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Article

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Investment and sustainability: CSR, SDGs and the ESG Score in Indonesia

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ABSTRACT

This study examines how Corporate Social Responsibility (CSR) disclosure and Sustainable Development Goals (SDGs) affect investment decisions mediated by Environmental, Social, and Governance (ESG) scores. Structural Equation Modeling (SEM) was used to test the hypotheses of this study using the SmartPLS 3.0 programme. Testing the router model is done using algorithmic techniques, and the inner model is tested by bootstrapping and model testing using goodness of fit. By analysing data from 79 companies listed on the Indonesia Stock Exchange (IDX), we found that CSR and SDGs disclosures positively affect ESG scores. ESG scores also positively affect investment decisions as measured by earnings per share. The findings of this test indicate that ESG scores mediate the relationship between CSR disclosure and earnings per share in a statistically significant way. However, the mediation of ESG score on the relationship between SDGs disclosure and earnings per share was not found to have a significant effect.

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JEL CLASSIFICATION

M14; Q01; Q56; G11

1. Introduction

Investment decisions in the capital market have become a primary focus for investors, both individuals and financial institutions. In recent years, a new paradigm has emerged that changes investment decisions. This paradigm is known as ESG, which stands for Environmental, Social, and Governance (Ahmadin et al., 2023). Sustainable investing, also known as green investing, encompasses a variety of strategies in which investors seek financial returns while advancing long-term environmental and social goals. By integrating conventional investment methodologies with insights into environmental, social, and corporate governance (ESG) factors, investors can conduct more thorough analyses and thus make more informed investment choices. This approach to investing seeks to evaluate firms not solely based on immediate financial returns but also considers their broader societal contributions. Consequently, investors are tasked with critically evaluating the potential impacts of their investments within the contexts of environmental, political, and societal dynamics (Stobierski, 2021).

Regarding Morgan Stanley Capital Investment (n.d.), ESG considers environmental, social, governance, and financial factors in investment decision-making. In this context, applying ESG principles in investment is expected to target two aspects: financial return and positive impact (Nelson, 2017). In recent years, there has been a significant increase in assets managed with sustainable investing principles in

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mind (Remoa, 2022). Investors increasingly realise the importance of positively impacting the environment and society while achieving profitable investment returns (Puspitasari, 2017). Briand et al. (2011) suggest that long-term investment is not only related to opportunities that may arise in the future but also involves considering the risks that may arise. One of the risks that can create the Black Swan phenomenon is Environmental, Social, and Governance (ESG) risk. Therefore, companies that do not pay attention to ESG risks in the long run may become vulnerable to risks that could harm the company's value and threaten its sustainability. From an investor's perspective, the value assessment of such a company should be adjusted to the ESG risks that the company may face (Schramade, 2016).

In Indonesia, investments considering Environmental, Social, and Governance (ESG) values have gained attention, especially with the establishment of the SRI Kehati index. The SRI Kehati index is developed with the Kehati Foundation, which includes companies that fulfil environmental governance criteria. SRI refers to Socially Responsible Investment or Investment Report with social responsibility. It is proven that this index is one of the indices that provides a high rate of return. One conclusion that can be drawn is that paying attention to ESG factors is not only a responsibility that burdens the company but can increase the value of the company (Zulkafli et al., 2017).

With the growing discourse on sustainable investment, there is currently a lack of relevant literature that can be used as reference material on this topic, especially regarding the effect of CSR Disclosure and SDGs Disclosure on investment decisions mediated by ESG Score, so this is the primary motivation in this study. The difference between this research and other studies that have similar topics is that the author tries a new approach by using ESG Score as a mediator that connects CSR Disclosure and SDGs Disclosure with investment decisions so that research results can be obtained that can add to the knowledge literature regarding factors that influence sustainable investment decisions. This approach is expected to produce findings that can contribute new knowledge to the literature on factors influencing sustainable investment decisions.

The purpose of this study is to contribute to the growing literature on sustainable investment decisions, which scopes aspects of CSR disclosure, SDGs disclosure, and ESG scores. This research question is how CSR disclosure and SDGs disclosure influence investment decisions in Indonesia with the mediating role of ESG Score. Practically, this research is expected to contribute to understanding investment actors regarding the aspects that need to be considered in making investments. This research is also expected to contribute to developing research for academics interested in researching similar topics. This research uses secondary data with a sample that includes all companies that publish ESG Score on the Indonesia Stock Exchange so that the author can provide generalisation to build a conclusion that represents the actual conditions.

