

THE INFLUENCE OF ENVIRONMENT, SOCIAL AND GOVERNANCE ON OPTIMAL PORTFOLIO

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Article History	ABSTRACT
Received: 11 August 2026	Purpose: This study aims to examine the effect of Environmental, Social, and Governance (ESG) performance on optimal portfolio formation among energy and mineral companies listed on the Indonesia Stock Exchange (IDX). It further investigates the individual contribution of each ESG dimension in explaining portfolio optimization.
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	Method: This study employs a quantitative research design using secondary data from the sustainability reports and annual reports of energy and mineral firms listed on the Indonesia Stock Exchange during 2020–2024. A purposive sampling technique was applied, resulting in 32 firms (160 firm-year observations). ESG performance was measured using the Global Reporting Initiative (GRI) indicators, while the optimal portfolio was assessed based on expected return and portfolio risk. The hypotheses were tested using multiple linear regression analysis.
	Findings: The findings reveal that Environmental, Social, and Governance (ESG) jointly have a significant effect on optimal portfolio performance. Partially, environmental and governance dimensions positively influence optimal portfolios, whereas the social dimension does not show a significant effect. The results indicate that investors place greater emphasis on environmental and governance practices than social initiatives when evaluating optimal portfolios in the Indonesian energy and mineral sector.
	Novelty: This study extends the ESG literature by integrating GRI-based ESG disclosure with optimal portfolio theory in the context of Indonesia's energy and mineral sector. Unlike previous studies that primarily examine the relationship between ESG and firm performance, this research provides empirical evidence on how individual ESG dimensions contribute to portfolio optimization using expected return and risk as the investment performance framework.

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INTRODUCTION

Environment, Social and Governance (ESG) based investments are not only ethically viable but also offer competitive financial returns (Firman et al., 2022). The study demonstrates investor preference for ESG and may lead to the formulation of rules and regulations to improve corporate ESG performance, ESG reporting, and ultimately the introduction of ESG indices in Bangladesh, which can ensure a stable stock market and overall sustainable growth in the country (Sultana et al., 2017). The majority of clients who consider responsible investing very important hold several unrated mutual funds, while those who consider it unimportant still hold highly ESG rated mutual funds in their portfolios. However, a research gap indicates that ESG does not impact firm performance (Ramadhan et al., 2025). Therefore, we conclude that more focus on sustainability

preferences is needed to ensure that retail investors obtain the portfolios they desire (Brooks & Williams, 2024). The implementation of ESG project firms maintain signal for optimal portfolio.

The research questions that do ESG provide impact on optimal portfolios in the energy sector listed on the Indonesia Stock Exchange (IDX). The Theoretical Benefits provide to add insight and scientific literature related to the influence of ESG on optimal portfolios, particularly in the energy subsector listed on the Indonesia Stock Exchange (IDX), and to contribute to the development of ESG related theory. Helps enrich references for further research that wants to examine the relationship between ESG in other industrial subsectors. Practical Benefits Provides an understanding of the importance of ESG. Helps firms in formulating more effective sustainability strategies to increase stakeholder trust. Provides additional information in investment decision-making by considering ESG factors, as one of the fundamental indicators in assessing a firm's investment feasibility. Provides broader insight in understanding the impact of ESG on the firm's financial and non-financial aspects. A research gap indicates that literature often treats ESG as a single, unified score, whereas specific elements such as whether the Environmental component is dominant or Governance is the primary driver of portfolio efficiency are rarely disaggregated to account for their distinct characteristics. Moreover, the differences previous literature that ESG does not affect firm performance (Ramadhan et al., 2025) but in relevant with ESG leader and asset pricing model (Maulana et al., 2026). Therefore, we conclude that more focus on optimal portfolio to enhance each Environment, Social, and Governance indicators variables. To fill the gap, the study focus that ESG preferences is needed to ensure that retail investors obtain the optimal portfolio they desire (Brooks & Williams, 2024).

