

The Impact of Environmental, Social, and Governance (ESG) on Financial Performance Moderated by Firm Age and Firm Size

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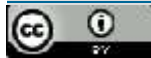
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ABSTRACT

This study investigates the relationship between Environmental, Social, and Governance (ESG) disclosure and corporate financial performance, with firm age and firm size incorporated as moderating factors. ESG disclosure has increasingly been recognized as an important indicator of firms' commitment to sustainability and responsible business conduct. Financial performance is assessed through Tobin's Q, Return on Assets (ROA), and Return on Equity (ROE). The study examines consumer goods firms listed on the Indonesia Stock Exchange over a five-year horizon using Moderated Regression Analysis (MRA). The findings indicate that firm age and firm size play important roles in conditioning the relationship between ESG disclosure and financial performance, suggesting that the impact of ESG disclosure differs depending on firm-specific attributes.

INTRODUCTION

Sustainability has become an increasingly important concern in contemporary business practices, particularly as stakeholders, investors, and regulators demand greater accountability beyond short-term profit maximization. The increasing focus on environmental, social, and governance (ESG) dimensions signals a transition toward long-term value creation and more responsible corporate conduct. Although financial performance remains essential for assessing a firm's sustainability and competitive capacity, reliance on financial indicators alone is increasingly viewed as inadequate to capture a company's broader responsibilities.

Financial performance reflects a firm's ability to generate profits and operate efficiently. Weak financial conditions often limit the effectiveness of sustainability initiatives, whereas financially strong firms are better positioned to invest in environmental, social, and governance improvements. In this context, ESG reporting serves as an essential mechanism through which companies communicate broader environmental, social, and governance impacts. ESG encompasses three main pillars: Environmental aspects cover issues related to energy efficiency, emission control, and waste management, while social dimensions focus on relationships with employees, local communities, and consumers. Governance refers to practices associated with leadership transparency, accountability mechanisms, and the enforcement of corporate ethical standards. These dimensions collectively enable stakeholders to assess the extent to which sustainability values have been integrated into corporate business strategies (Che Kasim et al., 2024).

The function of accounting in ESG reporting has evolved considerably over time. Accounting was initially centered on financial information but has gradually incorporated the assessment and disclosure of non-financial elements. Henisz et al. (2019) emphasized that accounting serves an important role in embedding non-financial considerations into strategic decision-making processes, thereby supporting firms in identifying and managing ESG-related risks and opportunities. Nevertheless, challenges remain, particularly due to the absence of a globally uniform ESG reporting standard, such as GRI, SASB, TCFD, or ISSB, which complicates cross-company comparability. The effects of sustainability initiatives generally emerge over extended periods rather than in the short term. These challenges do not diminish the tendency of firms that successfully embed ESG practices to attract higher levels of investor confidence. Rajani (2024) observed that investors are increasingly using ESG disclosure as a signal of long-term stability and sustainable business prospects. In this regard, accounting functions not only as a measurement tool but also as a communication instrument, ensuring that ESG information is verifiable, relevant, and aligned with international standards.

Research on the relationship between ESG activities and corporate financial outcomes has produced varied conclusions. While several studies show that ESG initiatives generate stronger performance benefits in advanced economies, others highlight their importance in improving governance structures and supporting sustainable development in emerging markets. More recent evidence points to a tendency for firms with higher levels of ESG transparency to record better financial outcomes. These differences suggest that firm-specific attributes, particularly firm age and firm size, play an important role in determining how ESG efforts are reflected in financial performance. Older firms usually benefit from more established systems and accumulated experience in implementing ESG practices (Fadilah et al., 2022), while larger firms possess greater resource availability to support sustainability-oriented initiatives (Kalsie & Shrivastav, 2016). Additional studies by Martiny et al. (2024) and Ahmad et al. (2024) identified multiple determinants of ESG reporting, including board characteristics, leverage, the presence of external audit committees, female representation on boards, as well as broader institutional and social environments.