2. Theoretical literature review

2.1. Signalling theory

Signalling theory was first introduced by Spence (1973). This theory explains that the party sending the information or the owner of the information provides a signal or signal that reflects the company's condition and benefits the party receiving the information, especially investors. According to Brigham and Houston (2011), signalling theory addresses how management views the company's potential for development, which influences how prospective investors view the business. The signals might take the shape of details explaining management's attempts to meet the owner of the company's objectives. Investors and businesspeople need access to this information as a critical signal when making investment decisions.

Following a process of interpretation and analysis, investors will determine if the information supplied by the firm is a positive signal (beneficial news) or a negative signal (lousy news) (Jogiyanto, 2010). Investors often react favourably to favourable information and can discern between organisations that possess quality and those that do not. The stock price and the company's worth may rise as a result. Conversely, if investors interpret information as a negative signal, this indicates a decrease in investor interest, which may decrease company value.

In investment decision-making, an investor is often faced with abundant information that can be accessed through various platforms. In the context of sustainable investment, this article will discuss

several types of relevant information, including CSR Disclosure, SDGs Disclosure, ESG Score, and Earning per Share (EPS). These are expected to assist and guide investors in making their investment decisions.

2.2. Investment theory

Investment is the commitment of a certain amount of funds or other resources to obtain future profits. Bodie et al. (2009) state, 'An investment is the current commitment of money or other resources in the expectation of reaping future benefits'. Meanwhile, according to Van Horne and Wachowicz (2008), investment is an activity carried out by utilising cash at this time, intending to obtain goods in the future. In the context of sustainable investment, an investor makes investment decisions by considering the concept of sustainability using environmental, social, and governance considerations in the investment decision-making process. With this approach, it is expected that the investment will not only provide long-term benefits but also survive without damaging the environment. This sustainable approach reflects investors' awareness of their investment portfolio's social and environmental impacts and aspirations to contribute positively to sustainability issues.

2.3. Sustainability theory

Sustainability paradigms seek to emphasise and incorporate societal efforts to address environmental and cultural challenges. Within this framework, economic models aim to uphold natural and financial capital; ecological models seek to preserve biodiversity and ecological integrity; and political models seek to establish social systems conducive to realising human dignity (Jenkins, 2010).

Basically, sustainability denotes the ability to perpetuate an entity, outcome, or process over a long period of time. Whether in agriculture, forest management, or financial investments, sustainability implies that the activity does not deplete the natural resources it depends on. Similarly, the term 'sustainability' encompasses social circumstances; for example, peace agreements, economic policies, or cultural traditions can be categorised as sustainable if they do not exhaust the support of the political community. The concept of sustainability is increasingly prevalent in contemporary discourse as a framework in which environmental challenges are recognised for their potential to undermine the viability of healthy economic, ecological, and social systems (Jenkins, 2010).

According to Molina-Azorín et al. (2009), companies that apply the concept of sustainable management in their operational activities can reduce costs and increase revenue. Sustainable management allows companies to adopt better environmental practices, reducing operating costs while increasing revenues (Ambec & Lanoie, 2008). In a broader perspective, environmental management can also improve shareholder relationships and prevent potential conflicts with shareholders (Hull & Rothenberg, 2008). Thus, implementing sustainable practices in environmental management has a positive impact on the environment and can also have positive implications on a company's financial health and relationships with stakeholders.

3. Empirical literature review and hypotheses development

3.1. CSR disclosure, SDGs disclosure, and ESG Score

Previous research that researchers in various countries have conducted presents exciting findings related to similar topics. For example, research by Zamir et al. (2022) involving 9 developing Asian countries showed that CSR disclosure can reduce underinvestment in large companies while not limiting overinvestment. This finding provides important insights into the impact of CSR on investment in the context of developing Asian countries. Furthermore, the results of Rokhayati et al. (2019) confirmed that CSR disclosure influences investment decisions. This strengthens the understanding that information regarding corporate social responsibility can influence how investors make their investment decisions. Research by Bose et al. (2024) shows that Environmental, Social, and Governance (ESG) performance, stakeholder engagement, and the issuance of stand-alone sustainability reports positively affect firm-level SDG disclosure. In addition, the study found a positive relationship between higher levels of SDG disclosure and increased firm value.