The problem solving approach uses quantitative methods from ESG reports or sustainability reports published on the IDX in 2020-2024. The approach by analyzing ESG reports from energy sector firms uses multiple regression analysis tests with SPSS IBM 25. The problem-solving approach considers ESG theory and optimal portfolio theory through research hypotheses with a significance result of 5% using multiple regression statistical tests with SPSS IBM 25. Aspects measured from ESG based on GRI 2021 indicators include Social Aspects, Environmental Aspects and Government. Environmental Aspects include waste indicators, emissions for the Firm, carbon reduction. Social aspects include Government Aspects related to employee governance and customer relations of the Firm. Governance aspects include the firms management and supervision, including the structure and composition of the board of directors, executive remuneration policies, shareholder rights, transparency, and business ethics. Social, Environmental and Government scores reflect the firm's sustainability performance in managing Social, Environmental and Government risks and opportunities compared to similar firms. Scores are expressed on a scale of 0-100, where higher scores indicate better Social, Environmental and Government performance. State-of-the-art ESG disclosure has a negative and significant impact on firm value (Hurhayati et al., 2025). The novelty using separate ESG factor for each Environment (E), Social (S) and Governance (G) proxies using GRI indicators as a measure of the Social, Environment, and Government index on the IDX. Furthermore, research novelty also links ESG with optimal portfolio performance for energy sector firms in 2020-2024 on the IDX.

THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

Environmental, social, and governance (ESG) is a business concept that emphasizes sustainable development, investment, and business practices that pay attention to environmental, social, and governance aspects. ESG encompasses various related issues, such as environmental issues such as climate change, social issues such as human rights, and governance issues such as shareholder protection. It's relevant with devident issue, busy director and ESG (Sucitawati & Utama, 2025). Enviroment means green environment and finance environmentally friendly projects such as renewable energy, energy efficiency, and waste management. Social means social benefits project such as education, healthcare, and economic empowerment. Governance means firms

maintain good governance principles to ensure going concern and uphold transparency, ethics, compliance, and board accountability.

Optimal portfolio such as maximal return with minimum risk (Damanik & Tandelilin, 2022). Firm image and community engagement as investment decision (Memarista & Kusuwati, 2022). The formula of optimal portfolio consist of expected return and variance as risk portfolio with weighted of maximum profit for a given level of risk. Expected return portfolio measured by the weighted accumulation from expected return each stock firms. Variance risk portfolio measured by the weighted accumulation from risk and covariance each asset of stock firm. Determining the optimal portfolio such as firstly Efficient Frontier present a graph showing asset combinations that yield the highest returns for a given level of risk. Secondly Tangency Point such as the optimal point on the efficient frontier that best aligns with an investor's risk tolerance.

The first hypothesis that the link between Environment and optimal portfolio. The optimal portfolio suggested by the weighted excess return to beta. There is the link between Environment and optimal Portfolio. Portfolio performance provides good returns for investors (Sari et al., 2026). ESG, which affects firm value, also impacts sustainability (Mulialim & Madyan, 2023). Then, the first hypothesis as follow that Environment have significant impact on optimal Portfolio.

The second Hypothesis that Social and optimal Portfolio. Social means pay attention for solidarity from firms. Stock market investors are concerned with Environmental, Social, and Governance (ESG) issues. By applying ESG theory and optimal portfolios, the analysis shows that ESG issues influence investment decisions, while governance issues influence respondents' investment decisions, followed by social and environmental issues (Firman et al., 2022). Then, the second hypothesis as follow that H2 Social have significant impact on optimal Portfolio.

The third hypothesis that Governance and optimal Portfolio. Governance have impact on optimal portofolio. By comparing the strength of clients' sustainability views with the ESG ratings of the mutual funds they purchase, we can identify for the first time the extent to which mutual fund choices and sustainability preferences align. Although investors with a stronger desire for sustainability hold more mutual funds with higher ESG ratings on average, the relationship is weaker than expected (Brooks & Williams, 2024). Risk adjusted investment performance of green and black portfolios and the impact of toxic asset divestment in emerging markets (Rahat & Nguyen, 2022). Then, the third hypothesis as follow that H3 Governance have significant impact on optimal Portfolio.

