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The Effect of Environmental, Social, and Governance (ESG) Disclosure on Investment Efficiency (an Empirical Study on Manufacturing Companies Listed on the Indonesia Stock Exchange in 2019–2023)

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ABSTRACT

This study examines the impact of Environmental, Social, and Governance (ESG) disclosure on investment efficiency in manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2023. As ESG practices gain global prominence, their role in enhancing transparency and reducing information asymmetry is considered crucial for sustainable business and efficient investment decisions. Using a purposive sampling method, 37 manufacturing firms were analyzed over a five-year period, employing secondary data from international ESG databases. Panel data regression with the Random Effect Model was used to test both aggregated and disaggregated ESG dimensions—environmental, social, and governance—against investment efficiency, measured through residuals of the Biddle et al. (2009) investment model. The findings indicate that aggregated ESG disclosure does not significantly influence investment efficiency. However, when disaggregated, social disclosure demonstrates a significant positive effect, while governance disclosure shows a significant negative effect. Environmental disclosure was found to have no significant impact. These results suggest that while social responsibility initiatives contribute positively to investment decision-making by improving stakeholder trust and reducing agency conflict, overly rigid governance mechanisms may limit managerial flexibility, hindering efficient investment. The study highlights the limited awareness and implementation of ESG practices in Indonesia's manufacturing sector, as well as the need for future research to explore mediating factors or expand samples across other sectors or countries. The research contributes to understanding ESG's nuanced role in shaping financial performance within emerging markets.

Keywords
ESG Disclosure, Investment Efficiency, Manufacturing Sector, Social Responsibility, Corporate Governance.

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INTRODUCTION

Environmental degradation and pollution have emerged as increasingly pressing global concerns over recent decades. These issues have often been attributed to the lack of corporate responsibility in monitoring the environmental consequences of their business activities. As environmental damage becomes more prevalent, companies are being urged to prioritize ethical, social, and environmental dimensions in their reporting practices. In recent years, public demand has significantly increased for corporations to adopt more ethically and environmentally conscious operations. This societal pressure encourages companies to align their business strategies with broader social values (Hammami & Hendijani Zadeh, 2020). The rapid depletion of natural resources and the acceleration of environmental change have also prompted legal and regulatory bodies in many developed nations to raise ongoing questions regarding corporate sustainability (Ellili, 2022).

Corporate sustainability has become a central concern in modern business practices, prominently reflected in the disclosure of Environmental, Social, and Governance (ESG) practices. ESG disclosures represent a company's commitment to three fundamental pillars: environmental protection, social responsibility, and sound corporate governance. Global frameworks such as the Global Reporting Initiative (GRI), International Integrated Reporting Council (IIRC), and the Sustainability Accounting Standards Board (SASB) often serve as references for such disclosures (Ellili, 2022). In Indonesia, ESG reporting is regulated under the Financial Services Authority Regulation (POJK) No. 51 of 2017, which outlines technical guidelines for sustainable finance applicable to financial institutions, issuers, and public companies. These reports must include both qualitative and quantitative disclosures on economic, environmental, and social aspects. As such, ESG disclosures serve not only as tools for sustainability measurement but also as a means of regulatory compliance and indicators of a company's commitment to responsible business practices.

The manufacturing sector is one of the primary contributors to global CO_2 emissions, placing a significant obligation on its firms to understand and manage their ESG-related impacts. This sector is particularly relevant due to its reliance on raw materials and processes that produce hazardous waste and non-renewable outputs (Buallay, 2020). In Indonesia, the continuous expansion of the manufacturing sector plays a pivotal role in driving investment and exports (Chandra et al., 2024). Given its environmental footprint, the sector is increasingly expected to contribute to sustainable development initiatives (Rizky Bunga Pertiwi, 2023). Data from Indonesia's Ministry of Environment and Forestry (KLHK) in 2024 reveals that the country generated 67.9 million

tons of hazardous and toxic (B3) inorganic waste, with the manufacturing sector accounting for 9.6 million tons. Of this amount, only 6.3 million tons underwent further treatment, while the remaining 3.3 million tons were temporarily stored.

The ESG framework, encompassing environmental stewardship, stakeholder relations, and ethical governance, offers a strategic approach to sustainable business operations (Kouaib, 2022). ESG disclosures are crucial in enhancing the transparency of corporate reporting by providing non-financial information that supports investment decisions (Ellili, 2022) and demonstrates corporate commitment to sustainable development (Hai et al., 2022). High levels of ESG disclosure can reduce information asymmetry and mitigate conflicts of interest between stakeholders, thereby enhancing managerial investment visibility and investment efficiency (Kouaib, 2022).