In the Indonesian context, particularly within the consumer goods industry sector, ESG integration remains at a developmental stage. Earlier studies conducted by Jusmarni (2016), Manisa and Defung (2018), and Permata and Andreas (2019) documented inconsistent evidence concerning the effect of ESG on financial performance. The mixed evidence in prior research provides the basis for this study to further explore how firm-specific characteristics shape the ESG-performance linkage. Accordingly, this research investigates whether firm age and firm size condition the relationship between ESG disclosure and financial performance. Beyond identifying the direct association between ESG disclosure and performance, the study evaluates how these characteristics alter the strength of that association. The results are intended to offer practical insights for managers and regulators in enhancing ESG disclosure practices and supporting the financial sustainability of consumer goods companies in Indonesia.

LITERATURE REVIEW

Stakeholder Theory

Stakeholder Theory, originally articulated by R. Edward Freeman in his 1984 work *Strategic Management: A Stakeholder Approach*, argues that companies are accountable to a broad range of parties connected to the organization, not only to shareholders. From this perspective, sustainable long-term performance depends on how effectively firms manage and balance their relationships with diverse stakeholder groups (Freeman & McVea, 2005). Such stakeholders encompass shareholders, creditors, customers, suppliers, governmental bodies, local communities, analysts, and other relevant actors.

A firm's survival and long-term continuity largely rely on the support it receives from its stakeholders. Firms may face difficulties in maintaining operations if they fail to deliver value to stakeholders. ESG disclosure represents an important business principle that can influence stakeholders both within and outside the organization. Horisch et al. (2020) argue that when firms facilitate the production of sustainability-related accounting information, value creation for stakeholders increases. This indicates that a company's commitment to sustainability matters is a key factor in stakeholder assessment. These assessments, in turn, shape stakeholders' willingness to support the firm through investment, collaboration, or other forms of engagement.

Legitimacy Theory

Legitimacy Theory explains how organizations achieve social acceptance by operating in line with prevailing societal values and norms, as well as how they preserve stakeholder trust and support through actions perceived as appropriate and socially approved (Suchman, 1995). The theory posits that firms must align their activities with societal expectations and shared values to obtain and sustain legitimacy. Legitimacy is essential for organizational continuity and growth, as failure to meet social expectations may result in reputational damage, declining performance, or even organizational failure.

This concept is especially applicable to ESG reporting, where companies communicate their environmental, social, and governance impacts to establish and sustain legitimacy from stakeholder perspectives. The implementation of ESG practices and the formulation of ESG-oriented corporate strategies are primarily driven by the objective of attaining and maintaining legitimacy (Eliwa et al., 2021).

Environmental, Social, and Governance (ESG)

ESG reflects a sustainability-based value framework that highlights the interaction between human activities and the natural environment, while also incorporating stakeholder interests into the process of corporate value creation. The evaluation of ESG is structured around three core dimensions, namely environmental, social, and governance.

Environmental (E)

The environmental dimension relates to how firms use energy and resources, manage waste, and generate environmental impacts, such as emissions and climate change. Corporate activities are inherently connected to the natural environment, both shaping and being shaped by it.

Social (S)

The social dimension assesses firms' interactions with employees, customers, and the wider society, encompassing aspects such as labor relations, diversity, and inclusion. Firms operate within a broader and increasingly diverse social context.

Governance (G)

The governance dimension relates to how firms are directed and controlled, including leadership structures, board composition, shareholder rights, audit policies, reporting transparency, internal controls, as well as measures aimed at reducing conflicts of interest and limiting corrupt practices.

Financial Performance

Financial performance indicates the extent to which a firm efficiently utilizes its financial resources to meet business goals, generate earnings, and sustain financial stability over both short- and long-term horizons (Brigham & Houston, 2024). It reflects the results of managerial choices concerning the management of assets, liabilities, and capital with the objective of increasing firm value. Financial performance is typically evaluated using measures such as Tobin's Q, *Return on Assets (ROA)*, and *Return on Equity (ROE)*.

Tobin's Q represents the comparison between a firm's market valuation and the economic value of its assets. When the ratio exceeds one, it suggests that investors assign a premium to the firm, often reflecting favorable expectations about future growth. Conversely, a ratio below one indicates that the market places a lower value on the firm relative to its assets, which may signal weaker growth prospects.

Return on Assets (ROA) captures how effectively a company converts its asset base into profits. A higher ROA reflects stronger efficiency in managing and utilizing assets to generate earnings, while a lower ROA points to less optimal asset use. *Return on Equity (ROE)* measures the profitability generated from shareholders' invested capital. An elevated ROE indicates that equity is being employed productively to produce returns, whereas a lower ROE implies weaker profitability or inefficiencies in the use of shareholder funds.