RESEARCH METHODOLOGY

The research design employs quantitative methods, meaning the research utilizes financial data and statistical analysis (Sari et al., 2026). The study employs managed, systematic, data-driven, critical, objective, and scientific investigation of a specific problem, conducted with the aim of finding answers or solutions (Bougie & Sekaran, 2020). The study conducted by quantitative because it uses data in the form of numbers and can be calculated using units of calculation. This research can be stated as quantitative research based on the form of data used, namely annual report figures.

The population was conducted by energy and mineral firms listed on the Indonesia Stock Exchange (IDX) in 2020-2024. The sample was selected from energy and mineral firms listed in the Indonesia Stock Exchange (IDX) in 2020-2024.

Sampling was conducted using a purposive sampling method. The data used in this sample is quantitative, that is, data measured on a numerical scale. The sampling technique employed in this study was purposive sampling, a sampling technique in which researchers employ criteria and considerations in sampling, or in determining samples for specific purposes. The sampling criteria were energy and mineral firms listed on the Indonesia Stock Exchange (IDX) between 2020-2024. The research sample consisted of 37 energy and mining firms listed on the IDX in 2020-2024,

including ADRO, AKRA, APEX, BUMI, ELSA, ENRG, INDY, ITMG, MBSS, MEDC, MYOH, PGAS, PSSI PTBA, PTRO, WINS, ARII, ARTI BIPI, BSSR, BULL, BYAN, DEWA, DOID, DSSA, FIRE GEMS, HRUM, ITMA, KKG, KOPI, LEAD, RAJA RIGS, RUIS, SURE, and TEBE.

The data collection method used in this study was conducted through historical documentation of firm performance reports over a certain period. The data sources used in this study were obtained through searches from the Indonesia Capital Market Directory (ICMD), website www.idx.co.id, and data from the Indonesian Stock Exchange related to ESG (Idx, 2023). The operational definition of variables includes Environment, Social and Governance (ESG) as an independent variable and optimal portfolios as a dependent variable. ESG is calculated and measured using scores from the GRI Index (Hurhayati et al., 2025). Optimal portfolios based on the single index model (Tandelilin, 2019).

$$\text{single index model} = \frac{E(R_i) - R_f}{\beta_i}$$

Source : (Tandelilin, 2019).

Data Analysis Techniques such as Classical Assumption Test that Before conducting hypothesis testing, necessary assumption tests can first be performed, such as the normality test, multicollinearity test, heteroscedasticity test, and autocollinearity test. The normality test is useful for determining whether a data distribution is normal. The output obtained in the Test of Normality column, as seen in the Kolmogorov-Smimov column, indicates whether this assumption follows a normal distribution or not, with a significance value. The Kolmogorov-Smimov test can be conducted if the probability value is $>\alpha = 5\%$, the K-S Value is accepted, and the residual data are normally distributed. The multicollinearity test is conducted to determine whether the regression model has a linear relationship between the independent variables. This type of test is used for research with more than one independent variable. A good regression model has no correlation between the independent variables. To detect the presence or absence of multicollinearity in the regression model, we can use the tolerance value and its opposite, or the Variance Inflation Factor (VIF). These two measures indicate which variables are explained by other independent variables. Tolerance measures the variability of the selected independent variable that is not explained by other independent variables. A low tolerance value equates to a high VIF value (since $VIF = 1/\text{tolerance}$). From the output in the Coefficients column, the Variance Inflation Factor (VIF) value can be determined. A common value to indicate multicollinearity is a tolerance value ≤ 0.1 , or equal to a $VIF \geq 10$. If the VIF value is <10 , then multicollinearity is absent.

The heteroscedasticity test is used to determine whether there is a deviation in the variance of the residuals from one observation to another in the regression model. If the variance from one observation's residuals remains constant, it is called homoscedasticity, while if it varies, it is called heteroscedasticity. A good regression model is one that does not exhibit heteroscedasticity (Ghozali, 2020). If the output results indicate that there are still variables with a significance value <0.05 , this indicates heteroscedasticity and requires data transformation.

