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Research article

The impact of ESG implementation and green innovation on the financial performance of companies listed on the IDX ESG leaders index (2020-2022)

Luqman Arief Ramadhana[1], Syahrul Effendi[2]

[1]Sekolah Tinggi Ilmu Ekonomi Indonesia Jakarta, Jakarta, Indonesia
[2]Business Creation Program, Management Department, BINUS Business School Undergraduate Program, Bina Nusantara University, Jakarta, Indonesia

ABSTRACT

This study aims to examine the impact of Environmental, Social, and Governance (ESG) performance and green innovation on the financial performance of companies. Economic performance is measured using Tobin's Q, while ESG and green innovation are measured using indicators established by the researchers. The research population comprises all 30 companies listed on the IDX ESG Leaders Index between 2020 and 2022. Applying purposive sampling criteria, a final sample of 19 companies was selected for analysis. The findings reveal a contrasting influence of the two independent variables. The ESG performance variable demonstrates a negative and significant effect on corporate financial performance. Conversely, green innovation exhibits a positive and significant impact. Furthermore, the control variables, company size and leverage, are also proven to influence financial performance significantly. These findings indicate that while green innovation directly contributes to enhanced financial outcomes, the current implementation of ESG practices may incur short-term costs that outweigh its immediate economic benefits.

Keywords: Environmental, social, governance (ESG), green innovation, corporate financial performance, corporate size, leverage

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Corresponding author:
Luqman Arief Ramadhana.
Email: larvarief74@gmail.com
Sekolah Tinggi Ilmu Ekonomi Indonesia Jakarta, Jakarta, Indonesia

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Abstrak

Penelitian ini bertujuan untuk menganalisis dampak kinerja Lingkungan, Sosial, dan Tata Kelola (ESG) serta inovasi hijau terhadap kinerja keuangan perusahaan. Kinerja ekonomi diukur menggunakan Tobin's Q, sementara ESG dan inovasi hijau diukur menggunakan indikator yang ditetapkan oleh para peneliti. Populasi penelitian terdiri dari semua 30 perusahaan yang terdaftar di IDX ESG Leaders Index antara tahun 2020 dan 2022. Dengan menerapkan kriteria sampling purposif, sampel akhir sebanyak 19 perusahaan dipilih untuk dianalisis. Temuan menunjukkan pengaruh yang kontras dari dua variabel independen. Variabel kinerja ESG menunjukkan efek negatif dan signifikan terhadap kinerja keuangan korporat. Sebaliknya, inovasi hijau menunjukkan dampak positif dan signifikan. Selain itu, variabel kontrol, ukuran perusahaan dan leverage, juga terbukti mempengaruhi kinerja keuangan secara signifikan. Temuan ini menunjukkan bahwa meskipun inovasi hijau secara langsung berkontribusi pada hasil keuangan yang lebih baik, implementasi praktik ESG saat ini mungkin menimbulkan biaya jangka pendek yang melebihi manfaat ekonomi langsungnya.

Kata Kunci: *Environmental, social, governance (ESG), green innovation, kinerja keuangan perusahaan, ukuran perusahaan, leverage*

1. Introduction

As development progresses, the challenges faced by society become increasingly complex, with sustainability emerging as a central concern. Sustainability refers to the pursuit of economic growth that simultaneously addresses climate change, natural resource scarcity, and other environmental challenges (Tolliver et al., 2020). It ensures that business operations avoid negative impacts on surrounding communities and natural environments while contributing positively to the achievement of the Sustainable Development Goals (Ceballos et al., 2023). In the current era of globalization, companies are undergoing a significant shift, compelled to pay greater attention to the environmental and social consequences of their activities. This change is primarily driven by rising public awareness regarding the importance of environmental preservation and social welfare (Husada & Handayani, 2021). A concrete manifestation of this corporate sustainability is the implementation of Environmental, Social, and Governance (ESG) principles and green innovation. These concepts represent an evolution and specific application of the broader Corporate Social Responsibility (CSR) framework, which encourages companies to be accountable to their environment and society (Chouaibi et al., 2019; Effendi, 2019).