Investment efficiency is achieved when there is no deviation from planned investment levels. Overinvestment occurs when companies exceed optimal investment thresholds, while underinvestment results from neglecting profitable opportunities (Cutillas Gomariz & Sánchez Ballesta, 2014). Indonesia's low level of investment efficiency is evident in its high Incremental Capital Output Ratio (ICOR), which ranged between 7.6% from 2021–2022, and slightly decreased to 6.8% in 2024. These figures remain considerably higher than those of other ASEAN countries, where ICOR ranges from 4% to 5%, indicating relatively inefficient capital usage (Kontan.co, 2024; Hake & Shanti, 2024).

Reducing information asymmetry is essential for achieving investment efficiency. While financial data remains vital, non-financial disclosures—such as ESG indicators—also play a role in reducing uncertainty and improving investment decisions (Ellili, 2022). Prior studies by Al-Hiyari et al. (2023), Ellili (2022), Hai et al. (2022), Hammami and Hendijani Zadeh (2020), and Kouaib (2022) found that ESG disclosures positively influence investment efficiency across both developing and developed economies. However, a study conducted in Indonesia by Aji Aryonanto and Dewayanto (2022) reported no significant relationship between ESG disclosure and investment efficiency, revealing a research gap.

Although existing studies suggest that ESG transparency supports corporate value and alleviates financial constraints, few have examined its direct impact on investment efficiency (Ellili, 2022). Addressing this research gap, the present study investigates whether ESG disclosure contributes positively to investment efficiency among manufacturing firms listed on the Indonesia Stock Exchange during the 2019–2023 period. The selection of this

sector is pertinent due to its significant environmental impact and its potential role in promoting sustainability through ESG-oriented strategies.

RESEARCH METHOD

Population and Research Sample

The population in this study encompasses all entities targeted for observation, measurement, and evaluation to support the formulation of general conclusions (Kusumastuti et al., 2020). Specifically, the population comprises manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2023. This sector was selected due to its significant environmental impact, complex governance structure, and exposure to social issues, making it highly relevant to the Environmental, Social, and Governance (ESG) theme examined in this research.

The sample was determined using a purposive sampling method, wherein companies were selected based on specific criteria to ensure alignment with the study's objectives (Kusumastuti et al., 2020). The sampling criteria included (1) companies operating in the manufacturing sector and listed on the IDX during the 2019–2023 period, and (2) companies that published ESG scores in an international database. Based on these criteria, 37 companies were selected, resulting in a total of 185 firm-year observations over the five-year period.

Data and Data Types

This study employs secondary data, which refers to information collected indirectly from pre-existing sources. The data utilized is documentary in nature, comprising written records or documents that reflect actual events or verifiable information. Specifically, the research uses ESG scores obtained from an international database. These scores, ranging from 0 to 100, represent individual assessments of the environmental, social, and governance dimensions. All variables analyzed in this study are sourced from the same international database and span a five-year period, from 2019 to 2023, ensuring consistency and comparability across observations.

Operational Definition of Variables

This study categorizes its variables into one dependent variable and four independent variables to test the proposed hypotheses. The independent variable is the Environmental, Social, and Governance (ESG) Score, which is obtained from a reputable international database. The ESG Score is assessed separately for each pillar—environmental, social, and governance—and ranges from 0 to 100. These scores are sourced from annual reports, corporate governance documents, CSR reports, and official company websites (Wang et al., 2022).

The dependent variable is investment efficiency, measured using the absolute residuals derived from the investment model proposed by Biddle et al. (2009). This model evaluates the gap between expected and actual investment based on sales growth and total investment. A larger absolute residual indicates a lower level of investment efficiency, where negative residuals denote underinvestment and positive residuals signify overinvestment (Hai et al., 2022; Hammami & Hendijani Zadeh, 2020). Two control variables are included: firm size and firm performance. Firm size is measured by the natural logarithm of total assets (Ellili, 2022; Fajri Yudha & Rahman, 2024), while performance is proxied by Return on Assets (ROA), calculated as net income divided by average total assets (Saputra, 2022; Kouaib, 2022).