The autocorrelation test is used to determine whether there are deviations from the classical assumption of autocorrelation, namely the correlation between residuals from one observation and other observations in the regression model. Regression analysis aims to measure the strength of the relationship between the dependent and independent variables in multiple regression analysis. A multiple regression model is used to test the independent variables. The F test is conducted to determine whether the independent variables used in the model have a joint influence on the dependent variable. The results of the basic test are accepted if the significance value is less than 0.05 and rejected if the significance value is greater than 0.05. This T test is conducted to partially determine the extent to which the independent variables explain the dependent variable (Bougie & Sekaran, 2020). This T-test can be performed using the following criteria that If T count $\geq$ T table

(Sig. level < 0.05), then Hypothesis is accepted, meaning the independent variable has an effect on the dependent variable. The coefficient of determination essentially measures the model's ability to measure the dependent variables. The coefficient of determination value is between zero and one. A small R² value means the independent variables have limited ability to explain the dependent variable's variation. A value close to 1 (one) means the independent variables provide almost all the information needed to predict the dependent variable variation.

RESULTS AND DISCUSSION

Table 1 Sampling Process

Criteria	Samples
1. Firms operating in the 2020-2024 Energy and Mineral sector	65
2. Firms that do not publish complete financial reports	10
3. Firms that present financial reports in non-rupiah amounts	13
4. Firms that do not have complete variable data	10
Total Samples	32
Total Observation of samples 2020-2024 (32 x 5)	160

Source : Data Processed (2026)

Table 1 indicates that 32 mineral and energy firms listed on the IDX between 2020 and 2024, resulting in 160 observations. The firms included ADRO, AKRA, APEX, BUMI, ELSA, ENRG, INDY, ITMG, MBSS, MEDC, MYOH, PGAS, PSSI, PTBA, PTRO, WINS, ARII, ARTI, BIPI, BSSR, BULL, BYAN, DEWA, DOID, DSSA, FIRE, GEMS, HRUM, ITMA, KKGI, KOPI, LEAD. The n value for the sample observations was 160.

The study accept classic assumption test include Normality, heteroskedastisity , autocorrelation and Multikolonierity. The significance value of environment, social, governance, and optimal variables is greater than 0.05. Variable data with a significance value greater than 0.05 passes the normality test (Lind et al., 2020). The kolmogorov-smirnov test recommend acceptable normality. Although the kolmogorov-smirnov significance values show some variations, the results confirm that all variables meet the normality assumption. Therefore, the data are considered appropriate for further parametric statistical analysis.

the glacier test Environment, Social, and Governance have a significance value greater than 0.05. A glacier test result that exceeds 0.05 indicates heteroscedasticity. The research data shows no indication of homoscedasticity. it can be seen that the tolerance and VIF values for each of the Environment, Social, and Governance variables meet the multicollinearity test criteria. The standard tolerance value is greater than 0.10 and the VIF value is greater than 10. The Durbin-Watson (DW) test. The DW test can be used to test for the presence of autocorrelation. This study yielded data that passed the autocorrelation test because the DW value was 1.368.

Table 2 Paired Samples Test

		Std.							
		Mean		Deviation		Lower		Upper	
Variables		Mean	n	Mean	Lower	Upper	t	df	sig
Pair 1	Environment - Optimal	5.53490	5.70830	.45128	4.64362	6.42617	12.265	159	.000
Pair 2	social - Optimal	5.49497	5.70700	.45118	4.60389	6.38604	12.179	159	.000
Pair 3	governance - Optimal	5.57406	5.70715	.45119	4.68297	6.46516	12.354	159	.000

Source : Data Processed (2026)

Based on Table 2, the difference test shows a significant difference between the environment and the optimal portfolio, with a difference value of 5.53 and a significance level of 0.000. There is a significant difference between the social aspect and the optimal portfolio, with a difference value of 5.49 and a significance level of 0.000. There is a significant difference between governance and the optimal portfolio, with a difference value of 5.57 and a significance level of 0.000. A significant difference is considered if the significance value is less than 0.05.

