

The Effect of ESG Risk and Eco-Efficiency on Financial Performance of Food and Beverage Companies

Siti Rhohimin^{1*}, Nofrianty², Zulkarnain³

^{1,2,3}Accounting Study Program, Faculty of Economics, University of Pasir Pengaraian.

Article History

Received : 2026-08-09

Revised : 2026-08-10

Accepted : 2026-08-10

Keywords:

ESG Risk; Eco-Efficiency; Financial Performance; Return on Assets (ROA).

*Corresponding author:

sitirhohimin05@gmail.com

DOI:

10.68376/IJECRE.v1.i2.a79

Abstract

This study aims to analyze the effect of Environmental, Social, and Governance (ESG) Risk and Eco-Efficiency on the financial performance of food and beverage companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period. This study employed a quantitative causal approach using secondary data obtained from annual reports. The population consisted of food and beverage companies listed on the IDX during the 2022–2024 period, and the sample was determined using a purposive sampling technique, resulting in 13 companies with 39 firm-year observations. Data were analyzed using multiple linear regression with the assistance of SPSS, including classical assumption tests, the coefficient of determination (R^2), the t-test, and the F-test. The results show that ESG Risk has a positive and significant effect on financial performance, while Eco-Efficiency has a positive but not significant effect on financial performance. Furthermore, ESG Risk and Eco-Efficiency simultaneously have a significant effect on financial performance, with an Adjusted R Square of 0.506, indicating that the two independent variables jointly explain 50.6% of the variation in financial performance.

Introduction

In the era of globalization and rapid economic development, companies are no longer expected to generate financial profit alone but must also pay attention to sustainability in their business operations. As modern business evolves, companies are required to balance economic objectives with responsibility toward the environment, society, and sound corporate governance, in line with the concept of sustainable development, which seeks to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. Prior research has shown that the implementation of sustainability and Environmental, Social, and Governance (ESG) practices can increase firm value and investor confidence in a company (Adenina & Sudrajat, 2024).

The food and beverage sector plays a strategic role in the Indonesian economy, yet it also carries substantial sustainability challenges. Production activities in this sector inevitably involve large-scale energy and water consumption, organic and inorganic waste generation, and greenhouse gas emissions arising from processing and distribution. Consequently, food and beverage companies face growing pressure from various stakeholders to manage ESG aspects responsibly in order to safeguard their reputation and business continuity.

In Indonesia, attention to ESG implementation continues to grow alongside the government's commitment to supporting the Sustainable Development Goals (SDGs) and the Paris Agreement. The Financial Services Authority (OJK) has issued POJK No. 51/POJK.03/2017 concerning the Implementation of Sustainable Finance, requiring public companies to begin disclosing sustainability information in their annual reports and sustainability reports. The Indonesia Stock Exchange (IDX) has also developed sustainability-based indices, such as IDX SRI-KEHATI and ESG Leaders, to encourage companies with sound ESG practices. Such regulations indicate that sustainability has become an important factor influencing investor assessment and corporate business continuity; ESG regulation in Indonesia plays an important role in enhancing corporate transparency and accountability toward stakeholders.

ESG Risk represents the potential adverse impact that may arise from a company's failure to manage environmental, social, and governance aspects, including risks of environmental pollution, poor waste management, labor rights violations, or weak corporate governance systems. According to Lestari and Pebriyani (2025), ESG Risk can affect a company's business continuity, as such risk may lead to financial losses, reputational decline, and reduced investor confidence.

In addition to managing ESG Risk, an eco-efficiency approach has become an increasingly relevant strategy in achieving operational sustainability. Eco-efficiency is a management concept that measures a company's ability to create economic value while using resources more sparingly and generating a smaller environmental impact; it can be realized through reduced energy consumption, optimized waste management, efficient use of raw materials, and the adoption of environmentally friendly production technologies (Fitriyani, Rely, & Sari, 2025). In the context of food and beverage companies, eco-efficiency can be implemented through water conservation during washing and raw-material processing, the use of organic waste as an alternative energy source, recyclable packaging, and energy-efficient, low-emission production technology; such practices not only provide environmental benefits but also have the potential to reduce operating costs and improve business efficiency, which may in turn strengthen financial performance (Lorenza & Sudrajat, 2024).

