero, it still signals high earnings quality. This implies that any observed effect is not due to distortions in earnings reporting.

Understanding DAC in this way provides valuable insights for investors and stakeholders, helping them judge the reliability of a firm's financial disclosures. High earnings quality supports better investment decisions and builds confidence in the company's financial credibility.

### 2.5. Firm performance

Firm performance is a company's capacity to generate returns through operations, efficient asset management, and value creation, as represented in both financial and market-based measures (Al-Matari et al., 2014). This study uses two key performance measures:

- Tobin's Q: This ratio measures the market value of a firm relative to the replacement cost of its assets. A value above 1 indicates market value creation, while a value below 1 may signal inefficiency (Tobin, 1969).
- ROA: It reflects how efficiently a firm uses its total assets to generate net income. It is calculated as net profit divided by total assets and serves as a key indicator of operational performance (Biddle et al., 1997).

### 2.6. Control variables

This study controls for firm age and firm size to improve the robustness of the analysis. Firm age, defined as the number of years since incorporation, reflects organizational maturity, while firm size, measured by the natural logarithm of total assets, serves as a proxy for resource capacity. Prior research indicates that both factors may influence financial performance and ESG engagement (Aqabna et al., 2023; Alareeni and Hamdan, 2020).

### 2.7. ESG performance and firm performance

The link between ESG performance and firm outcomes has been widely explored in prior studies, with mixed results depending on industry, region, and governance structures. Building on this literature, the present study proposes the following hypothesis:

**H1:** ENV, SOC, and GOV scores positively affect Firm Performance.

Many studies have examined the empirical relationship between corporate success and ESG performance. ROA, which shows the capacity to earn a profit from operations, and Tobin's Q, which represents the firm's market value, are typically used to gauge a company's success. The majority of research indicates that strong ESG performance and firm performance are positively correlated, albeit the degree of this correlation may differ depending on the industry, business plan, and legal environment.

Aqabna et al. (2023) showed that during the COVID-19 pandemic, ESG scores significantly improved ROA and Tobin's Q in MENA companies, underscoring the function of ESG in boosting value creation and financial resilience in unpredictable times. The impact can vary, nevertheless, when taking into account the various ESG components. Alareeni and Hamdan (2020) claimed that although ESG as a whole improves financial performance, the impact differs greatly depending on the ENV, SOC, and GOV aspects. Given that each element may have a unique strategic and empirical influence, this suggests the necessity for a more thorough examination of ESG.

### 2.8. The moderating role of earnings quality

EQ has been recognized as a critical factor that shapes the strength of the ESG–performance relationship. High-quality earnings enhance transparency, reduce managerial opportunism, and build investor trust, thereby amplifying the benefits of ESG practices. Accordingly, this study formulates the second hypothesis:

**H2:** EQ moderates the relationship between ENV, SOC, and GOV scores and Firm Performance.

The relationship between ESG performance and financial outcomes has been widely discussed, with empirical studies consistently showing that high ESG performance is generally associated with improved financial results. However, EQ plays a crucial role in amplifying these advantages. High-quality earnings reflect the true financial position of a firm, reducing managerial opportunism and enhancing investor trust (Islam et al., 2022).

The significance of EQ in enhancing the relationship between ESG performance and firm performance has been emphasized in a number of studies. Businesses with strong financial results typically gain more from ESG initiatives, which increase their stability and inspire investor trust. Additionally, it has been discovered that companies with high EQ typically have greater Tobin's Q, especially when regulatory control is lax. Strong governance frameworks support the maintenance of high profit quality, which improves the performance of the company as a whole.

With a focus on the moderating function of EQ, this literature review investigates the relationship between company success and ESG performance. The results show that the degree and direction of this association are strongly influenced by a number of contextual factors, such as firm-specific qualities, regulatory settings, and industry characteristics. These observations lay the groundwork for the next empirical study, indicating that more investigation is required to examine the complex effects of earnings quality on the relationship between ESG and performance in various settings.