Empirical research by Kouaib and Amara (2022) presents two main findings. First, CSR reporting has a significant influence on investment decisions. Second, this relationship between CSR and investment decisions depends on corporate governance practices. This finding provides a deeper perspective on how corporate governance can moderate the relationship between CSR and investment decisions. Overall, these studies make essential contributions to understanding the relationship between CSR and investment decisions across different contexts and show variation in the findings depending on the characteristics of the firm and its business environment.

A series of studies conducted by Cohen et al. (2017) in Lebanon showed that CSR performance can influence investment decisions. These findings provide further perspective on how corporate social responsibility practices can play a role in investment decision-making, particularly in the Lebanese context.

In China, Shen et al. (2017) present exciting results showing that CSR guarantees, or CSR-related guarantees, can increase investors' willingness to invest. This highlights the importance of transparency and assurance regarding social responsibility practices in motivating investment decisions in the Chinese financial market. Research by Chen et al. (2023) shows ESG disclosures effectively drive technological innovation capability (TIC) and also across different industries (green vs. high-tech). In addition, Khurram et al. (2023) study the impact of green bond issuance on firm performance and further examine the mediating effect of firm innovation performance on the primary relationship.

Research conducted by Sadiq et al. (2023) on ASEAN countries showed that ESG scores positively correlate with SDGs. This finding provides insight into the relationship between environmental, social, and governance assessments and achieving sustainable development goals in the ASEAN region.

Sasaki's (2020) research in Japan highlights that the level of commitment to SDGs and ESG scores have a high correlation. This suggests that companies committed to sustainable development goals will likely score high on Japan's environmental, social, and governance assessments.

Finally, research by Soni (2023) covering three countries, namely India, China, and Brazil, shows a high positive correlation between ESG Score at the company level and SDG score at the country level. This confirms that corporate efforts in environmental disclosure can positively contribute to achieving sustainable development goals at the country level.

Based on the above research, the authors propose the following hypothesis:

H1: CSR Disclosure has a significant effect on ESG Score

H2: SDGs Disclosure has a significant effect on ESG Score

3.2. ESG Score and investment decision

According to Kashmir (2012), financial ratios involve comparing numbers in a company's financial statements. One of the most common financial ratios investors use is Earnings per Share (EPS) because this ratio provides an overview of the company's ability to generate profits in the future. Research by Li et al. (2023) revealed that environmental factors are the most significant factors in green finance investment decision-making in China, followed by governance and social factors. Research by Tan and Solangi (2023) showed that the decision to invest in green infrastructure is mainly influenced by environmental impacts, followed by economic and social factors, which were identified as the second and third most important considerations. In addition, research by Xu and Solangi (2023) revealed that green bonds can significantly lower the cost of capital, increase investor confidence, and support the certification of renewable energy projects.

According to Tryfino (2009), Earning per Share (EPS) is a ratio used to calculate net income or see the net income obtained from each share. In this perspective, EPS measures how much net income is attributable to each outstanding share. Meanwhile, according to Sihombing (2008), Earnings per share (EPS) can be defined as the net income earned per share, calculated by dividing net income by the number of shares outstanding. In other words, EPS gives an idea of how much profit can be earned by each shareholder per share owned.

It is important to note that in a study conducted by Khemir et al. (2019) in Tunisia, the results showed that ESG (Environmental, Social, and Governance) information significantly influences investment decisions. In this context, Earning per Share (EPS) may be used as a proxy or indicator in measuring investment decisions, which can reflect the company's financial performance and be a consideration in making investment decisions.

So, based on the research above, the authors propose the following hypothesis:

H3: ESG Score has a significant effect on Earning per Share

3.3. The mediating effect of ESG Score in the relationship between CSR disclosure and SDGs disclosure with investment decision

The ESG Score is a positive step towards incorporating the UN Sustainable Development Goals into financial investments (Eurosif, 2018). ESG Score provides an overview of the extent to which a company pays attention to environmental, social, and governance aspects in its operations.

Research by Bekaert et al. (2023) also concluded that there is a positive relationship between ESG and Sustainable Development Goals (SDGs). This confirms that companies that pay attention to ESG factors tend to support achieving sustainable development goals. In its development, business literature shows that many companies have begun implementing SDGs as a strategy for their operational activities. The company's annual and sustainability reports increasingly include the SDGs component. This aims to create a positive image that the company carries out environmentally friendly and sustainable business practices. In this way, companies hope to attract investors who are concerned about sustainability issues to invest in them. Reflecting a commitment to the SDGs can be a positive factor that increases a company's attractiveness in the eyes of investors concerned about sustainable development.