Financial performance is an important indicator used to assess a company's ability to generate profit and manage its resources effectively and efficiently. In this study, financial performance is measured using Return on Assets (ROA), as this ratio reflects a company's ability to generate profit through the utilization of its total assets; the higher the ROA value, the better a company's ability to manage its assets to generate profit.

Nevertheless, the implementation of ESG Risk management and eco-efficiency among food and beverage companies in Indonesia still shows a fairly wide gap. While some large companies have begun disclosing sustainability practices in their annual reports, many others have yet to consistently integrate ESG and environmental efficiency aspects into their core business strategy, constrained by limited data access, insufficient understanding of long-term benefits, and substantial initial investment requirements. Prior research on the effect of ESG Risk and eco-efficiency on financial performance also remains inconsistent: Lestari and Pebriyani (2025), examining companies listed on the Indonesia Stock Exchange in 2023, found that ESG Risk has a negative effect on corporate financial performance, whereas Pertiwi, Muslim, and Widiastuti (2024) found that ESG performance has a positive effect on financial performance, a pattern of mixed results also observed by Fikru, Hasan, and Putra (2024) in their study of ESG risk and financial performance across emerging markets. Similarly, findings on eco-efficiency remain mixed, with some studies reporting a positive effect and others finding no significant relationship, indicating that further investigation is needed, particularly one focused specifically on the food and beverage sector.

Based on the description above, this study is entitled “The Effect of Environmental, Social, and Governance (ESG) Risk and Eco-Efficiency on Financial Performance in Food and Beverage Companies Listed on the Indonesia Stock Exchange during 2022–2024,” aiming to provide updated empirical evidence on how these two sustainability-related factors, individually and jointly, contribute to corporate financial performance in this sector.

Literature Review and Hypotheses Development

The Effect of ESG Risk on Financial Performance

ESG Risk relates to the risks a company faces in managing environmental, social, and governance aspects of its operations. Effective management of ESG Risk can help a company reduce operational risk, strengthen investor confidence, enhance corporate reputation, and support business sustainability. Based on Stakeholder Theory, a company that is able to meet stakeholder expectations through sound environmental, social, and governance management will gain support that contributes to improved financial performance, as a company is responsible not only to its shareholders but to all its stakeholders, including investors, customers, employees, government, suppliers, and the community (Freeman, 1984; Cohen, 2023). Rahman and Putri (2024) found that

ESG risk has significant implications for corporate financial performance, indicating that sound risk management in this area can strengthen profitability, whereas Lestari and Pebriyani (2025) found that ESG Risk has a negative effect on corporate financial performance. This divergence in findings indicates that the effect of ESG Risk on financial performance remains mixed and warrants further investigation. Based on the theory and empirical findings above, the following hypothesis is proposed:

H1: Environmental, Social, and Governance (ESG) Risk affects financial performance in food and beverage companies listed on the Indonesia Stock Exchange during 2022–2024.

The Effect of Eco-Efficiency on Financial Performance

Eco-efficiency is a company's ability to create economic value through the efficient use of resources while minimizing the environmental impact generated by its operational activities, achieved through efficient use of energy, water, and raw materials, waste reduction, and emission control. Companies that are able to implement eco-efficiency optimally are expected to improve operational efficiency, reduce production costs, and create added value, thereby improving financial performance (Fitriyani, Rely, & Sari, 2025). Meutia, Ramadhani, and Adam (2019) found that eco-efficiency has a positive and significant effect on the financial performance of manufacturing companies in Indonesia, indicating that eco-efficiency implementation can improve resource-use efficiency and thereby increase profitability, a finding further supported by Meutia, Kartasari, and Yaacob (2019) and Hakim and Nursanti (2024), who likewise found a positive relationship between eco-efficiency and financial performance among Indonesian companies. However, this finding differs from that of other studies, which found that eco-efficiency does not have a significant effect on financial performance (ROA). This divergence in findings indicates that the effect of eco-efficiency on financial performance remains mixed and warrants further investigation. Based on the theory and empirical findings above, the following hypothesis is proposed:

H2: Eco-Efficiency affects financial performance in food and beverage companies listed on the Indonesia Stock Exchange during 2022–2024.