## 3. Research methodology

### 3.1. Sample description and data

This study focuses on 44 companies listed on the Stock Exchange of Thailand (SET) under the Thailand Sustainability Investment (THSI) group, covering the period from 2018 to 2022. The dataset comprises 220 observations across eight industries: Agro and Food, Consumer Products, Financials, Industrials, Property and Construction, Resources, Services, and Technology. After removing outliers, the final sample includes 208 companies.

Data collection involved sourcing secondary data from financial statements, Bloomberg ESG ratings, and regulatory filings, such as the 56-1 One Report. Additional data were retrieved from SET SMART and the Securities and Exchange Commission (SEC) databases.

### 3.2. Measuring EQ

EQ, measured using the Modified Jones's (1991) Model (Dechow et al., 1995), shows how trustworthy stated earnings are. DACs are estimated by the algorithm; values around 0 signify excellent transparency and high-quality earnings. This study evaluates the moderating effect of EQ on the relationship between ESG and company performance using DAC as a stand-in for EQ.

### 3.3. Research method

This study adopts a quantitative research approach and applies deductive reasoning to examine the impact of ESG performance on firm performance, with EQ acting as a moderating variable. Data analysis is performed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS software, which is well-suited for analyzing complex relationships between latent constructs and observable variables, enabling the simultaneous estimation of multiple regression equations (Byrne, 2013). Descriptive statistical techniques, such as mean, median, standard deviation, skewness, and kurtosis, are used at the start of the analysis. Regression analysis is then used to evaluate the connections between company performance, EQ, and ESG performance. To assess how EQ interacts with the relationship between ESG and company performance, moderation analysis is also used. Additionally, multicollinearity is tested using the Variance Inflation Factor (VIF) to ensure the independence of predictor variables.

Furthermore, the model's explanatory and predictive capabilities are evaluated through $R^2$ and $Q^2$. $R^2$ represents the proportion of variance explained by the independent variables, providing an indication of the model's goodness-of-fit. $Q^2$, on the other hand, assesses the predictive relevance of the model, indicating how well the model can predict the values of the dependent variables. These measures are crucial for evaluating the robustness and predictive accuracy of the model.

## 4. Hypothesis testing

This section presents the results of hypothesis testing, which evaluate the direct effects of ENV, SOC, and GOV scores on firm performance, measured by market value (Tobin's Q) and financial performance. Additionally, the moderating role of EQ is assessed to determine how it influences the relationship between ESG dimensions and firm outcomes.

The analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM), and the results are summarized in Table 1. Key statistical indicators employed include path coefficients (β), T-values, P-values, effect sizes ($f^2$), $R^2$ (coefficient of determination), and $Q^2$ (predictive relevance). All values obtained fall within acceptable thresholds, demonstrating the robustness and validity of the model. As shown in Table 1, the results support the reliability of the structural relationships and confirm that the model possesses adequate explanatory power and predictive capability.

### 4.1. Direct and moderating effects of ESG on firm performance

The findings of hypothesis testing, which assess the direct impacts of ENV, SOC, and GOV scores on business performance as determined by market value (Tobin's Q) and financial performance, are shown in this section. Additionally, the moderating effect of EQ is evaluated in order to ascertain its impact on the relationship between company performance and ESG characteristics.

The analysis was conducted using Partial Least Squares Structural Equation Modelling (PLS-SEM), and the results are summarized in Table 1. Key statistical indicators employed include path coefficients (β), T-values, P-values, effect sizes ($f^2$), $R^2$ (coefficient of determination), and $Q^2$ (predictive relevance). The model's validity and robustness can be seen by the fact that all of the values collected fall within acceptable restrictions. As shown in Table 1, the findings indicate that the model has sufficient explanatory power and predictive ability and support the validity of the structural associations.