Data Analysis Methods

This study employs a panel data regression model for data analysis. Panel data refers to a dataset that captures the behavior of specific units—such as individuals, firms, or countries—over time, combining both cross-sectional and time-series dimensions (Ghozali & Ratmono, 2017). Utilizing panel data enhances the quality of the analysis by increasing data variability, reducing collinearity among variables, improving degrees of freedom, and providing greater estimation efficiency (Ghozali & Ratmono, 2017). The analytical process is facilitated through the Econometric Views 12 (EViews 12) software. The methodology comprises several stages: descriptive statistical analysis to portray general data characteristics, selection of the most appropriate panel data regression model, classical assumption testing, and hypothesis testing to validate empirical results.

Descriptive statistics are used to summarize and describe the main features of the dataset, including central tendency, dispersion, and distribution shape indicators such as mean, standard deviation, variance, minimum, maximum, range, skewness, and kurtosis (Ghozali, 2018). The next phase involves model selection through Chow, Hausman, and Lagrange Multiplier tests to identify whether the Common Effect Model (CEM), Fixed Effect Model (FEM), or Random Effect Model (REM) provides the best fit (Priyatno, 2023).

Furthermore, classical assumption tests are conducted to ensure the model's validity, including assessments for normality, heteroscedasticity, multicollinearity, and autocorrelation (Ghozali, 2018; Priyatno, 2023). Following model estimation, the study utilizes two regression equations to assess the impact of ESG disclosure—both aggregated and disaggregated (environmental, social, and governance)—on investment efficiency. Finally, hypothesis testing is conducted using t-tests (to evaluate the individual influence of independent variables), F-tests (to assess the simultaneous influence), and Adjusted R-

Squared values (to determine the model's explanatory power) (Ghozali, 2018; Priyatno, 2023).

RESULT AND DISCUSSION

Descriptive Statistics

Based on the descriptive statistics in Table 1, it can be observed that the dependent variable, investment efficiency (INEF), has a maximum value of 20.03 and a minimum value of 0.13, both corresponding to PT Mayora Indah Tbk (MYOR). This indicates that this company exhibits significant fluctuations in its ability to efficiently engage in investment activities. When considering the aggregate ESG score as the independent variable, the maximum value is held by PT Timah Tbk (TINS) at 71.59, suggesting that PT Timah Tbk demonstrates a stronger commitment to sustainable business practices, transparency, and social responsibility compared to the other companies in the sample. Companies with higher ESG scores, such as PT Timah Tbk, are generally perceived to have a better corporate image and a lower potential for regulatory and environmental risks compared to those with the lowest ESG scores in the sample, such as PT Aspirasi Hidup Indonesia Tbk (ASII), which has an ESG score of 18.43.

The partial disclosure of ESG factors, which are also independent variables in this study, can be analyzed through the environmental, social, and governance pillars. Overall, the governance pillar reveals better disclosure scores compared to the other pillars. This is evident from the maximum governance score of 98.62, achieved by PT Vale Indonesia Tbk (INCO), which exceeds the maximum scores for the environmental and social pillars, which are 74.96 and 60.82, respectively, both held by PT Timah Tbk (TINS). PT Timah Tbk demonstrates strong capabilities in ESG disclosure both in aggregate and by individual pillar, as reflected in its maximum scores for environmental and social disclosures. In contrast, PT Vale Indonesia Tbk excels in governance disclosure, suggesting transparency, regulatory compliance, and a robust management structure.

The control variables in this study, company size and performance, exhibit maximum values that indicate larger companies with greater assets also tend to have higher performance, reflecting their ability to effectively manage assets to generate profits and improve company performance. This is demonstrated by PT Aspirasi Hidup Indonesia Tbk (ASII), which has the maximum company size value of 33.73, and PT Unilever Indonesia Tbk (UNVR), with a maximum performance score of 0.36.

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Table 1.
Descriptive Statistics Results

	INEF	ESG	ENV	SOC	GOV	SIZE	ROA
Mean	7.511243	44.29541	30.78114	29.84627	72.15622	30.86130	0.058054
Median	7.010000	44.52000	29.66000	29.53000	75.20000	30.94000	0.060000
Maximum	20.03000	71.59000	74.96000	60.82000	98.62000	33.73000	0.360000
Minimum	0.130000	18.43000	0.000000	9.980000	38.62000	27.38000	-0.400000
Std. Dev.	4.315517	11.68181	19.40140	11.44338	11.59000	1.238081	0.075961
Skewness	0.422425	-0.006946	0.113599	0.405101	-0.351303	-0.365972	-0.744036
Kurtosis	2.653387	2.187612	1.852047	2.459578	2.630803	3.409899	12.19020
Jarque-Bera	6.428064	5.088786	10.55591	7.311217	4.855951	5.424804	668.1126
Probability	0.040194	0.078521	0.005103	0.025846	0.088215	0.066377	0.000000
Sum	1389.580	8194.650	5694.510	5521.560	13348.90	5709.340	10.74000
Sum Sq. Dev.	3426.759	25109.50	69260.22	24094.98	24716.38	282.0435	1.061699
Observations	185	185	185	185	185	185	185