Firm Age

Firm age denotes the length of time a company has been in operation, measured by the number of years between the year of observation and the firm's founding year.

Firm Size

Firm size reflects the overall scale of a company's activities and is typically represented by the magnitude of its total assets. Companies with larger asset bases are often perceived as more stable and capable of generating long-term value, which can increase investor interest and firm valuation. In this study, firm size is operationalized as the natural logarithm of total assets, following Melinda and Wardhani (2020).

Hypothesis Development

Viewed through the lenses of Stakeholder and Legitimacy theories, financial performance is not solely a consequence of shareholder-focused strategies but also reflects how firms respond to broader social expectations. Companies are increasingly required to consider the interests of diverse groups such as investors, customers, regulators, and the wider public—in their decision-making processes. Within this framework, comprehensive and transparent ESG reporting functions as a signal of a firm's commitment to sustainable conduct, helping to enhance legitimacy, build credibility, and secure long-term stakeholder support. Legitimacy Theory, in turn, suggests that firms seek to obtain and maintain social legitimacy by aligning their activities with societal values and expectations, with ESG disclosure acting as a mechanism to demonstrate compliance with prevailing social and environmental norms and to strengthen public legitimacy.

Transparent and extensive ESG disclosure supports the development of a stronger corporate reputation, closer relationships with stakeholders, and improved competitive positioning. A favorable reputation contributes not only to customer loyalty but also to the attraction of investors with a sustainability focus. Effective ESG management also helps mitigate operational risks, including legal exposure related to environmental harm or unethical conduct. Accordingly, companies that consistently adopt and integrate ESG disclosure tend to achieve superior financial outcomes compared with firms that place minimal emphasis on ESG-related practices (Tarmuji et al., 2016).

Existing research offers substantial discussion on how ESG-related activities influence corporate financial results, although the emphasis and contexts differ across studies. Large-scale empirical reviews suggest that the majority of prior findings associate ESG engagement with favorable performance outcomes. Evidence from sustainability-focused analyses further indicates that firms embedding ESG principles into their strategies tend to perform better financially over extended periods. More recent empirical work continues to document a positive link between ESG disclosure and firm performance, while other studies highlight that ESG involvement can ease access to external funding and strengthen corporate transparency and accountability. Taken together, these arguments and findings lead this study to argue that greater ESG disclosure is likely to be accompanied by stronger corporate financial performance.

From the perspective of the Resource-Based View (RBV), firms with longer operational experience possess more mature resources and capabilities, including those related to sustainability management. Organizational Learning Theory further suggests that older firms benefit from accumulated learning, enabling them to adapt more effectively to external pressures such as demands for transparency and social responsibility.

In the ESG context, older firms are believed to have a more comprehensive understanding of sustainability issues and to be better prepared to respond to stakeholder expectations. Prolonged exposure to regulatory requirements, investor pressure, and market dynamics enhances firms' ability to develop robust and long-term ESG disclosure systems. Moreover, established reputations motivate firms to maintain social legitimacy through more extensive ESG disclosure.

Huang and Watson (2015) find that older firms are more transparent in disclosing sustainability initiatives. This is supported by Cahan et al. (2016), who argue that mature firms are more likely to adopt extensive ESG practices to preserve market reputation. Talpur et al. (2018) state that firm age influences ESG disclosure as it reflects different stages of organizational growth and development. Consistent with Roestanto et al. (2022), firm age affects ESG disclosure, and older firms face greater stakeholder pressure to fulfill social contracts through higher-quality ESG reporting. Therefore, based on theory, logical reasoning, and empirical evidence, it is assumed that firm age positively moderates the relationship between ESG disclosure and financial performance.

H1.1: *Firm age moderates the relationship between ESG disclosure and Tobin's Q in consumer goods industry firms during the 2020–2024 period.*

H1.2: *Firm age moderates the relationship between ESG disclosure and ROA in consumer goods industry firms during the 2020–2024 period.*

H1.3: *Firm age moderates the relationship between ESG disclosure and ROE in consumer goods industry firms during the 2020–2024 period.*

The board of directors functions as a central governance mechanism tasked with supervising and guiding corporate activities while ensuring adherence to sound governance principles. Board size refers to the total number of individuals serving as directors and may affect the quality of strategic decision-making and managerial monitoring, including matters related to ESG disclosure. Agency Theory posits that a larger board can strengthen monitoring capacity, thereby enhancing transparency and accountability in ESG reporting. Good Corporate Governance Theory further argues that a well-structured board supports responsible governance and sustainability-oriented practices. Larger boards typically provide a broader range of expertise, experience, and viewpoints, which improves a firm's capability to address ESG issues in a strategic manner. Rao and Tilt (2016) provide empirical evidence showing that firms with larger boards tend to disclose ESG information more extensively.