The Simultaneous Effect of ESG Risk and Eco-Efficiency on Financial Performance

ESG Risk and Eco-Efficiency are two aspects that support corporate sustainability. Effective management of ESG Risk can help a company reduce operational risk, strengthen investor confidence, and reinforce corporate governance, while the implementation of Eco-Efficiency can improve the efficiency of energy, water, and raw-material use and reduce the environmental impact of operational activities. The implementation of both aspects is expected to improve corporate efficiency and create added value, thereby improving financial performance. Hardiansyah and Melani (2024) found that the integration of sustainability risk management with operational efficiency jointly affects financial performance, supporting the view that ESG Risk management and eco-efficiency function as complementary, rather than independent, drivers of corporate financial outcomes. Based on the theory and empirical findings above, the following hypothesis is proposed:

H3: Environmental, Social, and Governance (ESG) Risk and Eco-Efficiency simultaneously affect financial performance in food and beverage companies listed on the Indonesia Stock Exchange during 2022–2024.

Research Methods

The object of this study is food and beverage companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period. This study focuses on how ESG Risk and Eco-Efficiency affect corporate financial performance. Food and beverage companies were selected because their operational activities utilize substantial natural resources and generate environmental impacts, such as energy use, water consumption, emissions, and production waste. All data used were obtained from annual reports, sustainability reports, and official IDX publications available to the public.

This study employs a quantitative approach with a causal research design, used to examine the cause-and-effect relationship between the independent variables—ESG Risk and Eco-Efficiency—and the dependent variable, financial performance, in food and beverage companies listed on the IDX during 2022–2024. The quantitative approach was applied because the research data are numerical in nature and were analyzed using statistical techniques through a multiple linear regression model.

The population in this study consists of all food and beverage companies listed on the Indonesia Stock Exchange during the 2022–2024 period, totaling 94 companies. The sample was determined using a purposive sampling technique (Sugiyono, 2019), with the following criteria: companies consistently listed on the IDX throughout 2022–2024; companies that published complete annual financial statements during the research period; companies with available ESG Risk data during the research period; and companies with the data required to measure Eco-Efficiency during the research period. Based on these criteria, 13 companies were obtained as the research sample, with an observation period of 3 years, resulting in 39 firm-year observations.

The type of data used in this study is quantitative data, including ESG Risk scores, Eco-Efficiency indicators, and financial performance ratios measured using Return on Assets (ROA). The data source is secondary data, collected through documentation from the annual reports and sustainability reports of food and beverage companies listed on the IDX during 2022–2024, supplemented by data from the IDX's official website (www.idx.co.id) and each company's official website. ESG Risk (X1) was measured using each company's ESG Risk score as reported in its sustainability disclosures (Refinitiv, 2021). Eco-Efficiency (X2) was measured by comparing a company's net income to its total emissions (World Business Council for Sustainable Development/WBCSD, 2000). Financial Performance (Y) was measured using Return on Assets (ROA), calculated as net income after tax divided by total assets (Daud, Hidayat, & Pratama, 2023). Data were analyzed using multiple linear regression with the assistance of SPSS (Ghozali, 2021; Gujarati & Porter, 2020), comprising classical assumption tests (normality tested using the Kolmogorov-Smirnov method, multicollinearity tested using Tolerance and Variance Inflation Factor/VIF values, heteroscedasticity tested using scatterplot analysis, and autocorrelation tested where relevant), multiple linear regression analysis with the model $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \epsilon$, the coefficient of determination (R^2) test, and hypothesis testing through the partial test (t-test) and simultaneous test (F-test) at a 5% significance level.