Panel Data Regression Model (Random Effect Model)

Based on the analysis, it can be concluded that the significance of Both of the two models is 0.0000 <0.05. Thus, following the decision-making criteria of the Lagrange multiplier test, the most optimal and appropriate model in estimating panel data regression in this study is to use the Random Effect Model.

Partial Test (T-Test)

The Partial Test is used to determine the extent to which an independent variable influences the dependent variable in isolation.

Table 2.
Partial Test Results (Regression Model I)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	29.23856	10.67149	2.739877	0.0068
ESG	0.042376	0.034004	1.246186	0.2143
SIZE	-0.781883	0.357934	-2.184430	0.0302
ROA	9.052590	4.283301	2.113461	0.0359

Source: Eviews 12 Output (Processed Data, 2025)

The table presents the results of hypothesis testing using the EGLS estimator. *** indicates significance at the 1% level, ** indicates significance at the 5% level, and * indicates significance at the 10% level.

The t-test in Regression Model I is used to assess the significance of aggregate ESG disclosure as the independent variable in relation to investment efficiency as the dependent variable. The test results reveal that certain variables have a significant impact on investment efficiency. According to Table 4.24, which presents the results from the Random Effect Model as the selected regression model, the partial test (t-test) for ESG disclosure shows a probability value of 0.2143, which is greater than 0.05, and a t-statistic of 1.246186. This

indicates that ESG disclosure does not significantly influence investment efficiency. Therefore, the t-test results suggest that ESG disclosure in manufacturing companies listed on the Indonesia Stock Exchange does not necessarily enhance the investment efficiency of these companies. As a result, it can be concluded that Hypothesis 1 (H1) in this study is rejected.

Table 3.
Partial Test Results (Regression Model II)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.02693	11.18483	2.326986	0.0211
ENV	0.017690	0.024884	0.710916	0.4781
SOC	0.091058	0.041470	2.195759	0.0294
GOV	-0.092501	0.040699	-2.272796	0.0242
SIZE	-0.504905	0.380717	-1.326197	0.1865
ROA	8.244375	4.209741	1.958404	0.0517

Source: Eviews 12 Output (Processed Data, 2025)

The table presents the results of hypothesis testing using the EGLS estimator. *** indicates significance at the 1% level, ** indicates significance at the 5% level, and * indicates significance at the 10% level.

The t-test in Regression Model II was conducted to examine the partial effect of ESG disclosures on investment efficiency, assessed separately for each dimension. According to the table, which presents the results from the Random Effect Model as the selected regression model, the environmental disclosure (ENV) variable shows a probability value of 0.4781, which is greater than 0.05, and a t-statistic of 0.710916. This indicates that environmental disclosure does not have a significant impact on the investment efficiency of manufacturing companies listed on the Indonesia Stock Exchange. Therefore, it can be concluded that Hypothesis 1a in this study is rejected.

On the other hand, the results in the table show that the probability value for the social disclosure (SOC) variable is 0.0294, which is less than 0.05, and the t-statistic is 2.195759. This suggests that social disclosure has a positive and significant effect on investment efficiency. Thus, Hypothesis 1b in this study is accepted. Additionally, the partial test results indicate that the governance disclosure (GOV) variable has a probability value of 0.0242, which is less than 0.05, and a t-statistic of -2.272796. This indicates that governance disclosure has a significant negative effect on investment efficiency. As a result, Hypothesis 1c in this study is rejected.

Simultaneous Test (F-Test)

The simultaneous test is used to determine the combined effect of all independent variables on the dependent variable. In this study, the

simultaneous test is conducted to assess whether both aggregate ESG disclosure and the individual ESG dimensions have an effect on investment efficiency.