Cheng et al. (2014) also demonstrate that larger board structures are more effective in implementing good governance principles, including ESG, ultimately contributing to improved financial performance. However, some empirical studies highlight potential drawbacks of excessively large boards. Suprpto and Alvina (2023) as well as Edi and Suyadi (2018) report that larger boards are linked to a greater probability of earnings restatements, which may signal inefficiencies in decision-making processes. Yan et al. (2021) document a negative association between board size and firm performance, particularly within high-technology industries. Additional evidence indicates that boards composed of an odd number of members can be more effective than even-numbered boards, as such structures help minimize the risk of decision-making

stalemates. In contrast, Kalsie and Shrivastav (2016), employing both market-based indicators (Tobin's Q and Market-to-Book Value) and accounting-based measures (ROA and ROCE), find that board size exerts a positive and significant influence on firm performance.

Based on relevant theoretical perspectives, analytical reasoning, and insights from prior studies, this research proposes that firm size conditions the link between ESG disclosure and financial performance. Firms with larger operational scales typically have more resources and organizational capabilities to implement ESG initiatives effectively, which increases the likelihood that ESG disclosure will translate into financial benefits.

H2.1: Firm size moderates the relationship between ESG disclosure and Tobin's Q in consumer goods industry firms during the 2020–2024 period.

H2.2: Firm size moderates the relationship between ESG disclosure and ROA in consumer goods industry firms during the 2020–2024 period.

H2.3: Firm size moderates the relationship between ESG disclosure and ROE in consumer goods industry firms during the 2020–2024 period.

METHODOLOGY

This study employs a quantitative research design, which utilizes numerical or statistical data analysis to test hypotheses, measure phenomena, and identify relationships or effects among the variables examined, thereby producing generalizable conclusions. The quantitative methodology employs several statistical procedures, including descriptive statistics, classical assumption testing, panel data regression, and moderated regression analysis. The study population consists of consumer goods companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The sample is selected using purposive sampling, focusing on firms that consistently published complete financial statements and annual reports with no missing data throughout the observation period.

Analytical Method

This study applies panel-based multiple regression with moderation analysis to assess the proposed relationships. The sample covers a five-year observation window and consists of firm-level data observed across time and across companies. Accordingly, panel regression is adopted to evaluate the effect of ESG disclosure on financial performance and to test the moderating roles of firm age and firm size. By combining cross-firm variation with longitudinal observations, panel data analysis allows for a more nuanced understanding of the underlying relationships. Prior to model estimation, a series of diagnostic tests including normality, heteroskedasticity, and multicollinearity checks were conducted to ensure the robustness and validity of the regression results.

Independent Variables (X):

- X₁: Environmental Disclosure (ENV).
- X₂: Social Disclosure (SOC).
- X₃: Governance Disclosure (GOV).

Dependent Variables (Y): Corporate Financial Performance

- Y₁: Firm Performance (Tobin's Q)
- Y₂: Firm Performance (ROA)
- Y₃: Firm Performance (ROE)

Moderating Variables (M):

- M₁: Firm Age
- M₂: Firm Size

The panel data regression model can generally be represented in the following form (Greene, 2017):

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 M_{it} + \beta_5 (X_{1it} * M_{it}) + \beta_6 (X_{2it} * M_{it}) + \beta_7 (X_{3it} * M_{it}) + \alpha_i + \lambda_t + \varepsilon$$

Where:

- Y_{it} = Dependent variable for firm i at time t.
- X_{1it}, X_{2it}, X_{3it} = Independent variables for firm i at time t.
- X_{1it} × M_{it}, X_{2it} × M_{it}, X_{3it} × M_{it} = Interaction terms representing the moderating effects of the independent variables.
- α_i = Individual fixed or random effect.
- λ_t = Time effect (in the case of a two-way model).