### 4.2. Path model results

Table 1 explains the path model's results examining how ESG elements affect Tobin's Q and ROA, as well as how earnings quality acts as a moderator. It includes path coefficients (β), effect sizes ($f^2$), T-values, P-values, and VIF.

From Table 1, the path model results present the effects of various ESG factors on firm performance, focusing on Tobin's Q (market value) and ROA (financial performance), along with the moderating role of earnings quality. The following key findings with significant effects are noted:

- ENV_DM→ROA_DM ($\beta = -0.343$, $p = 0.003$): ENV Responsibility has a significant negative effect on ROA, indicating that environmental initiatives may reduce short-term financial performance due to higher operational costs or long-term investment burdens.

- SOC_DM→ROA_DM ($\beta = 0.495$, $p < 0.01$): SOC Responsibility has a strong positive effect on ROA, indicating that social initiatives enhance financial performance.
- Abs_EQ_DM×ENV_DM→TBQ_DM ($\beta = -0.353$, $p = 0.001$): EQ moderates the effect of Environmental Activities on Tobin's Q, showing a significant interaction that supports the role of earnings quality in enhancing market value through environmental efforts.

### 4.3. Graphical results and interpretation

The outcomes of the hypothesis testing are presented clearly in this section. The moderating influence of EQ on the correlation between Tobin's Q and the ENV score can be seen in Fig. 3. The overall structural model is shown in Fig. 4, which also clarifies the connections between business performance, EQ, and ENV, SOC, and GOV scores.

**Table 1:** Results of hypothesis testing: Direct and moderating effects of ESG scores and EQ on firm performance (Tobin's Q and ROA)

| Path | β | $f^2$ | T-value | P-value | VIF |
|---|---|---|---|---|---|
| **Control variables** | | | | | |
| Firm size (Ln_Fsize → Tobin's Q) | -0.210 | 0.032 | 1.792 | 0.073 | 1.654 |
| Firm size (Ln_Fsize → ROA) | -0.349 | 0.084 | 4.055 | 0.000 | 1.654 |
| Firm age (FA → Tobin's Q) | 0.116 | 0.013 | 1.641 | 0.101 | 3.951 |
| Firm age (FA → ROA) | -0.106 | 0.010 | 1.485 | 0.138 | 3.951 |
| **Main effects** | | | | | |
| Environmental score (ENV → Tobin's Q) | 0.004 | 0.000 | 1.792 | 0.975 | 1.792 |
| Environmental score (ENV → ROA) | -0.343 | 0.037 | 4.055 | 0.003 | 4.055 |
| Social score (SOC → Tobin's Q) | 0.151 | 0.009 | 1.641 | 0.183 | 1.641 |
| Social score (SOC → ROA) | 0.495 | 0.092 | 1.485 | 0.000 | 1.485 |
| Governance score (GOV → Tobin's Q) | -0.235 | 0.043 | 1.792 | 0.060 | 1.792 |
| Governance score (GOV → ROA) | 0.021 | 0.000 | 0.405 | 0.647 | 1.161 |
| Earnings quality (EQ → Tobin's Q) | 0.346 | 0.095 | 1.641 | 0.000 | 1.641 |
| Earnings quality (EQ → ROA) | -0.165 | 0.021 | 1.485 | 0.039 | 1.485 |
| **Interaction effects (moderation)** | | | | | |
| EQ × ENV → Tobin's Q | -0.353 | 0.047 | 3.344 | 0.001 | 4.410 |
| EQ × ENV → ROA | -0.052 | 0.001 | 0.448 | 0.654 | 4.410 |
| EQ × SOC → Tobin's Q | 0.043 | 0.001 | 0.457 | 0.647 | 3.147 |
| EQ × SOC → ROA | 0.058 | 0.001 | 0.520 | 0.603 | 3.147 |
| EQ × GOV → Tobin's Q | 0.171 | 0.022 | 1.666 | 0.096 | 1.987 |
| EQ × GOV → ROA | 0.025 | 0.000 | 0.407 | 0.684 | 1.987 |