In practice, the application of ESG and green innovation encompasses a wide range of activities. These include waste management, carbon emission reduction, the development of environmentally friendly products, fair employment policies, labor empowerment, and corporate transparency, all of which are typically detailed in a company's sustainability report (Chouaibi et al., 2019). When implemented effectively, these practices offer significant strategic advantages. They can enhance company performance, build a strong long-term reputation, create a competitive edge through unique green products, mitigate risks associated with stringent environmental regulations, and attract a growing pool of investors who prioritize sustainability (Zheng et al., 2023). Collectively, these benefits have the potential to increase corporate profitability and support long-term growth, thereby positioning companies for success in an economy that is increasingly oriented toward sustainability.

In the Indonesian context, the adoption of ESG and green innovation is steadily progressing. This is evidenced by a significant growth trend in sustainable investments, as modern investors increasingly factor a company's sustainable practices into their decisions alongside traditional operational and financial metrics (Shakil, 2021). However, this development is not without obstacles. Significant challenges remain, including a low understanding of sustainability concepts among many companies, the high initial investment required for new infrastructure and technology, concerns that these costs may impair short-term financial returns, and a lack of robust supporting frameworks and regulations (Husada & Handayani, 2021). A further critical obstacle is the emergence of greenwashing, where certain parties misrepresent their sustainability efforts to secure investor funding. This practice of data manipulation severely undermines public trust in corporate sustainability commitments (Chandra et al., 2022).

The existing body of research on the financial implications of ESG and green innovation presents conflicting findings, underscoring a clear research gap. Several international studies, such as those on financial firms in Germany and the UK (Chouaibi et al., 2019) and on general ESG scores (Kim & Li, 2020), report a positive effect on financial performance. Similarly, research on green innovation in the oil & gas sector (Aastvedt et al., 2021) and on company value in China (Dai & Xia, 2022) also found positive influences. Conversely, other studies present contrasting results. Research on Indonesian financial companies (Husada & Handayani, 2021) and Polish energy firms (Baran et al., 2022) found that ESG scores had no significant influence on financial performance. Likewise, studies on green innovation in Indonesian manufacturing (Maulana & Mulyadi, 2022) and in China's heavy pollution industry (Xie et al., 2022) found no significant effect on firm value. Given that sustainability issues have been more extensively researched in European, American, and Chinese contexts, the relative scarcity of focused studies in Indonesia may explain these divergent outcomes and highlights the need for further localized investigation.

Therefore, the purpose of this study is to obtain robust empirical evidence on the impact of ESG performance and green innovation on the financial performance of companies in Indonesia. This research is expected to provide substantial benefits. For companies, it can offer valuable insights for effectively implementing sustainability principles and managing financial resources. For investors, the findings can provide crucial information for making informed investment decisions. Furthermore, for the academic community, this research serves as a reference for future scholars who wish to develop further studies in this field.

2. Theoretical framework and hypothesis

The Growth of the Firm theory, introduced by Penrose (1959), posits that firm Growth is driven by internal processes and strategies that expand operations, market presence, and overall size. The theory emphasizes a firm's internal resources and capabilities as the primary engines for Growth, suggesting that a firm's productive opportunities are not necessarily limited to its existing markets (Lau & Michie, 2022). Essentially, this theory provides a framework for understanding why some firms successfully achieve Growth while others do not, highlighting the critical role of internal resource management and strategic direction (Lau & Michie, 2022).

Resource-Based View (RBV) Theory

Introduced by Wernerfelt (1984), the Resource-Based View (RBV) theory frames a firm as a unique collection of tangible and intangible resources and capabilities. According to this strategic management approach, these internal resources are the main components for achieving a sustainable competitive advantage (Bhandari et al., 2021). The RBV focuses on the processes of identifying, developing, and deploying valuable, rare, and inimitable resources to create long-term Growth, which in turn positively impacts a firm's financial performance (Dasuki, 2021).