Table 3 F Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51.995	3	10.399	.315	.004 ^b
	Residual	5087.641	156	33.037		
	Total	5139.636	159			

Source : Data Processed (2026)

Based on table 3 F test known by ANOVA test that Significance 0.004 is smaller than 0.05 meaning that governance, social, Environment simultaneously have a significant effect on the optimal portfolio. Environment, Social and Governance together have a significant effect on the optimal portfolio. The F value of 0.315 means that a one-unit increase in Environment, Social and Governance will increase the optimal portfolio by 0.315. The significance of the F test is smaller than 0.05 meaning that the independent variables simultaneously affect the dependent variable.

Table 4. R-Square Test

Test	Value
R	0.101 ^a
R-square	0.010
Adjusted R-square	-0.022
Std. Error of the Estimate	5.74775

Source : Data Processed (2026)

Table 4 shows an R-square value of 0.01, indicating that Environment, Social, and Governance have a 1 percent influence on the optimal portfolio. The remaining 99 percent of the optimal portfolio is influenced by variables outside the research model. A good coefficient of determination is one that approaches one.

Table 5. t Testing

Model	Variable	B	Std. Error	Beta	t-statistics	Sig.	Tolerance	VIF
1	(Constant)	-2.392	2.646		-.904	.367		
	Environment	-1.541	2.246	-.071	-.686	.044	.608	1.645
	social	-.129	2.005	-.006	-.064	.949	.692	1.444
	governance	.020	1.723	.001	.012	.001	.683	1.465

Source : Data Processed (2026)

Table 5 shows t test or partial test. The formula of multiple regression as follow :

$$Y_{op} = \alpha + X_1 + X_2 + X_3 + e$$

$$Y_{op} = -2,392 - 0,686X_1 - 0,064X_2 + 0,012X_3 + e$$

The results from the tables provide evidence Environment has a t-value of -0.686 and a significance level of 0.044. Environment has a significance value less than 0.05, indicating that Environment has a significant effect on the optimal portfolio.

Thus, Social has a t-value of -0.064 and a significance level of 0.949. Social has a significance value greater than 0.05, indicating that Social has no significant effect on the optimal portfolio.

Governance has a t-value of 0.012 and a significance level of 0.001. Governance has a significance value less than 0.05, indicating that Governance has a significant effect on the optimal portfolio.

Discussion

The findings of this study indicate that Environmental, Social, and Governance (ESG) collectively influence optimal portfolio performance among energy and mineral companies listed on the Indonesia Stock Exchange. These results reinforce the argument that sustainability practices

have become an important consideration in investment decision-making. Investors increasingly evaluate not only financial performance but also non-financial information that reflects a firm's ability to manage environmental risks, social responsibilities, and governance quality. This finding is consistent with the ESG-efficient frontier concept proposed by Pedersen et al. (2021), which suggests that integrating ESG factors into portfolio selection can improve the balance between expected returns and investment risk.

The empirical results further demonstrate that the **environmental dimension** has a significant effect on optimal portfolio performance. This finding implies that environmental disclosure provides a positive signal regarding a firm's commitment to sustainability, resource efficiency, and environmental risk management. In the energy and mineral sector, environmental issues are particularly relevant because business activities are directly associated with carbon emissions, natural resource utilization, and environmental preservation. Consequently, investors tend to perceive firms with stronger environmental performance as having lower long-term risks and greater sustainability prospects. This result supports previous studies by Mulialim and Madyan (2023), which reported that ESG performance contributes to excess returns in emerging markets, and by (Xidonas & Essner, 2024), who found that environmental-related information positively influences investment performance. The findings therefore indicate that environmental initiatives enhance investor confidence and contribute to the construction of more efficient portfolios.

In contrast, the **social dimension** does not significantly affect optimal portfolio performance. This result suggests that social initiatives undertaken by firms have not yet become a primary consideration for investors in the Indonesian energy and mineral sector. Although social responsibility contributes to stronger stakeholder relationships through employee welfare, community engagement, and customer trust, these benefits may not be immediately reflected in stock prices or portfolio performance. Furthermore, social disclosure practices among the sampled firms may exhibit relatively limited variation, reducing their ability to differentiate firm value from an investor's perspective. These findings differ from Pedersen et al. (2021), who argued that social responsibility forms an integral component of ESG investing. Nevertheless, the present results indicate that investors continue to prioritize factors with more direct implications for financial performance and risk reduction, particularly environmental management and governance quality.