Results And Discussion

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
ESG Risk (X1)	39	28.4100	45.1000	36.2482	4.3981
Eco-Efficiency (X2)	39	1.3683	19.1313	10.3417	6.6756
Financial Performance (Y)	39	-0.0501	0.2741	0.0873	0.0826

Source: SPSS Data Processing Results, 2026

Based on Table 1, the 39 observations used in this study show that ESG Risk has a mean value of 36.2482 with a standard deviation of 4.3981, Eco-Efficiency has a mean value of 10.3417 with a relatively wide standard deviation of 6.6756, and Financial Performance (ROA) has a mean value of 0.0873 with a standard deviation of 0.0826, indicating variation in profitability among the sampled companies.

Classical assumption testing shows that the residual data is normally distributed based on the Kolmogorov-Smirnov test, no multicollinearity is present, with Tolerance values of 0.995 for both ESG Risk and Eco-Efficiency and VIF values of 1.005 for both variables (well within acceptable thresholds), and no heteroscedasticity is present based on the scatterplot pattern of the residuals, so the regression model is suitable for hypothesis testing.

Table 2. Multiple Linear Regression and t-Test Results

Variable	B	Beta	T	Sig.
(Constant)	-0.414		-5.131	0.000
ESG Risk (X1)	0.014	0.731	6.391	0.000
Eco-Efficiency (X2)	0.000	0.035	0.304	0.763

Source: SPSS Data Processing Results, 2026. Dependent Variable: Financial Performance (ROA)

Based on Table 2, the regression equation obtained is $Y = -0.414 + 0.014X1 + 0.000X2 + e$. The constant value of -0.414 indicates that when ESG Risk and Eco-Efficiency are held at zero, Financial Performance (ROA) is estimated at -0.414 . The regression coefficient of ESG Risk (X1) is positive at 0.014, indicating that a one-unit increase in ESG Risk is associated with a 0.014-unit increase in ROA, assuming Eco-Efficiency remains constant. The regression coefficient of Eco-Efficiency (X2) is positive but very small at 0.000, indicating that a one-unit increase in Eco-Efficiency is associated with a negligible increase in Financial Performance, assuming ESG Risk remains constant.

Table 3. Coefficient of Determination and F-Test Results

R Square	Adjusted R Square	F-calculated	Sig.
0.532	0.506	20.435	0.000

Source: SPSS Data Processing Results, 2026. Predictors: (Constant), Eco-Efficiency, ESG Risk

The t-test results in Table 2 show that ESG Risk obtained a calculated t-value of 6.391 with a significance value of 0.000 (< 0.05), so H1 is accepted: ESG Risk has a positive and significant effect on Financial Performance. Eco-Efficiency obtained a calculated t-value of 0.304 with a significance value of 0.763 (> 0.05), so H2 is rejected: Eco-Efficiency has a positive but not significant effect on Financial Performance. The F-test result in Table 3 shows a calculated F-value of 20.435 with a significance value of 0.000 (< 0.05), so H3 is accepted: ESG Risk and Eco-Efficiency simultaneously have a significant effect on Financial Performance. The Adjusted R Square value of 0.506 indicates that the two independent variables jointly explain 50.6% of the variation in Financial Performance, while the remaining 49.4% is explained by other factors outside the research model.

The Effect of ESG Risk on Financial Performance

The partial test result shows that ESG Risk has a positive and significant effect on Financial Performance ($t = 6.391 > t\text{-table}$; Sig. = 0.000 < 0.05), so H1 is accepted. This finding indicates that the better a company manages risks related to environmental, social, and governance aspects, the better its resulting financial performance. Effective ESG Risk management can strengthen investor confidence, enhance corporate reputation, reduce operational risk, and improve business efficiency, thereby contributing to improved profitability. This finding is consistent with Rahman and Putri (2024), who found that ESG risk has significant implications for corporate financial performance, and with Pertiwi, Muslim, and Widiastuti (2024), who found that ESG performance has a positive effect on financial performance, though it differs from Lestari and Pebriyani (2025), who found that ESG Risk has a negative effect on financial performance; this discrepancy may be attributable to differences in research object, research period, sample size, and company characteristics used as the research object.