Table 4.
Simultaneous Test Results (Regression Model I)

Root MSE	3.605526	R-squared	0.050644
Mean dependent var	4.702481	Adjusted R-squared	0.034909
S.D. dependent var	3.710487	S.E. of regression	3.645148
Sum squared resid	2404.966	F-statistic	3.218502
Durbin-Watson stat	1.924489	Prob(F-statistic)	0.024059

Source: Eviews 12 Output (Processed Data, 2025)

Based on Table 5, which presents the results from the Random Effect Model, the simultaneous test shows that the Prob(F-statistic) value is 0.024059, which is less than the significance level of 0.05. This indicates that the aggregate ESG disclosure variable has a significant effect on investment efficiency.

Table 5.
Simultaneous Test Results (Regression Model II)

Root MSE	3.487561	R-squared	0.087257
Mean dependent var	4.416268	Adjusted R-squared	0.061761
S.D. dependent var	3.660366	S.E. of regression	3.545530
Sum squared resid	2250.171	F-statistic	3.422429
Durbin-Watson stat	1.977556	Prob(F-statistic)	0.005603

Source: Eviews 12 Output (Processed Data, 2025)

According to Table 6, which also presents results from the Random Effect Model, the simultaneous test reveals that the Prob(F-statistic) value is 0.005603, which is less than the 0.05 significance level. This indicates that the individual ESG disclosures—environmental (ENV), social (SOC), and governance (GOV)—all together have a significant impact on investment efficiency. In other words, all independent variables, when considered simultaneously, significantly affect the dependent variable.

Analysis of Determination Coefficient (R2)

The coefficient of determination (R^2) analysis is used to assess the extent to which aggregate ESG disclosure, as well as the individual ESG components (Environmental Disclosure, Social Disclosure, and Governance Disclosure) as independent variables, and company size as a control variable, influence investment efficiency as the dependent variable, expressed as a percentage. Based on the R^2 analysis for Regression Model I using the Random Effect Model, the Adjusted R-squared value is 0.0349, or 3.49%. This indicates that 3.49% of the variation in investment efficiency is explained by aggregate ESG disclosure (independent variable) and company size (control variable), while the remaining 96.51% is attributed to other variables not included in this study.

Similarly, for Regression Model II shows an Adjusted R-squared value of 0.0617, or 6.17%. This indicates that Model II explains 6.17% of the variation in investment efficiency, suggesting that this model, which considers the individual ESG components, provides a better explanation of investment efficiency variation compared to Model I.

The Effect of ESG Disclosure on Investment Efficiency

The results of hypothesis testing indicate that the ESG Disclosure variable has a probability value of 0.21, which exceeds the significance level of 0.05, and a coefficient value of 0.04. This suggests that ESG Disclosure, as an independent variable, does not influence investment efficiency as the dependent variable in manufacturing companies listed on the Indonesia Stock Exchange. Therefore, the hypothesis (H1) positing a positive effect of ESG Disclosure on investment efficiency is rejected. This finding is inconsistent with studies by Al-Hiyari et al. (2023), Ellili (2022), Hai et al. (2022), Hammami & Hendijani Zadeh (2020), and Kouaib (2022), who found a significant positive impact of ESG Disclosure on investment efficiency. However, it aligns with the research of Aji Aryonanto & Dewayanto (2022), which also found no impact. This discrepancy may arise due to the high costs associated with ESG Disclosure (Harymawan et al., 2022), which can be seen as inefficient investment. Further, Ellili (2022) suggests that ESG's impact on investment efficiency may be mediated by factors such as financial reporting quality, and Harymawan et al. (2022) note that ESG Disclosure often serves more as a legitimacy tool than a strategic factor affecting investment decisions. In developing countries like Indonesia, investor awareness of ESG remains lower than in developed countries, reducing its impact on investment efficiency. Additionally, in capital-intensive industries like manufacturing, investment decisions are more influenced by operational and financial factors than sustainability concerns (Hai et al., 2022).

The Effect of Environmental Disclosure on Investment Efficiency

The hypothesis test results reveal that the Environmental Disclosure variable has a probability value of 0.47, which exceeds the significance level of 0.05, with a coefficient value of 0.01. This indicates that Environmental Disclosure does not have an impact on investment efficiency in manufacturing companies listed on the Indonesia Stock Exchange. Consequently, hypothesis (H1a), which posits a positive effect of Environmental Disclosure on investment efficiency, is rejected. These findings align with Ellili (2022), who also found that Environmental Disclosure did not significantly influence investment efficiency. This suggests that improved Environmental Disclosure does not enhance a company's ability to make efficient investment decisions, as it fails to reduce information asymmetry. Additionally, this result may be attributed to

the low urgency of environmental policy implementation in Indonesia's manufacturing sector. Investors may not yet consider environmental factors as a crucial element in investment decisions, especially since the impact of Environmental Disclosure is not immediately visible and involves high costs.