The study also finds that **governance** has a significant positive effect on optimal portfolio performance. Good corporate governance enhances transparency, accountability, ethical business practices, and effective managerial oversight, thereby reducing agency conflicts and information asymmetry between managers and investors. Strong governance structures improve the credibility of corporate disclosures and increase investor confidence in the firm's long-term sustainability. These findings are consistent with Maulana et al. (2026), who emphasized that firms with superior governance and sustainability practices achieve stronger asset-pricing performance, and with Meiyanti and Adhariani (2026), who highlighted governance as a key mechanism for strengthening corporate resilience under climate-related uncertainty. Accordingly, governance represents an important determinant of investment attractiveness and portfolio optimization because it reduces uncertainty while supporting sustainable corporate value creation.

Overall, this study demonstrates that the contribution of ESG dimensions to optimal portfolio formation is not uniform. Environmental and governance aspects provide stronger signals for investors than social performance in the Indonesian energy and mineral industry. These findings extend previous empirical evidence by showing that ESG effectiveness depends on the relative importance of each dimension within a specific industrial context. Therefore, firms operating in environmentally sensitive industries should prioritize improvements in environmental management and governance quality while continuing to strengthen social initiatives to enhance their long-term competitiveness and investment attractiveness. The further evidence from (Ayem & Bobat, 2025) and (Oktafiani & Wijayanti, 2026).

CONCLUSIONS and RECOMMENDATIONS

This study concludes that Environmental, Social, and Governance (ESG) collectively have a significant effect on optimal portfolio performance in energy and mineral companies listed on the Indonesia Stock Exchange during 2020–2024. Partially, the environmental and governance dimensions significantly influence optimal portfolio formation, whereas the social dimension does not exhibit a significant effect. These findings indicate that investors place greater emphasis on environmental responsibility and governance quality than on social performance when making portfolio allocation decisions. The study also confirms that integrating ESG considerations, particularly environmental and governance aspects, can support optimal portfolios.

The limitation of study that the scope is limited to the mineral and energy sectors and time scope only for five years with 160 observations data so that the findings may not yet be generalizable in emerging countries others.

The findings provide several practical implications. First, managers of energy and mineral companies should strengthen environmental initiatives and corporate governance practices to enhance investor confidence and improve portfolio attractiveness. Second, investors are encouraged to incorporate ESG information, particularly environmental and governance indicators, as complementary criteria alongside traditional financial analysis in portfolio selection. Third, regulators and the Indonesia Stock Exchange should continue improving ESG disclosure standards to increase the comparability and reliability of sustainability reporting. Finally, future studies are recommended to extend the observation period, include firms from other industrial sectors or cross country samples, and examine additional variables such as ESG ratings, corporate financial performance, firm risk, or macroeconomic conditions as mediating or moderating factors to obtain a more comprehensive understanding of the relationship between ESG performance and optimal portfolio formation.

REFERENCE

- Ayem, S., & Bobat, M. (2025). Pengaruh Komisaris Independenden dan Pengungkapan ESG terhadap Nilai Perusahaan dengan Profitabilitas sebagai Variabel Moderasi. *Jurnal Literasi Akuntansi*, 5(3), 126–133. <https://doi.org/10.55587/jla.v5i3.178>
- Bougie, R., & Sekaran, U. (2020). *Research Method For Business : A Skill Building Approach*. John Wiley & Sons Ltd, fifth Edit.
- Brooks, C., & Williams, L. (2024). Investing Responsibly: What Drives Preferences for Sustainability and Do Investors Receive Appropriate Investments? *SSRN Electronic Journal*, 8(April). <https://doi.org/10.2139/ssrn.4751838>
- Damanik, J. M., & Tandelilin, E. (2022). Strategi Dan Kinerja Investasi Dalam Aktivitas Perdagangan Investor Asing Vs Investor Domestik. *Jurnal Manajemen Universitas Bung Hatta*, 17(1). <https://doi.org/10.37301/jmubh.v17i1.19997>
- Firman, D., Manajemen, P., Muhammadiyah, U., & Utara, S. (2022). Perbandingan Kinerja Portofolio Berbasis ESG dan Non-ESG di Bursa Efek Indonesia. *JAKK Jurnal Akuntansi & Keuangan Kontemporer*, 5(2), 130–138. <https://doi.org/https://doi.org/10.30596/jakk.v5i2.25706>
- Ghozali, I. (2020). *Aplikasi Analisis Multivariate dengan Program IBM SPSS 21 Update PLS Regresi*. Badan Penerbit Universitas Diponegoro.
- Hurhayati, Y. S., Rinofah, R., & Sari, P. P. (2025). The Influence of ESG (Environmental, Social, Governance) and Company Size on Financial Performance. *International Journal of Economics Development Research (IJEDR)*, 6(6), 4568–4578.
- Idx. (2023). *Indonesia Stock Exchange*. Wwww.idx.co.id.