The Effect of Eco-Efficiency on Financial Performance

The partial test result shows that Eco-Efficiency does not have a significant effect on Financial Performance ($t = 0.304$; Sig. = 0.763 > 0.05), so H2 is rejected. Conceptually, companies that are able to generate greater output while using fewer resources and producing a smaller environmental impact are expected to reduce operating costs, improve asset productivity, and strengthen financial performance; however, eco-efficiency implementation also requires investment in technology, production process improvements, maintenance costs, and the development of environmental management systems, so the economic benefits of eco-efficiency are not always realized by companies in the short term. This finding indicates that eco-efficiency

implementation has not yet had a significant effect on improving the financial performance of food and beverage companies during the research period, a condition that may occur because the benefits of eco-efficiency implementation are more likely to be felt in the long term, while corporate profit growth is influenced by many other factors, such as market conditions, production costs, and operational strategy. This finding is consistent with other studies that found eco-efficiency does not have a significant effect on Return on Assets, explaining that environmental efficiency does not necessarily directly improve corporate profitability, though it differs from Meutia, Ramadhani, and Adam (2019), Meutia, Kartasari, and Yaacob (2019), and Hakim and Nursanti (2024), who found that eco-efficiency has a positive and significant effect on the financial performance of Indonesian companies; this discrepancy may be attributable to differences in company sector, research period, eco-efficiency measurement indicators, and the characteristics of the sample used.

The Simultaneous Effect of ESG Risk and Eco-Efficiency on Financial Performance

The simultaneous test (F-test) shows a calculated F-value of 20.435 with a significance value of 0.000 (< 0.05), so H3 is accepted: ESG Risk and Eco-Efficiency jointly have a significant effect on Financial Performance. This finding indicates that the two variables together are able to explain changes in corporate financial performance. Effective ESG Risk management can strengthen investor confidence, minimize operational risk, and reinforce corporate governance, while eco-efficiency implementation encourages companies to use resources more efficiently, thereby supporting operational sustainability; although Eco-Efficiency does not show a significant partial effect, its presence alongside ESG Risk still contributes to explaining the variation in corporate financial performance. From the perspective of Stakeholder Theory, a company is responsible not only to its shareholders but to all its stakeholders, including investors, customers, employees, government, suppliers, and the community (Freeman, 1984); effective ESG Risk management demonstrates a company's ability to meet stakeholder expectations regarding environmental protection, social responsibility, and sound corporate governance, while eco-efficiency implementation reflects a company's commitment to using resources responsibly and sustainably. When both aspects are implemented in an integrated manner, a company gains greater stakeholder trust, reduces operational risk, and strengthens business sustainability, which ultimately contributes to improved financial performance. This finding is supported by Hardiansyah and Melani (2024), who found that the integration of sustainability risk management and operational efficiency jointly affects financial performance, further reinforcing the view that these two sustainability aspects function as complementary drivers of corporate financial outcomes.

Implication and Conclusion

Based on the results of the analysis and discussion, it can be concluded that ESG Risk has a positive and significant effect on Financial Performance, as measured using Return on Assets (H1 accepted); Eco-Efficiency has a positive but not significant effect on Financial Performance (H2 rejected); and ESG Risk and Eco-Efficiency simultaneously have a significant effect on Financial Performance (H3 accepted), jointly explaining 50.6% of its variation, and the regression model is declared suitable for explaining the relationship between the independent variables and Financial Performance.

These findings imply that food and beverage companies are encouraged to strengthen their capacity to identify, control, and evaluate ESG Risk, integrating environmental, social, and governance risk management into operational planning and decision-making so as to reduce potential losses, maintain reputation, strengthen stakeholder trust, and sustain financial performance over the long term. Companies are also encouraged to continue improving eco-efficiency implementation through optimal resource use and waste management; although eco-efficiency did not show a significant effect on financial performance in this study, its implementation remains important for supporting corporate sustainability and increasing economic benefits in the future. Future researchers are recommended to increase the sample size and extend the observation period so that the analysis can better capture the long-term effect of ESG Risk and

Eco-Efficiency, and to incorporate other variables that may affect financial performance, such as leverage, firm size, sales growth, asset turnover, capital structure, and operational efficiency, in order to obtain more comprehensive findings.