In addition to the SDGs, CSR is an essential component companies report in their annual reports. CSR encompasses the company's strategic elements not necessarily represented in the ESG score. ESG ratings, on the other hand, accurately gauge CSR concerns. Since ESG concerns are developed from the CSR strategy, the ESG score may thus be seen as an extension of the CSR strategy. The ESG score represents the quantitative component of the CSR strategy. On the other hand, the CSR strategy is better represented by encapsulating mission statements, forward strategic orientation, and corporate values—all of which are challenging to quantify (Gillan et al., 2021).

Furthermore, the ESG Score is viewed as an imprecise assessment of CSR and as an extension of CSR measures (Drempetic et al., 2020; Friede et al., 2015; Gillan et al., 2021; Saadaoui and Soobaroyen, 2018). Some people see the ESG Score as a different metric that assesses a specific component of CSR. Although the ESG Score manifests corporate social responsibility, this perspective highlights that it can accurately depict how businesses attend to particular CSR matters (Gillan et al., 2021).

In this perspective, recognising that the ESG Score originates in CSR suggests that a comprehensive sustainability assessment requires an in-depth understanding and measurement of corporate social responsibility and its impact on environmental, social, and corporate governance aspects (Gillan et al., 2021).

Based on the above research, the authors propose the following hypothesis:

H4: ESG mediates the effect of CSR disclosure on investment Decisions.

H5: ESG Score mediates the effect of SDGs Disclosure on Investment Decisions.

4. Research design

This study has a population of all companies listed on the Indonesia Stock Exchange (IDX). The research sample was taken based on the availability of data and criteria set by the author. On the Indonesia Stock Exchange (IDX) website, there are only 79 companies that publish ESG Score data, so the authors decided to take samples based on the 79 published ESG Score data. With only 79 samples of companies that publish ESG Score data, the data obtained is representative of the entire

population and is sufficiently robust to conclude. The source of the Indonesia Stock Exchange (IDX) website is trusted because it is an official website that is the centre of data and information for all companies listed on the Indonesia Stock Exchange (IDX). The ESG Score displayed is the result of the ESG Score assessed by Morningstar Sustainalytics, one of the credible institutions conducting ESG ratings.

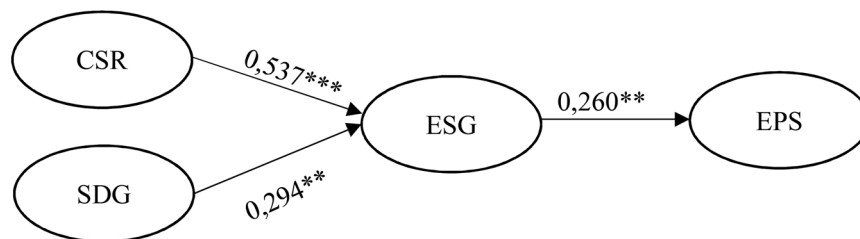
Furthermore, the author obtained data on CSR Disclosure, SDGs Disclosure, and Earning per Share by accessing the dataset provided by ESG Intelligence Universitas Airlangga. ESG Intelligence is a credible institution managed by the Center for Environmental, Social, & Governance Studies Universitas Airlangga that provides reliable data related to the ESG of listed companies in Indonesia. The dataset obtained by the author from ESG Intelligence will then be processed and used in research analysis.

Partial least square structural equation modelling (PLS-SEM) tests hypotheses prepared based on the research conceptual framework. In the context of this research, the SmartPLS 3.0 programme was chosen as a tool for conducting SEM analysis. The use of SEM in this study is because SEM is very suitable for predicting models with many factors. SmartPLS is used to predict the relationship between constructs to confirm the theory and the relationship between endogenous and exogenous variables both directly and indirectly.

The first test used algorithm techniques, namely convergent and discriminant validity and reliability. In convergent validity, the loading factor value is used with a minimum value of 0.70. Furthermore, discriminant validity testing uses the average variance extracted (AVE) value, which must be greater than 0.50. Furthermore, reliability testing uses a composite reliability value, which must be greater than 0.70 to be declared reliable (Hair et al., 2021).