Hypothesis Development

The Effect of ESG on corporate financial performance

Financial performance is a comprehensive evaluation of how effectively a company manages its assets, debt, and capital to achieve its financial objectives (Anhar, 2017). It measures the efficiency and effectiveness of a firm in generating profits, managing assets, and servicing its debts. This evaluation typically involves analyzing financial statements and ratios derived from balance sheets and income statements to assess both current financial position and prospects (Husada & Handayani, 2021). In this study, financial performance is measured using Tobin's Q, a ratio that compares the market value of a company to the replacement cost of its assets (Chouaibi et al., 2019). A high Tobin's Q indicates that the market values the company positively, suggesting that its market worth exceeds the book value of its physical assets (Ishaq et al., 2021).

Environmental, Social, and Governance (ESG) refers to the key non-financial factors used to evaluate a company's commitment to social responsibility, environmental stewardship, and sound ethical governance (Kim & Li, 2021). The theoretical underpinning suggests that companies can derive significant benefits from the effective implementation of ESG principles. When firms integrate environmental, social, and governance considerations into their strategic decision-making, they are better positioned to manage risks, reduce long-term operational costs, and enhance their corporate reputation. This holistic improvement in corporate management and stakeholder perception can subsequently elevate the company's overall market value and profitability (Ruan & Liu, 2021). Furthermore, a robust ESG profile is increasingly attractive to a growing segment of investors who incorporate sustainability criteria into their investment decisions (Zheng et al., 2022). This positive relationship is empirically supported by research from Chouaibi et al. (2019) and Minggu et al. (2023), who found that strong ESG implementation positively influences a company's financial performance. Based on this logical and empirical foundation, the following hypothesis is proposed:

H1: Environmental, Social, and Governance (ESG) has a positive effect on the company's financial performance.

The Effect of green innovation on corporate financial performance

Green Innovation (GI) refers to the development and application of new products, processes, technologies, and business models that are environmentally friendly and sustainable (Dai & Xue, 2022). It involves creating innovative solutions that minimize negative environmental impacts, conserve natural resources, and promote sustainable development. The implementation of green innovation aims to enhance products, increase productivity, achieve cost efficiency, and open new market opportunities, thereby creating a competitive advantage for companies

(Agustia et al., 2019). Furthermore, it encourages businesses to adopt circular economy principles, such as turning waste into marketable goods, which can reduce production costs and generate additional revenue streams (Afriyanti & Murwaningsari, 2022). Green Innovation (GI) is defined as the development and application of new or modified processes, techniques, systems, and products aimed at preventing or reducing environmental damage (Cahyaningtyas et al., 2022). In practice, green innovation focuses on the efficient utilization of raw materials and energy, which can lead to significant cost savings. It also creates opportunities for market expansion and allows companies to leverage the competitive advantages of their eco-friendly products, ultimately impacting financial performance positively (Dai & Xia, 2022). Beyond being a tool for market differentiation, green innovation serves as a proactive and strategic approach that helps companies achieve and sustain long-term value (Agustia et al., 2019). The adoption of green practices also enhances the confidence of investors and other stakeholders. Companies engaged in demonstrably sustainable business practices are more likely to attract investment from stakeholders who prioritize sustainability (Aastvedt et al., 2021). This positive linkage is corroborated by studies from Zhang et al. (2020) and Rosiyana & Rahmianingsih (2020), which confirm that green innovation has a positive effect on corporate financial performance. Based on this reasoning, the following hypothesis is proposed:

H2: Green innovation has a positive effect on the company's financial performance.