Model fit statistics: $R^2$ (Tobin's Q) = 0.203; $Q^2$ = 0.138. $R^2$ (ROA) = 0.244; $Q^2$ = 0.159

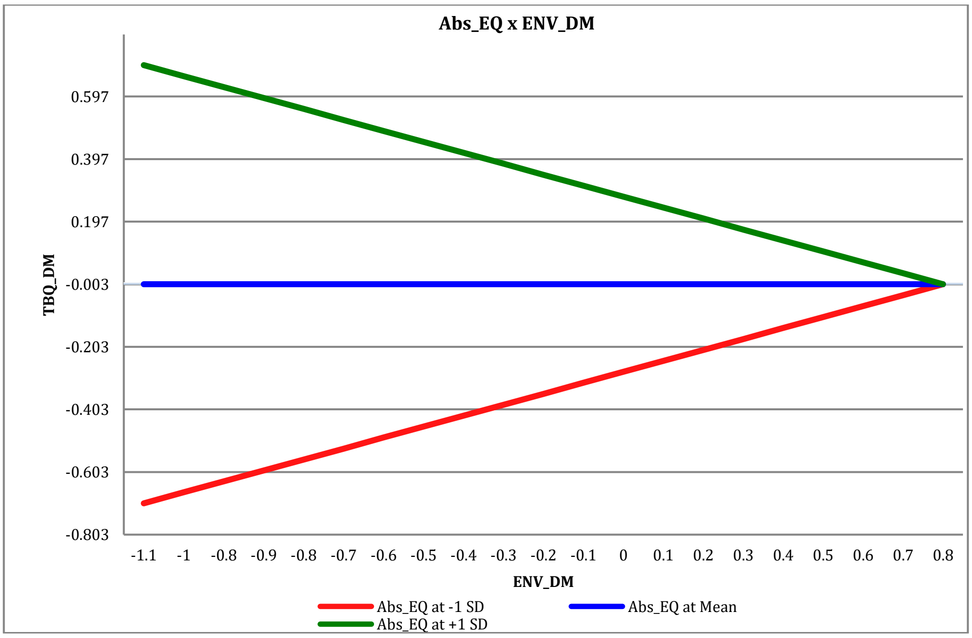


**Fig. 3:** Moderating effect of earnings quality on the ENV score and Tobin's Q relationship

Fig. 3 presents the moderating role of earnings quality (Abs_EQ_DM) in the relationship between ENV Score and Tobin's Q. When earnings quality is high (Abs_EQ_DM = −1 SD), the positive association between ENV Score and Tobin's Q is strengthened, indicating that firms with lower earnings management are more effective in converting environmental initiatives into market value. In contrast, when earnings quality is low (Abs_EQ_DM = +1 SD), the influence of ENV Score on Tobin's Q weakens, likely due to diminished credibility in financial reporting. Graphically, the green line (low EQ, Abs_EQ_DM = +1 SD) exhibits limited value gains from environmental activities, whereas the red line (high EQ, Abs_EQ_DM = −1 SD) shows a more pronounced upward trend, highlighting that higher earnings quality enhances the financial relevance of environmental performance.