References

- Adenina, R., & Sudrajat. (2024). Environmental, social, and governance (ESG) dan implikasinya terhadap kinerja perusahaan. *Jurnal Akuntansi dan Keuangan Berkelanjutan*, 9(2), 145–158.
- Cohen, J. R. (2023). Corporate governance and ESG risk management. *Journal of Business Ethics*, 185(1), 35–52.
- Daud, R., Hidayat, A., & Pratama, R. (2023). Analisis kinerja keuangan perusahaan menggunakan Return On Assets (ROA). *Jurnal Akuntansi Kontemporer*, 7(1), 21–34.
- Fikru, M., Hasan, A., & Putra, D. (2024). ESG risk and financial performance: Evidence from emerging markets. *International Journal of Sustainability Accounting and Management*, 6(2), 89–104.
- Fitriyani, R., Rely, G., & Sari, M. (2025). Eco-efficiency sebagai strategi keberlanjutan dan kinerja keuangan perusahaan. *Jurnal Ekonomi dan Bisnis Berkelanjutan*, 10(1), 55–69.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman Publishing.
- Ghozali, I. (2021). *Aplikasi analisis multivariate dengan program IBM SPSS 26*. Badan Penerbit Universitas Diponegoro.
- Gujarati, D. N., & Porter, D. C. (2020). *Basic econometrics* (5th ed.). McGraw-Hill Education.
- Hakim, L., & Nursanti, R. (2024). Pengaruh eco-efficiency terhadap kinerja keuangan perusahaan. *Jurnal Akuntansi dan Keuangan*, 12(1), 44–58.
- Hardiansyah, F., & Melani, D. (2024). Integrasi manajemen risiko keberlanjutan dan efisiensi operasional terhadap kinerja keuangan. *Jurnal Riset Akuntansi Indonesia*, 14(2), 101–116.
- Lestari, G., & Pebriyani, D. (2025). Pengaruh environmental, social, and governance (ESG) risk terhadap kinerja keuangan perusahaan: Studi empiris pada perusahaan yang terdaftar di Bursa Efek Indonesia tahun 2023. *Jurnal Akuntansi dan Keuangan Indonesia*, 12(1), 1–15.
- Lorenza, W., & Sudrajat. (2024). Pengaruh eco-efficiency dan pengungkapan lingkungan terhadap kinerja keuangan. *Jurnal Akuntansi Berkelanjutan*, 8(1), 29–43.
- Meutia, I., Kartasari, F., & Yaacob, M. (2019). Eco-efficiency and financial performance: Evidence from Indonesian companies. *Journal of Accounting and Investment*, 20(3), 215–230.
- Meutia, I., Ramadhani, M., & Adam, M. (2019). Apakah eco-efficiency meningkatkan kinerja keuangan perusahaan manufaktur di Indonesia? *Jurnal Akuntansi Multiparadigma*, 10(2), 312–327.
- Pertiwi, R., Muslim, A., & Widiastuti, T. (2024). Kinerja ESG dan corporate governance terhadap kinerja keuangan dengan transformasi digital sebagai variabel moderasi. *Jurnal Akuntansi dan Auditing Indonesia*, 28(1), 55–70.
- Rahman, A., & Putri, S. A. (2024). ESG risk dan implikasinya terhadap kinerja keuangan perusahaan. *Jurnal Keuangan dan Investasi*, 11(2), 88–102.
- Refinitiv. (2021). *Environmental, social and governance (ESG) scores methodology*. Refinitiv.
- Sugiyono. (2019). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- World Business Council for Sustainable Development. (2000). *Eco-efficiency: Creating more value with less impact*. WBCSD.