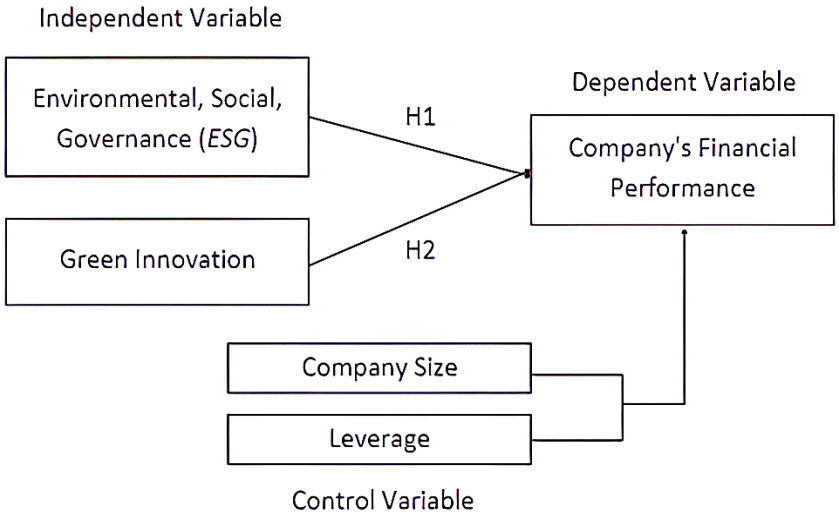

Figure 1. Research Model

3. Methods

This study employs a quantitative associative research design to examine the causal relationship between the independent variables, Environmental, Social, and Governance (ESG) performance, and Green Innovation, and the dependent variable, corporate financial performance. The research utilizes secondary data from the annual economic and sustainability reports of the sampled companies, accessed through each company's official website.

Sample and procedures

The population of this research comprises all companies listed on the IDX ESG Leaders Index from 2020 to 2022. The sampling technique applied was purposive sampling, wherein specific criteria were set to select the sample. Based on the predetermined criteria, a final sample of 19 companies was obtained for analysis.

Measurement

Table 1 presents the variables used in this study, along with their measurement methods and corresponding references. Each variable is measured based on established formulas and indicators from previous research to ensure validity and consistency in data analysis.

Table 1. Measurement

variables	Measurement	Referensi
Environmental, Social, and Governance (ESG)	$\frac{Total\ value\ of\ ESG\ related\ disclosures}{Total\ value\ of\ all\ indicators}$	Kim & Li (2021)
Green Innovation (GI)	$\frac{Total\ disclosure\ value\ related\ to\ green\ innovation}{Total\ value\ of\ all\ indicators}$	Agustia et al. (2019)
Tobin's Q	$\frac{Market\ Value\ of\ Equity + Total\ Liabilities}{Book\ Value\ of\ Assets}$	Ruan & Liu (2021)
Company Size	$Ln\ Total\ Assets$	Halfiyyah & Suriawinata (2019)
Leverage	$\frac{Total\ Liabilities}{Total\ Equity}$	Irfani & Anhar (2019)

Data analysis technique

The data analysis in this study employs multiple linear regression analysis using SPSS 26 software. The process begins with descriptive statistical testing to describe the characteristics of the collected data, followed by classical assumption tests, including tests for normality, multicollinearity, heteroscedasticity, and autocorrelation. Afterward, hypothesis testing is conducted using the F-test (to assess model feasibility), the t-test (to determine the effect of each independent variable on the dependent variable), and the coefficient of determination (R^2) (to measure the explanatory power of the independent variables). The multiple linear regression model used in this study is formulated as follows:

$$Tobin's\ Q = \alpha + \beta 1 ESG\_SCO + \beta 2 GI\_SCO + \beta 3\ Size + \beta 4\ Lev + e$$

4. Results and discussion

Descriptive statistics

Descriptive statistics were used to summarize the characteristics of the research variables: Tobin's Q, ESG, Green Innovation, Company Size, and Leverage. These variables were analyzed

based on 57 companies in the ESG Leaders Index, including their minimum, maximum, mean, and standard deviation, as shown in Table 2.