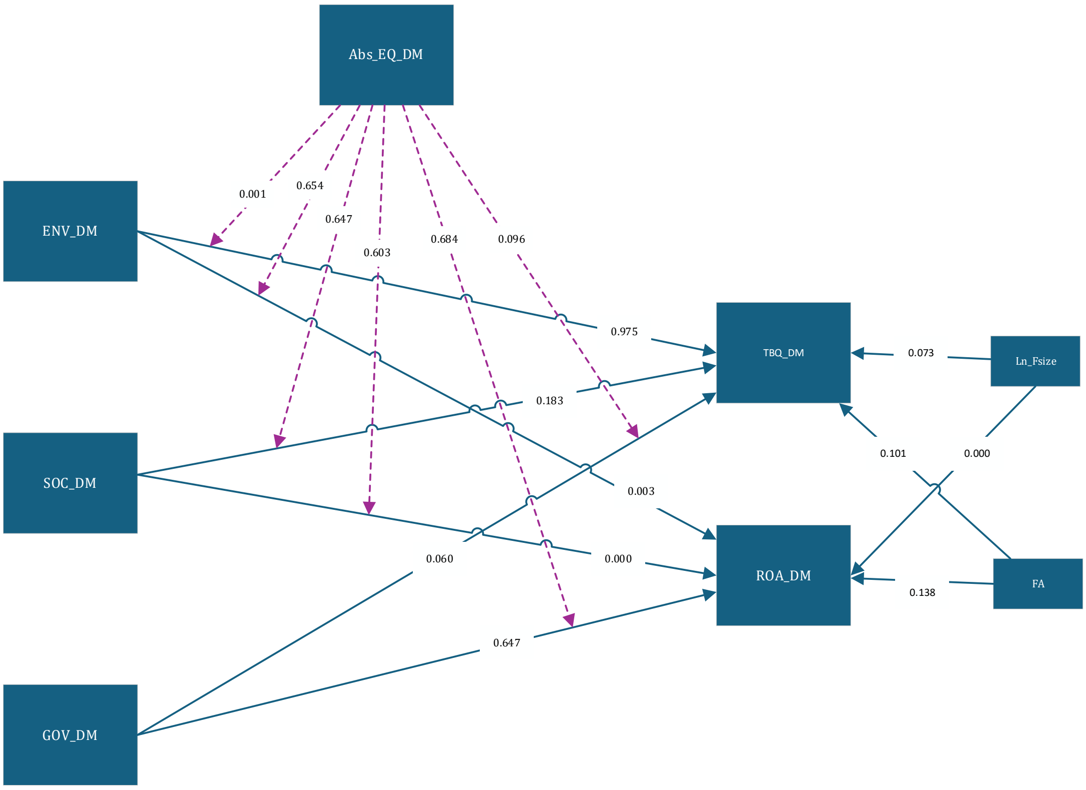


**Fig. 4:** Structural path model of ENV, SOC, GOV, earnings quality, and firm performance

From Fig. 4, the structural path model clarifies how the connections between ENV, SOC, GOV activities, Earnings Quality (Abs_EQ), and Firm Performance (Tobin's Q-TBQ_DM and ROA-ROA_DM), along with control variables including Firm Size (Ln_Fsize) and Firm Age (FA). The analysis provides information on the interactions between these variables and the way they influence business outcomes.

Key Observations:

- Main effects of ESG components: The social score (SOC_DM) has a significantly positive effect on financial performance (ROA_DM; $\beta = 0.495$, $p < 0.01$), showing that businesses that perform social responsibility typically have higher profits. In contrast, the Environmental Score (ENV_DM) has a negative effect on ROA_DM ($\beta = -0.353$, $p = 0.001$) and no significant impact on market value (Tobin's Q or TBQ_DM). The Governance Score (GOV_DM) shows no significant effect on either outcome.
- Moderating role of earnings quality (Abs_EQ): Earnings quality significantly moderates the relationship between ENV_DM and Tobin's Q ($\beta = -0.353$, $p = 0.001$) are suggesting that higher earnings quality strengthens the effect of environmental activities on market value. No significant moderating effects are observed between Abs_EQ and either SOC_DM or GOV_DM in relation to firm performance.

## 5. Discussion

Using Tobin's Q and ROA as primary indicators, this study analyzes the connection between ESG scores and business performance and looks at the moderating effect of EQ.