This study employs three panel data estimation approaches, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), to assess the effects of the independent variables on firm performance (Y). The appropriate model is selected using the Chow test, Hausman test, and Lagrange Multiplier test (Greene, 2017).

Significance Tests

Statistical significance is assessed using the t-test to examine the partial effects of individual independent variables and the F-test to evaluate their joint effects. Hypotheses are accepted when the p-value is below 0.05. The coefficient of determination (R²) is used to assess the proportion of variance in the dependent variable explained by the independent variables.

RESEARCH RESULT*Descriptive Statistical Analysis***Table 1. Results of Descriptive Statistics**

Variable	Mean	Median	Maximum	Minimum	Std. Dev
X1 (ENV)	47.0174	35.7150	93.9400	0.1300	25.2929
X2 (SOC)	54.4040	52.0550	94.5600	22.5000	22.4460
X3 (GOV)	50.4908	54.0245	107.0500	2.9800	25.7355
Y1 (Tobin's Q)	2.7274	2.1400	14.4100	0.4800	2.7931
Y2 (ROA)	0.1294	0.1000	0.3500	-0.1400	0.0951
Y3 (ROE)	0.3934	0.1500	2.3800	-1.5000	0.6266
M1 (Firm age)	44.2000	41.0000	91.0000	11.0000	23.5900
M2 (Firm size)	31.0582	30.9950	32.9400	29.2800	1.1679

a. Independent Variables

The independent variable examined in this study is ESG (Environmental, Social, and Governance) disclosure. As presented in Table 1, the environmental dimension shows a mean value of 47.01, suggesting that the average level of environmental disclosure quality in Indonesia over the 2020–2024 period reached 47.01 out of a possible score of 100. Among the 50 firm-year observations, PT Indofood Sukses Makmur Tbk achieved the highest environmental disclosure score of 93.94 in 2024, whereas the lowest score of 0.13 was recorded by PT Media Nusantara Citra Tbk in 2021.

For the social variable, the mean value is 54.40, indicating that the average quality of social disclosure in Indonesia during the 2020–2024 period reached 54.40 out of a maximum score of 100. Among the 50 firm-year observations, PT Indofood CBP Sukses Makmur Tbk reported the highest social disclosure score of 94.56 in 2024, whereas the lowest score was recorded by PT Gudang Garam Tbk at 22.50 in 2022.

The governance dimension records a mean value of 46.16, reflecting the average level of governance disclosure quality in Indonesia throughout the 2020–2024 period. Among the 50 firm-year observations, PT Surya Cipta Media Tbk achieved the highest governance disclosure score of 107.05 in 2024, while the lowest score was recorded by PT Charoen Pokphand Indonesia Tbk at 2.98 in 2020.

b. Dependent Variables

Firm value and financial performance serve as the key outcome variables in this study, represented by Tobin's Q, Return on Assets (ROA), and Return on Equity (ROE). Descriptive statistics reported in Table 4.1 show that Tobin's Q has a mean of 2.73 with a standard deviation of 2.79, reflecting considerable differences in market valuation across firms. The highest market valuation, with a Tobin's Q of 14.41, was observed for PT Unilever Indonesia Tbk in 2020, whereas the lowest value, 0.61, occurred at PT Media Nusantara Citra Tbk in 2022.

Regarding profitability, ROA (Y_2) records an average of 0.129, suggesting that firms generated approximately IDR 0.129 in net income for every IDR 1 of assets annually. The standard deviation of 0.09 indicates a moderate level of variation among firms. The maximum ROA, reaching 0.35, was achieved by PT Unilever Indonesia Tbk in 2020, while the minimum ROA of -0.14 was reported by PT Matahari Department Store Tbk during the same year.

The ROE (Y_3) variable records a mean value of 0.39, indicating that, on average, each IDR 1 of shareholders' equity generated IDR 0.39 in net income per year. Among the 50 firm-year observations, the lowest ROE value of -1.50 was recorded by PT Matahari Department Store Tbk in 2020, reflecting a net loss. A negative ROE of -150% indicates that for every IDR 1 of shareholders' equity, the firm incurred a loss of IDR 1.50 within one year. However, the firm experienced a recovery in 2022, achieving the highest ROE value of 2.38.

c. Moderating Variables

This study incorporates firm age and firm size as moderating variables. With respect to firm age (M_1), the consumer goods firms in Indonesia included in the sample range from 11 to 91 years in operation, with an average firm age of 44 years. Firm size (M_2) is represented by total assets, with an average value of 31.05 across the 50 firm-year observations, a maximum of 32.94, and a minimum of 29.28.