Table 2. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Tobin's Q	57	0.57	14.41	2.0706	2.50766
ESG	57	0.60	1.00	0.9509	0.08889
Green Innovation	57	0.25	1.00	0.8596	0.19490
Company Size	57	29.30	35.23	31.6713	1.62278
Leverage	57	0.09	6.63	2.1431	1.98513

Source: Data processed with SPSS Version 26, 2024

Based on Table 2, the descriptive statistics results from 57 company samples in the ESG Leaders Index reveal the following characteristics. The Tobin's Q variable shows a minimum value of 0.57 (PT AKR Corporindo Tbk, 2019) and a maximum value of 14.41 (PT Unilever Indonesia Tbk, 2020), with an average value of 2.0706 and a standard deviation of 2.50766. This variation in values reflects that although most companies have relatively low market values, several show significantly higher valuations.

For the ESG variable, the scores ranged from 0.60 (PT Erajaya Swasembada Tbk, 2020) to a perfect score of 1.00, with an average of 0.9509 and a standard deviation of 0.08889. These results indicate that, in general, the companies in the sample have implemented good environmental, social, and governance practices. Meanwhile, the Green Innovation variable has a value range of 0.25 to 1.00 with a mean of 0.8596 and a standard deviation of 0.19490, indicating that the majority of companies have adopted effective green innovation strategies.

In the control variable, Company Size recorded a minimum value of 29.30 (PT Mitra Adiperkasa Tbk, 2021) and a maximum of 35.23 (PT Bank Mandiri (Persero) Tbk, 2021). The average is 31.6713, with a standard deviation of 1.62278, indicating uniformity in company size within the sample. Meanwhile, the Leverage variable shows the lowest value of 0.09 (PT Telkom Indonesia (Persero) Tbk, 2021) and the highest of 6.63 (PT Bank Negara Indonesia (Persero) Tbk, 2021), with an average of 2.1431 and a standard deviation of 1.98513. These findings confirm that, on average, the total debt of companies in the ESG Leaders Index exceeds their equity, reflecting moderate to high levels of leverage.

Hypothesis Testing

Based on the results of the F test, a significance value of 0.002 (< 0.05) was obtained. This result shows that the regression model used in this study is suitable for proceeding to the next stage of analysis. Furthermore, through a t-test with a T table value of 1.672 (with n=57, k=4, and α=0.05), the effect of each independent variable can be analyzed.

The Environmental, Social, Governance (ESG) variable showed a significance value of 0.889 (> 0.05) and a calculated t value of 0.140 (< 1.672). This result indicates that ESG has no significant effect on company financial performance (Tobin's Q). Conversely, the green innovation variable shows a significance value of 0.046 (< 0.05) and a t-value of 1.751 (> 1.672), which proves that green innovation has a positive and significant effect on the company's

financial performance. Based on these findings, it can be concluded that H1 is rejected and H2 is accepted.

Furthermore, the company size control variable shows a significance value of 0.000 (< 0.05) with a t-value of -4.341. Although negative, the absolute value of the t-value (-4.341 > 1.672) indicates that company size has a significant effect on financial performance. Meanwhile, the leverage variable shows a significance value of 0.001 (< 0.05) and a t-value of 3.612 (> 1.672), which proves that leverage has a positive and significant effect on the company's financial performance.

Table 3. Hypothesis Test

Variable	Regression Coefficient	t-value	Significance
Constant	37.924	4.078	0.000
ESG	0.532	0.140	0.889
Green Innovation	3.061	1.751	0.046
Company Size	-1.290	-4.341	0.000
Leverage	0.866	3.612	0.001
F Significance		0.002	
Adjusted R^2		0.226	

Source: Data processed with SPSS Version 26, 2024

Based on the test results presented in Table 3, the Adjusted R-Square value of 0.226 reveals that 22.6% of the variation in company financial performance can be explained collectively by the variables of Environmental, Social, Governance (ESG), green innovation, company size, and leverage. Meanwhile, most of the variation in financial performance, specifically 77.4% is influenced by factors outside the scope of this research model. The regression equation generated from the analysis using SPSS software is

Tobin's Q = 37.924 + 0.532 ESG + 3.061 GI - 1.290 SIZE + 0.866 LEV + e.