### 5.1. Impact of ESG score components on firm performance

#### 5.1.1. The impact of ENV score on firm performance

The ENV Score and the firm's market value (Tobin's Q) do not appear to be positively correlated. According to this, investors in the Thai capital market might not yet give environmental data their full weight when determining a company's worth. The lack of tools to convert environmental activities into concrete economic value may also be a sign, particularly in emerging markets where ESG awareness is still relatively low (Budsaratragoon and Jitmaneeroj, 2021).

Meanwhile, it is possible that the negative correlation between the ENV score and ROA is due to higher operating expenses resulting from environmental initiatives such as eco-friendly production, waste management, and efficient consumption of energy (Ben-Amar et al., 2017; Qureshi et al., 2020). Although these initiatives might not result in immediate financial gains, they can be analyzed using the framework of Stakeholder Theory, which indicates the significance it is to meeting stakeholders' demands for social responsibility and sustainability. According to this perspective, even if they come with immediate expenses, environmental projects are calculated investments meant to foster credibility, trust, and long-term worth.

#### 5.1.2. The impact of the SOC score on firm performance

The SOC Score analysis reveals that social initiatives such as promoting labor equity, supporting human rights, and engaging with local communities, while ethically important and beneficial to corporate image, have yet to be clearly translated into market value, particularly in new markets such as Thailand. The variation is further aggravated by the indecision of corporate social responsibility disclosures and difficulties with short-term evaluation.

This finding does not align with the study by Cheng et al. (2014), which suggests that social factors, through strengthening stakeholder confidence and reputation, may gradually raise corporate value. Data limitations and regional variations in investor awareness could be the cause of the differences. Moreover, Drempetic et al. (2020) noted that social information often qualifies as "soft information," difficult to quantify and slow to influence stock prices.

On the other hand, the SOC score shows a positive association with financial performance, consistent with Fatemi et al. (2015), who maintained that CSR initiatives, especially those pertaining to social issues, lower strategic risks, boost operational effectiveness, and increase long-term financial results.

Stakeholder Theory contends that businesses should consider the interests of other stakeholders in addition to shareholders, and our findings are consistent with that theory. Hence, even if it might not be evident right away in market performance, social engagement shows a sustained dedication to fostering trust, teamwork, and lasting value generation.

#### 5.1.3. The impact of GOV score on firm performance

The GOV Score research reveals no discernible positive impact on financial performance or market value (Tobin's Q). This might be the result of a number of difficulties, including higher administrative expenses related to developing internal control procedures, choosing independent directors, and adhering to governance standards, all of which could temporarily limit operational flexibility.

In emerging markets like Thailand, even firms listed in the THSI index with well-defined governance frameworks might not perceive a direct correlation between governance practices and business results. Furthermore, these processes might not immediately result in quantifiable gains in market or financial performance if investors are unable to assess governance benefits quantitatively.

This finding aligns with the study by Nguyen et al. (2022), who reported that governance measures in nations that are developing typically fail to provide obvious performance improvements due to insufficient enforcement and poor transparency. Similarly, Li and Xu (2021) found that stringent governance systems have been shown to increase administrative burdens and restrict decision-making agility, particularly in organizations with complicated business models.

These findings can be explained using Agency Theory, which points out conflicts of interest between managers and shareholders. Governance procedures are intended to increase transparency and reduce management opportunism. However, if their costs exceed the perceived benefits and if they fail to inspire investor confidence, they may not produce what is anticipated in short-term economic gains.

### 5.2. The impact of ESG scores on firm performance and the moderating role of earnings quality

The analysis indicates how ESG scores affect corporate performance, with EQ identified as a prominent moderator, particularly those Thai firms in the THSI index that adhere to ESG principles.

#### 5.2.1. ENV score and firm performance

The study finds that the ENV score plays a significant role in firm performance, particularly in relation to market value (Tobin's Q). The interaction between EQ and environmental activities (ENV_DM) shows a positive effect on market value ($\beta = 0.353$, p-value = 0.001), which shows that organizations with high earnings quality (i.e., minimal earnings management) and successful environmental activities are likely to obtain better market valuations over time. This finding points out the significance of transparent financial reporting and genuine environmental responsibility in fostering investor confidence, particularly among companies listed on the THSI index, which operates according to ESG principles.