The second test is bootstrapping in testing the inner model. The bootstrapping technique is 5000 sub-samples, so the results are robust and rigorous. Then, this test includes hypothesis testing both directly and indirectly using a minimum parameter t -statistic value of 1.96 and a p -value of 0.05. This means that if the t -statistic value is smaller than 1.96 and the p -value is more significant than 0.05, the hypothesis is rejected, and vice versa. The statistical parameters described above in this study are ensured to be fulfilled so that the results presented are rigorous and robust. Then, the next test is goodness of fit using the SRMR value with the condition that it must be smaller than 0.10. The SRMR value shows whether the model in the study is fit (Hair et al., 2021).

5. Empirical results



Notes: CSR is CSR Disclosure, ESG is ESG Score; SDG is SDG's Disclosure; EPS is earning per share. ** p -value < 0.05. *** p -value < 0.001.

Based on the validity testing results in Table 1 using the loading factor value above, it shows that each latent variable has a loading value > 0.70, then testing discriminant validity using the average variance extracted (AVE) value has a value of > 0.05. Finally, reliability testing using the composite reliability value of each latent variable has a value of > 0.70. Based on these three tests, it can be concluded that all latent variables have fulfilled the validity and reliability tests. In addition, Table 2 shows the value of validity testing using HTMT, and it can be seen that each variable has an HTMT value below 0.85 and is declared valid.

Table 3 shows the results of direct hypothesis testing and that CSR disclosure significantly affects ESG Score (std. beta 0.53; p -value < 0.001). This means that better CSR disclosure by the company increases the ESG score, so hypothesis 1 is accepted. Furthermore, the role of SDGs disclosure in increasing ESG

Table 1. Validity and reliability testing.

Construct	Loading	AVE	Composite RELIABILITY
CSR disclosure	1.000	1.000	1.000
SDGs disclosure	1.000	1.000	1.000
ESG Score	1.000	1.000	1.000
Earning per share	1.000	1.000	1.000

Source: Data processed, 2023.

Table 2. HTMT-discriminant validity.

Variable	1	2	3	4
CSR				
SDG	0.753			
ESG	0.788	0.752		
EPS	0.182	0.197	0.260	

Source: Data processed, 2023.

Table 3. Direct effect.

Hypotheses	Path	Std beta	t-Statistic	p-Value	Decision
H1	CSR > ESG	0.53	4.80	<0.001	Supported
H2	SDG > ESG	0.29	2.58	<0.05	Supported
H3	ESG > EPS	0.26	3.25	<0.005	Supported

Source: Data processed, 2023.

Table 4. Mediation Effect.

Hypotheses	Path	Indirect Effect	p-Value	Decision
H4	CSR > ESG > EPS	2.77	<0.05	Supported
H5	SDG > ESG > EPS	1.84	>0.05	Rejected

Source: Data processed, 2023. Notes: CSR is CSR Disclosure, ESG is ESG Score; SDG is SDG's Disclosure; EPS is earning per share.

scores has a significant effect (std. beta 0.29; p -value <0.05). This means that the better the SDG disclosure implementation increases the ESG score, so hypothesis 2 is accepted. Finally, the role of ESG score in increasing earnings per share is also significant (std. beta 0.26; p -value <0.05). This means that the better a company's ESG score, the higher its earnings per share increase; hence, hypothesis 3 is accepted.

Table 4 shows the results of indirect hypothesis testing or mediation effect. The outcomes of assessing the mediating impact of the Environmental, Social, and Governance (ESG) score on the relationship between Corporate Social Responsibility (CSR) disclosure and earnings per share reveal statistical significance (t -statistic 2.77; p -value <0.005). This means that the ESG score variable can mediate between CSR disclosure and increasing earnings per share, so hypothesis 4 is accepted. The mediating effect of ESG score is partial mediation because the effect of CSR disclosure on earnings per share is significant, the effect of CSR disclosure on ESG score is significant, and the effect of ESG score on earnings per share is also significant. Furthermore, the mediating effect of ESG score on the effect between SDGs disclosure on earning per share (t -statistic 1.84; p -value >0.05). This means that the ESG score variable cannot mediate the effect of SDGs disclosure on earnings per share, so hypothesis 5 is rejected.