The constant value of 37.924 indicates the basic level of financial performance when all independent variables are zero. The regression coefficients reveal various relationship patterns: ESG shows a positive influence with a coefficient of 0.532, indicating that a one-unit increase in ESG will increase Tobin's Q by 0.532 units. Green innovation shows a more substantial positive influence with a coefficient of 3.061, indicating that an increase in green innovation practices has a greater impact on financial performance. On the other hand, company size shows a negative relationship with a coefficient of -1.290, implying that larger companies tend to have lower economic performance. Meanwhile, leverage shows a positive influence with a coefficient of 0.866, indicating that an increase in debt relative to equity has a positive impact on company value.

Discussion

The results of data analysis indicate that ESG (Environmental, Social, and Governance) factors do not significantly impact a company's financial performance. This lack of effect is primarily attributed to a limited understanding of the ESG concept, which hinders companies from fully implementing ethical business practices. For example, sustainability initiatives and ESG

disclosures have not been thoroughly executed within organizations (Husada & Handayani, 2021). Additionally, implementing ESG practices can restrict a company's investment options and reduce operational flexibility, potentially affecting financial performance in the long run. Companies committed to reducing carbon emissions may find themselves limited to environmentally friendly projects, which often come with higher costs or lower profit margins (Zhang et al., 2020). Furthermore, adopting comprehensive ESG practices often requires significant initial investments in infrastructure, technology, and corporate policies, which may negatively impact short-term financial returns. Consequently, financial performance may decline before the long-term benefits of ESG practices materialize (Baran et al., 2022). Companies might also prioritize allocating resources toward innovation and product development instead of sustainability initiatives (Zhang et al., 2020). This observation is corroborated by Husada & Handayani (2021) and Baran et al. (2022), who assert that the implementation of ESG practices does not influence a company's financial performance.

Based on data analysis results, green innovation positively influences a company's financial outcomes. This effect is attributed to green innovation, enabling firms to utilize resources more effectively, minimize waste, and enhance production processes. As a result, production costs are lowered, which ultimately boosts the profitability of the company (Dai & Xia, 2022). Furthermore, implementing green innovation can enhance a company's reputation among consumers, investors, and other stakeholders by demonstrating environmental responsibility, potentially leading to an improved corporate image and long-term financial gains (Zhang et al., 2020). By embracing green innovation, companies can decrease environmental and regulatory risks by advancing their sustainable practices and adhering to stringent environmental regulations (Zheng et al., 2022). Integrating green innovation within the company aids in the development of eco-friendly products that align with the rising market demand for sustainability. Consequently, green innovation enables the creation of products and services that distinguish a company from its competitors and provide a competitive edge. For the company, this results in additional revenue, consequently affecting its financial performance (Agustia et al., 2019). This conclusion is corroborated by the findings of Aastvedt et al. (2021), Zheng et al. (2022), and Dai & Xia (2022), who indicate that integrating green innovation within a firm impacts its financial performance.

5. Conclusion

This study confirms the importance of applying sustainability principles in companies, particularly in relation to financial performance. The findings conclude that the application of Environmental, Social, Governance (ESG) has no significant effect on company financial performance, while green innovation has been proven to have a positive impact. The control variables of company size and leverage also show a significant effect. The implications of this study indicate that companies need to focus more of their resources on developing green innovation to improve financial performance. However, companies are advised to reevaluate their ESG approach, ensuring that its implementation is not merely a formality but can provide strategic added value. These findings underscore the importance of choosing an effective sustainability strategy that can support the company's long-term financial performance.

Limitations and suggestions

This study suffers from several limitations, including a sample size limited to 57 companies listed on the *ESG Leaders* index over a period of only 3 years, from 2020 to 2022, which may limit the generalizability of the results to the entire population of companies on the stock exchange. In addition, the relatively small *adjusted R-squared* value of 22.60% indicates that only a small portion of the variation in corporate financial performance can be explained by the included variables. Recommendations for future research include expanding the research subject to include all companies listed on the Indonesia Stock Exchange (IDX) or extending the observation period, as well as considering the addition of relevant independent variables to provide deeper insights relevant to the context being observed.

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