Selection of the Best Panel Data Model

The most appropriate panel data model is selected based on the Chow test, Hausman test, and Lagrange Multiplier test.

a. Chow Test

The Chow test is applied to identify the most appropriate panel data regression model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). The table below presents the Chow test results for the three dependent variables based on the independent variables and the moderating factors of firm age and firm size.

Table 2. Chow Test Results for Firm Age as a Moderating Variable

	Probability Value (prob)	The Result	Decision
Y1 (Tobins'Q)	0.0000	prob < 0.05	FEM
Y2 (ROA)	0.0053	prob < 0.05	FEM
Y3 (ROE)	0.2524	prob > 0.05	CEM

For each dependent variable, a panel regression equation was estimated, producing probability (prob) values greater than 0.05 and less than 0.05. The model estimations for Y_1 (Tobin's Q) and Y_2 (ROA) incorporating firm age as the moderating variable produced probability values below 0.05. Accordingly, a Hausman test was conducted to determine whether the Fixed Effect Model (FEM) provided a better fit than the Random Effect Model (REM).

By contrast, the Y_3 (ROE) model is further evaluated using the Lagrange Multiplier test to determine whether the Random Effect Model (REM) is more appropriate than the Common Effect Model (CEM).

Table 3. Chow Test Results for Firm Size as a Moderating Variable

	Probability Value (prob)	The Result	Decision
Y1 (Tobins'Q)	0.0000	prob < 0.05	FEM
Y2 (ROA)	0.0081	prob < 0.05	FEM
Y3 (ROE)	0.0564	prob > 0.05	CEM

As shown in Table 3, the regression models incorporating firm size as a moderating variable indicate that the Y_1 (Tobin's Q) and Y_2 (ROA) models advance to the Hausman test, whereas the Y_3 (ROE) model proceeds to the Lagrange Multiplier test.

b. Hausman Test

The Hausman test is used to determine whether the Fixed Effect Model (FEM) or the Random Effect Model (REM) is more suitable for the analysis. The table below presents the Hausman test results for models incorporating firm age as the moderating variable.

Table 4. Hausman Test Results for Firm Age as a Moderating Variable

	Probability Value (prob)	The Result	Decision
Y1 (Tobins'Q)	0.0308	prob < 0.05	FEM
Y2 (ROA)	0.9399	prob > 0.05	REM

Based on the Hausman test results presented in Table 4, the Y_1 (Tobin's Q) model yields a probability value below 0.05, indicating that the Fixed Effect Model (FEM) is preferred over the Random Effect Model (REM).

For the Y_2 (ROA) model, the probability value exceeds 0.05; therefore, the analysis is extended to the Lagrange Multiplier test to assess whether the Random Effect Model (REM) is more appropriate than the Common Effect Model (CEM).

Table 5. Hausman Test Results for Firm Size as a Moderating Variable

	Probability Value (prob)	The Result	Decision
Y1 (Tobins'Q)	0.0000	prob < 0.05	FEM
Y2 (ROA)	0.0474	prob < 0.05	FEM

Table 5 reports the Hausman test outcomes for each independent variable when moderated by firm size. The probability values obtained are below 0.05, indicating that the Fixed Effect Model (FEM) is more appropriate than the Random Effect Model (REM).

c. Lagrange Multiplier Test

The Lagrange Multiplier (LM) test, as proposed by Breusch and Pagan, is applied to assess whether the Random Effect Model (REM) is more appropriate than the Common Effect Model (CEM).

Table 6. Lagrange Multiplier Test Results for Firm Age as a Moderating Variable

	Probability Value (prob)	The Result	Decision
Y2 (ROA)	0.0087	prob < 0.05	REM
Y3 (ROE)	0.6005	prob > 0.05	CEM

Based on the results presented in Table 6, the most appropriate model for explaining Y₂ (ROA) is the Random Effect Model (REM), while the most suitable model for Y₃ (ROE) is the Common Effect Model (CEM).