This interaction implies that firms that can maintain high earnings quality while engaging in environmental practices demonstrate operational discipline and responsibility that improves their credibility in the perspective of investors and strengthens their financial stability in the long run, particularly in emerging markets such as Thailand, where ESG practices are gaining recognition.

However, the relationship between environmental activities and financial performance measured by ROA is not statistically significant ($\beta = -0.052$, p-value = 0.654). This suggests that, while environmental efforts help to ensure long-term sustainability, they may impose short-term operational costs such as investments in clean technologies, waste management, and energy efficiency, reducing asset utilization's immediate efficiency. This is especially important in emerging countries where such assets are frequently overlooked or undervalued by investors in the near run.

These findings are consistent with the studies of Ben-Amar et al. (2017), who discovered a component of while environmental investment increases corporate value over time, its associated short-term costs might harm financial performance. Similarly, Qureshi et al. (2020) pointed out that in emerging markets, environmental programs frequently fail to deliver quick cost savings, potentially resulting in short-term performance trade-offs despite long-term gains.

This evidence supports Agency Theory, which holds that excellent profit quality and genuine environmental engagement signal managerial transparency and a commitment to long-term shareholder benefit, reducing information asymmetry. It also supports Stakeholder Theory, which holds that environmental efforts, while not immediately profitable, function as strategic actions that meet stakeholder expectations and improve organizational sustainability in the long run.

#### 5.2.2. SOC score and firm performance

The findings show that the interplay between EQ and SOC score has no meaningful impact on either market value (Tobin's Q) or financial performance. This suggests that, while social activities like improving employee welfare, supporting communities, and promoting equality are ethically important, they do not yet translate into immediate economic value, especially in Thailand's capital market, where investor recognition of social impact is limited.

EQ, which is utilized as a moderating variable to analyze the association between SOC and business performance, has no meaningful influence on this relationship. One probable explanation is that social elements are sometimes seen as "soft information" that is difficult to measure or clearly link to profit or cost, making it difficult to assess their short-term financial impact.

This result aligns with the findings of Cheng et al. (2014), who argued that social initiatives typically influence firm value indirectly and over the long term. Similarly, Drempetic et al. (2020) pointed out that the intangible character of social elements restricts their visibility in short-term financial measurements.

These findings are consistent with Stakeholder Theory, which holds that organizations should consider the expectations of all stakeholders as not just shareholders. Even if social activities do not yield immediate financial benefits, they are deliberate initiatives to establish trust, long-term relationships, and sustainable organizational development.

#### 5.2.3. GOV score and firm performance

The study discovered that the interaction between EQ and GOV score has a positive relationship with market value (Tobin's Q); however, the effect is not statistically significant in the Thai capital market. This implies that, while strong governance systems such as independent board appointments or effective internal controls may provide long-term benefits, they do not appear to immediately increase market value in the short run. Investors in emerging nations such as Thailand may continue to prioritize short-term financial gains over structural governance changes.

Similarly, the combination of EQ and GOV did not have a substantial impact on the profitability of assets. This means that, while robust governance systems can improve operational transparency and they may not have an immediate influence on financial performance, especially in markets where short-term gains outweigh long-term strategic governance benefits.

However, the findings show that profit quality plays an important role in improving the effectiveness of governance measures. Firms with excellent earnings quality, indicating accurate and transparent financial reporting, are more likely to boost investor trust when combined with good governance procedures, thereby contributing to long-term value development.

These findings are consistent with Nguyen et al. (2022), who discovered that strong governance in new markets can lead to positive long-term outcomes, particularly when accompanied by increased transparency and regular communication with stakeholders.