Furthermore, this research ESG score variable has an R-square value of 0.644, which means that the role of the CSR disclosure and SDGs disclosure variables is 64.4%, while other variables outside the research model explain the rest. The earning per share variable has an r-square value of 0.067, which means that the ESG score variable can explain the earning per share variable by 6.7%. Then, in testing the goodness of fit, it can be seen that this study has an SRMR value of $0.007 < 0.10$ and an RMS Theta value of $0.565 > 0.10$. So, it can be concluded that this study has met the minimum criteria for goodness of fit.

6. Discussion

The findings of this study, which was conducted on 79 companies listed on the Indonesia Stock Exchange (IDX), concluded that CSR disclosure and SDGs disclosure positively influence ESG scores. This result

supports previous findings from the research of Sadiq et al. (2023), Sasaki (2020), and Soni (2023), which also show that SDGs are positively related to ESG scores. In addition, this finding also confirms the results of previous research by Fahad and K.B (2021), which indicated that CSR is positively related to ESG score.

This finding is significant because implementing CSR practices and SDGs in company reports can positively contribute to the ESG score assessment. This reflects that companies that implement sustainable policies and practices and are committed to social responsibility can create added value in environmental, social, and corporate governance aspects, reflected in their ESG Score. These findings provide further empirical support to the relationship between CSR, SDGs, and ESG, providing a foundation for companies to continue strengthening their commitment to sustainable business practices.

Furthermore, the findings of this study indicate that ESG score positively influences investment decisions proxied by earnings per share. This result confirms previous findings by Khemir et al. (2019) in Tunisia, which showed that ESG information significantly influences investment decisions. This study also evaluates the mediating effect of ESG score that connects CSR disclosure and SDGs disclosure with investment decisions.

The test results of the effect of CSR disclosure on earnings per share mediated by ESG score show that ESG score can connect CSR disclosure with investment decisions proxied by earnings per share. Thus, a high ESG score and good CSR disclosure may link to increased investment decisions proxied by EPS. It influences investor perceptions, reduces risk, strengthens the company's reputation, and provides access to resources needed for long-term growth and success.

However, the results of testing the effect of SDGs disclosure on earnings per share mediated by ESG scores show that ESG scores cannot mediate the influence between SDGs disclosure on investment decisions proxied by earnings per share. This may occur due to several potential factors such as (1) the level of investor satisfaction may not be delighted with the information provided by the company in the SDGs disclosure, and they may use other criteria to assess investment feasibility; (2) related to investment priorities, investment decisions may be influenced by factors other than ESG Score, such as potential investment returns, financial risks, or long-term investment strategies; and (3) investors may have different data sources or different internal judgements related to the ESG performance of a company, which may affect their investment decisions.

This finding further explains the role of ESG score as a glue between sustainability practices, such as CSR disclosure, and investment decisions reflected in earnings per share. These results may assist companies in understanding how their sustainability aspects may influence investor perceptions and investment decisions.

7. Conclusion

The implications of this study show that CSR Disclosure and SDGs Disclosure consistently affect ESG Scores. In this context, CSR and SDGs practices positively contribute to a company's ESG Score assessment. This indicates that the adoption and transparency in reporting a company's social, environmental, and governance aspects can improve the sustainability assessment of the company by stakeholders.

In addition, ESG score has a mediating role in the relationship between CSR disclosure and investment decisions. In other words, companies that actively engage in sustainability practices, as reflected in CSR Disclosure, can create added value reflected in the ESG assessment, which can then positively influence investment decisions, especially those proxied by earnings per share.

However, the results show this does not apply to the relationship between SDGs Disclosure and investment decisions. Although sustainable practices indicated by SDGs Disclosure can improve ESG Score, ESG Score does not mediate this influence on investment decisions proxied by earnings per share. This suggests that the direct impact of the disclosure of sustainable development goals may be more limited in influencing investment decisions compared to sustainability practices in general.

These implications provide essential insights for companies and stakeholders in understanding how different sustainability practices may influence ESG evaluations and investment decisions. Further, this may assist companies in directing their efforts to improve sustainability performance and its impact on investment decisions.

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Authors contributions

The lead author participated in the conceptualisation and design of the study, analysis, interpretation of data, and initial drafting of the paper. Each author contributed to critical revision of the content for intellectual rigour and provided final approval for the published version. All authors are responsible for every aspect of the work.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The dataset used in this study consists of secondary data sourced from the Indonesia Stock Exchange (IDX) website and datasets provided by ESG Intelligence Universitas Airlangga. To gain access to the data, interested parties can contact the corresponding author at iqbal_lhutfi@student.ub.ac.id.

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