Table 7. Lagrange Multiplier Test Results for Firm Size as a Moderating Variable

	Probability Value (prob)	The Result	Decision
Y3 (ROE)	0.4747	prob > 0.05	CEM

The best model for the dependent variable moderated by firm size for Y₃ (ROE) is the Common Effect Model (CEM).

DISCUSSION

The Effect of Environmental Disclosure on Tobin's Q, ROA, and ROE

Environmental disclosure positively affects firm value (Tobin's Q) but has no direct impact on ROA or ROE. When firm age is considered, the negative effect of environmental disclosure on ROA weakens as firms become older, indicating that more mature firms manage environmental disclosure more effectively without harming financial performance.

Older firms tend to have stronger legitimacy due to long-established relationships with stakeholders, as well as accumulated reputation and public trust. Investors and customers may perceive such firms as having a credible long-term commitment to sustainability. Consequently, the legitimacy enjoyed by older firms enables them to absorb or offset the pressure of environmental disclosure on profitability. This finding aligns with Legitimacy Theory, which posits that firms with strong legitimacy positions can engage in environmental and social responsibility practices without significantly compromising financial performance.

The Effect of Social Disclosure on Tobin's Q, ROA, and ROE

Social disclosure (X_2) is found to be positively and significantly related to firm value as measured by Tobin's Q. This result suggests that greater transparency regarding social practices is valued by the market. From a stakeholder-oriented perspective, communicating commitments to employee well-being, fair labor practices, and community engagement can strengthen a firm's standing among key stakeholder groups, which is reflected in higher market valuation.

However, the analysis shows no significant direct relationship between social disclosure and ROA or ROE. This indicates that social-related disclosures do not immediately translate into improvements in operational efficiency or shareholder-based profitability. Such outcomes are reasonable given that ROA and ROE capture short-term financial performance, whereas social initiatives are primarily designed to build trust, legitimacy, and long-term relationships with external stakeholders. As a result, the economic benefits of social disclosure are more likely to be realized gradually and manifested in long-term firm value rather than in short-term accounting returns.

The Effect of Governance Disclosure on Tobin's Q, ROA, and ROE

Governance disclosure is shown to have a positive and statistically significant association with firm value and profitability, as reflected in Tobin's Q, ROA, and ROE. Greater transparency in governance-related information (X_3) is positively valued by the market and is linked to higher firm valuation, supporting earlier evidence that well-disclosed governance practices enhance market-based performance measures. In addition, governance disclosure is also associated with improved accounting-based performance, indicating benefits for both operational efficiency and shareholder returns.

Companies that communicate clear governance structures, accountability mechanisms, and oversight practices are more likely to achieve effective managerial control and gain stronger confidence from investors. These conditions contribute to better resource utilization and profitability. From a theoretical standpoint, transparent governance aligns managerial actions with the interests of diverse stakeholders and helps mitigate agency problems between managers and shareholders, thereby reinforcing both market performance and financial outcomes.

The Simultaneous Effect of Environmental, Social, and Governance Disclosure on Tobin's Q, ROA, and ROE

For consumer goods firms listed on the Indonesia Stock Exchange during 2020–2024, the results indicate that ESG disclosure, when considered as a whole, plays a meaningful role in shaping market value, operating profitability, and returns to shareholders, as captured by Tobin's Q, ROA, and ROE.

Joint ESG disclosure enhances investor perceptions of transparency and firm value, while effective ESG management supports more efficient asset utilization and higher returns to capital providers. ESG performance contributes to ROE through improved efficiency, risk reduction, and stronger corporate reputation, although the magnitude of these effects may vary across industries, country contexts, and stages of ESG implementation.

For instance, Li et al. (2024), based on a study of 6,575 firm observations in China (2011–2021), found that ESG disclosure significantly increases Tobin's Q but does not significantly affect ROE. Meanwhile, a study in the Turkish manufacturing industry (2018–2022) found that ESG scores have a significant positive effect on ROA and Tobin's Q at the 10% and 5% significance levels, respectively (Akpınar & Topak, 2024).

The Moderating Effect of Firm Age on the Relationship between ESG Disclosure and Tobin's Q, ROA, and ROE

The interaction between environmental disclosure and firm age has a positive effect on Tobin's Q, indicating that older firms can strategically leverage environmental disclosure to improve market perception and firm value. Investors tend to view long-established firms that remain adaptive to sustainability issues more favorably, thereby increasing market confidence and valuation. A similar positive interaction effect is observed for ROA, suggesting that older firms engaged in environmental reporting tend to achieve greater asset efficiency.