The Effect of Social Disclosure on Investment Efficiency

The hypothesis test results indicate that the probability value for the Social Disclosure variable is 0.02, which is below the significance level of 0.05, with a coefficient of 0.09. This suggests that Social Disclosure has a significant positive impact on investment efficiency in manufacturing companies listed on the Indonesia Stock Exchange. Therefore, hypothesis (H1b), which posits a positive effect of Social Disclosure on investment efficiency, is accepted. These findings are consistent with Kouaib (2022), who argued that Social Disclosure, which reflects how companies manage relationships with employees, customers, and the community, can reduce investment inefficiencies. Social Disclosure, by promoting transparency in managing stakeholder relationships, helps reduce information asymmetry, enabling stakeholders to better understand how companies are managed. Companies with strong social practices often enjoy better stakeholder relationships, which can mitigate risks and improve investment resource management efficiency. Thus, the study supports the theory that good social practices reduce principal-agent conflicts, enhancing investment efficiency.

The Effect of Governance Disclosure on Investment Efficiency

The hypothesis test results reveal that the Governance Disclosure variable has a probability value of 0.02, which is greater than the significance level of 0.05, with a coefficient of -0.09. This suggests that Governance Disclosure has a negative impact on investment efficiency in manufacturing companies listed on the Indonesia Stock Exchange. The findings indicate that stricter corporate governance is associated with lower investment efficiency. Therefore, hypothesis (H1c), which posits a positive effect of Governance Disclosure on investment efficiency, is rejected. This outcome contradicts the findings of Ellili (2022), who argued that enhanced governance disclosure increases investment efficiency by reducing both underinvestment and overinvestment, as well as Kouaib (2022), who found that non-financial disclosures like governance negatively affect inefficiency. The results imply that excessive governance disclosure may hinder managerial flexibility in investment decisions, potentially leading to suboptimal outcomes. Complex governance structures may slow decision-making, while weak governance may lead to inefficient investment decisions due to principal-agent conflicts.

The Effect of Control Variables on Investment Efficiency

The control variables used in this study include firm size (SIZE) and firm performance (ROA). Regression results from Model I indicate that firm size negatively impacts investment efficiency at a 5% significance level, implying that larger companies tend to have less efficient investments. Conversely, the results from Model II show that firm size does not have a positive effect on investment efficiency. These findings contradict studies by Budiyanto (2020) in Fajri Yudha & Rahman (2024), which suggest that firm size positively influences investment efficiency. Similarly, Ellili (2022) found that larger firms may face barriers to efficient investment, indicating a negative relationship between firm size and investment efficiency. Regarding firm performance, the regression results in both models show that ROA positively affects investment efficiency, with significance at 5% in Model I and 10% in Model II. This is consistent with findings by Ellili (2022) and Kouaib (2022), which suggest that better firm performance leads to more efficient investment decisions.

CONCLUSION

This study aimed to assess the impact of ESG disclosures—aggregated and partial (environmental, social, and governance)—on investment efficiency, using a sample of 37 manufacturing companies listed on the Indonesia Stock Exchange from 2019 to 2023. The analysis revealed that aggregate ESG disclosure did not significantly impact investment efficiency. The limited impact of ESG disclosure may stem from low urgency in implementing ESG practices in Indonesia and the high costs associated with these disclosures. Similarly, environmental disclosure did not show a positive effect on investment efficiency. However, social disclosure had a significant positive effect, highlighting that strong social practices foster better stakeholder relations and improve investment efficiency. In contrast, governance disclosure negatively impacted investment efficiency, possibly due to overly rigid governance structures hindering managerial flexibility.

The study's limitations include a small sample size of manufacturing firms with ESG disclosures in international databases, which may not comprehensively represent the broader influence of ESG on investment efficiency. Future research could expand the sample to include companies from other developing countries. Additionally, the low Adjusted R-Square values (3.49% for aggregate ESG and 6.17% for partial ESG) suggest that other factors beyond the examined variables could influence investment efficiency. Future studies should consider including mediating variables to enhance the model's explanatory power.

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