Theoretical implications: These findings are consistent with Agency Theory, which argues that governance structures can assist in reducing conflicts between managers and shareholders. When combined with strong profits quality, governance sends a credible signal of managerial commitment to shareholder interests and long-term company value, even if the financial gains are not immediately apparent.

## 6. Conclusions and policy implications

This study looked at how ESG components affect company performance, with a focus on EQ as a moderator. The findings show that ENV activities have a considerable beneficial impact on market valuation (Tobin's Q) when enterprises retain excellent earnings quality. This shows that financial transparency boosts the authority of environmental efforts from the perspective of investors. Companies that report high-quality earnings and use effective environmental practices are more likely to achieve higher market values, especially within capital markets with rising ESG awareness, such as Thailand.

In contrast, SOC activities were discovered to considerably improve financial performance regardless of earnings quality. This suggests that activities like employee well-being and community support can directly improve operational efficiency and profitability. GOV performance does not exhibit a statistically significant effect on either market valuation or financial performance. This implies that corporate governance may be viewed by investors as a baseline or regulatory expectation, rather than a differentiating factor that enhances firm value.

The study points out the significance of including earnings quality into environmental strategies, as EQ may significantly increase the positive impact of environmental efforts on market valuation. Furthermore, social and governance measures remain valuable; however, their efficacy does not appear to be influenced by earnings quality.

The findings are consistent with Agency Theory, which suggests that strong earnings quality paired with ESG activities, particularly in the environmental dimension, indicates transparency and organizational discipline, minimizing conflicts between managers and shareholders. They also recommend Stakeholder Theory, which claims that environmental and social efforts help long-term sustainability by meeting the expectations of many different stakeholders, even if they do not result in significant financial benefits.

For corporate managers, the findings suggest that expanding profitability quality could increase the success of ESG policies, particularly in the environmental sector. Investors analyzing the value of a company should take into account both EQ and ESG performance. The government is expected to promote open communication and create ESG frameworks customized to specific industry circumstances. Future studies should begin looking into industry-specific effects and continue to study the long-term financial consequences of ESG standards.

## List of abbreviations

| | |
|---|---|
| Abs | Absolute |
| CSR | Corporate social responsibility |
| DAC | Discretionary accruals |
| DM | Discretionary accruals |
| ENV | Environmental score |
| EQ | Earnings quality |
| ESG | Environmental, social, and governance |
| FA | Firm age |
| $f^2$ | Effect size in structural equation modeling |
| GFC | Global financial crisis |
| GOV | Governance score |
| GRI | Global reporting initiative |
| Ln_Fsize | Natural logarithm of firm size |
| P-value | Probability value indicating significance of a statistical test |
| PLS-SEM | Partial Least Squares Structural Equation Modeling |
| $PPE_t$ | Gross property, plant, and equipment in year t |
| PRI | Principles for responsible investment |
| $Q^2$ | Predictive relevance (Stone-Geisser's $Q^2$). |
| ROA | Return on assets |
| ROA_DM | Return on assets (dependent variable in the model) |
| $R^2$ | Coefficient of determination |
| SASB | Sustainability Accounting Standards Board |
| SD | Standard deviation |
| SDGs | Sustainable development goals |
| SEC | Securities and Exchange Commission |
| SET | Stock Exchange of Thailand |
| SOC | Social score |
| SVI | Search volume index |
| T-value | Test statistic used to evaluate significance of coefficients |
| TAt | Total accruals in year t |
| TBQ_DM | Tobin's q (dependent variable in the model) |
| THSI | Thailand's sustainability investment |
| VIF | Variance inflation factor |
| β | Path coefficient in structural models |
| ΔREC | Change in receivables |
| $\Delta REC_t$ | Change in receivables in year t |
| $\Delta REV_t$ | Change in revenues in year t |
| $\varepsilon_t$ | Error term |

## Compliance with ethical standards

### Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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