- Lind, D. A., Marchal, W. G., & Mason. (2020). *Statistical Techniques In Business and Economics*.
- Maulana, Y., Nugraha, N., Disman, D., & Sari, M. (2026). Does sustainability strengthen asset pricing models? Moderating effects in the Fama-French framework on ESG leaders. *Asian Management and Business Review*, 155–168. <https://doi.org/10.20885/AMBR.vol6.iss1.art10>
- Memarista, G., & Kusuwati, M. (2022). How Do Financial Experts Choose Stocks? *Jurnal Manajemen Teori Dan Terapan | Journal of Theory and Applied Management*, 15(1), 50–61. <https://doi.org/10.20473/jmtt.v15i1.34480>
- Mulialim, C., & Madyan, M. (2023). How does ESG explain excess returns in emerging market? An Asset-Pricing Approach. *Jurnal Manajemen Teori Dan Terapan | Journal of Theory and Applied Management*, 16(2), 280–292. <https://doi.org/10.20473/jmtt.v16i2.48072>
- Oktafiani, M., & Wijayanti, I. O. (2026). Pengaruh Struktur Kepemilikan, Environmental, Social, and Governance (ESG), dan Inovasi Hijau terhadap Nilai Perusahaan. *Jurnal Literasi Akuntansi*, 6(2), 370–380. <https://doi.org/10.55587/jla.v6i2.303>
- Rahat, B., & Nguyen, P. (2022). Risk-adjusted investment performance of green and black portfolios and impact of toxic divestments in emerging markets. *Energy Economics*, 116, 106423. <https://doi.org/10.1016/j.eneco.2022.106423>
- Ramadhan, A., Rinofah, R., & Sari, P. P. (2025). Pengaruh Environmental Social Governance, Ukuran Perusahaan dan Leverage Terhadap Kinerja Keuangan. *JEBMA*, 5(3), 630–639. <https://doi.org/doi.org/jebma.v5n3.7153>
- Sari, P. P., Hermuningsih, S., Hidayat, R., & Rinofah, R. (2026). Indeks Treynor, Sharpe, Jensen Terhadap Kebijakan Dividen Di Bursa Efek Indonesia. *JEEJ Jambura Economic Education Journal*, 8(2), 307–322. <https://doi.org/10.37479/jeej.v8i2.33850>
- Sucitawati, N. P. D., & Utama, C. A. (2025). ESG Performance, Busy Directors, Dividend Payout Policy And Moderating Role Of Ownership Concentration: Indonesian Evidence. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis*, 13(1). <https://doi.org/https://doi.org/10.37676/ekombis.v13i1>
- Sultana, S., Zainal, D., & Zulkifli, N. (2017). The influence of environmental, social and governance (ESG) on investment decisions: The Bangladesh perspective. *Pertanika Journal of Social Sciences and Humanities*, 25(November), 155–173. <https://doi.org/https://doi.org/10.3390/su10061831>
- Tandelilin, E. (2019). Teori Portofolio and Analisis Investasi. *Kanisius*.
- Xidonas, P., & Essner, E. (2024). On ESG Portfolio Construction: A Multi-Objective Optimization Approach. *Computational Economics*, 63(1), 21–45. <https://doi.org/10.1007/s10614-022-10327-6>