Consistent with Lin and Qamruzzaman (2023), environmental disclosure is associated with improved operational efficiency and profitability. However, the interaction between environmental disclosure and firm age does not have a significant effect on ROE, suggesting that the combined influence is insufficient to consistently affect shareholder returns.

Firm age also does not moderate the relationships between social disclosure and Tobin's Q, ROA, or ROE, nor between governance disclosure and these performance measures. These findings align with Lai et al. (2014) and Arora and Sharma (2016), indicating that governance effectiveness is valued by the market regardless of firm age, provided that governance practices are implemented credibly.

The Moderating Effect of Firm Size on the Relationship between ESG Disclosure and Tobin's Q, ROA, and ROE

The analysis shows that firm size conditions the relationship between environmental disclosure and firm performance. While environmental disclosure on its own is associated with stronger Tobin's Q, ROA, and ROE, the interaction with firm size yields a significant negative effect on all three indicators. This pattern implies that, among larger firms, environmental disclosure may be accompanied by lower market valuation and profitability, potentially reflecting greater organizational complexity, bureaucratic rigidities, or the higher costs required to implement environmental initiatives at scale.

In some cases, environmental disclosure may be perceived as an additional cost burden, particularly when tangible financial benefits are not immediately evident (Faria et al., 2022). Moreover, investors often hold higher expectations for large firms; if environmental disclosures are perceived as symbolic or insufficient, market reactions may become negative.

Firm size emerges as a conditioning variable in the link between social disclosure and both market value and operational performance. Although social disclosure on its own is associated with positive outcomes, the negative and significant interaction with firm size indicates that this association becomes weaker in larger firms. For firms with greater scale, social reporting may be interpreted as routine or symbolic communication rather than as evidence of genuine social commitment, which reduces its effectiveness in enhancing firm value and profitability.

By contrast, firm size does not alter the relationship between social disclosure and shareholder returns, nor does it influence the effects of governance disclosure on market value or accounting performance. This pattern suggests that governance outcomes are less sensitive to firm scale and are instead more strongly determined by the substance and effectiveness of governance practices themselves.

The Simultaneous Moderating Effects of Firm Age and Firm Size on the ESG-Financial Performance Relationship

Greater sensitivity to ESG disclosure is observed in market-based and equity-based performance when firm age is taken into account. Specifically, firm age is found to moderate the relationship between ESG disclosure and both Tobin's Q and ROE, while no moderating effect is detected for ROA. This pattern aligns with prior evidence suggesting that interactions between firm characteristics and ESG practices tend to have a more pronounced impact on market valuation and shareholder returns than on measures of operational profitability (Oluwakemi & Mishelle, 2025).

Firm size plays a moderating role in the relationship between ESG disclosure and firm performance, including Tobin's Q, ROA, and ROE. This suggests that the impact of ESG disclosure varies according to firm scale, with larger firms tending to capture greater performance benefits. Such firms generally possess higher public visibility, more developed organizational resources, and face stronger monitoring from stakeholders, which enhances the effectiveness of ESG disclosure in influencing market valuation and financial outcomes.

CONCLUSIONS AND RECOMMENDATIONS

Focusing on consumer goods firms listed on the Indonesia Stock Exchange during the 2020–2024 period, this study analyzes how the disclosure of Environmental, Social, and Governance (ESG) information is associated with both market valuation and financial outcomes, as reflected in Tobin's Q, ROA, and ROE, while incorporating firm age and firm size as moderating factors. The empirical results demonstrate that ESG disclosure has a statistically meaningful direct effect on each of the three performance measures. Furthermore, the

strength of this relationship varies according to firm characteristics: firm age shapes the ESG-performance link for Tobin's Q and ROE but shows no moderating influence on ROA, whereas firm size consistently moderates the relationships between ESG disclosure and Tobin's Q, ROA, and ROE.

ADVANCED RESEARCH

Future research can advance this topic by improving ESG measurement beyond disclosure, expanding sectoral and geographic coverage, strengthening causal inference with policy/event-based designs, enriching the model with governance and financial channels, broadening performance metrics toward risk and capital market outcomes, and testing heterogeneity via non-linear or distributional methods.

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