

Analyzing ESG's Role as a Mediator in Corporate Resource Allocation and Financial Outcomes

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Abstract

Sustainable finance is a key focus for the Financial Services Authority (OJK) to support a green economy, yet the financial sector's understanding of its role remains limited. This study examines data from 12 companies listed on the SRI KEHATI Index over a 10-year period (2011-2020), analyzing the impact of corporate resource allocation on ESG performance and financial outcomes. The results show that investments in research and development (R&D) and cash flows directed toward investment activities significantly enhance financial performance, while human resource expenditures have no discernible effect. These findings align with the resource-based view, suggesting that innovation and strategic investments are more effective in improving profitability than labor-related costs. Moreover, ESG performance does not mediate the relationship between company resources and profitability, indicating that, for the companies studied, ESG factors have yet to be a significant driver of financial performance, reflecting the financial industry's limited integration of sustainable finance.

Keywords: ESG, Investment, Cashflow, HRD, R&D

Abstrak

Keuangan berkelanjutan menjadi fokus utama bagi Otoritas Jasa Keuangan (OJK) dalam mendukung ekonomi hijau, namun pemahaman sektor keuangan tentang perannya masih terbatas. Penelitian ini menganalisis data dari 12 perusahaan yang terdaftar di Indeks SRI KEHATI selama 10 tahun (2011-2020), dengan mengkaji dampak alokasi sumber daya perusahaan terhadap kinerja ESG dan hasil keuangan. Hasil penelitian menunjukkan bahwa investasi dalam penelitian dan pengembangan (R&D) serta arus kas yang dialokasikan untuk kegiatan investasi secara signifikan meningkatkan kinerja keuangan, sementara pengeluaran untuk sumber daya manusia tidak menunjukkan pengaruh yang signifikan. Temuan ini sejalan dengan pandangan berbasis sumber daya, yang menyatakan bahwa inovasi dan investasi strategis lebih efektif dalam meningkatkan profitabilitas dibandingkan dengan biaya terkait tenaga kerja. Selain itu, kinerja ESG tidak memediasi hubungan antara sumber daya perusahaan dan profitabilitas, yang mencerminkan keterbatasan sektor keuangan dalam mengintegrasikan keuangan berkelanjutan.

Kata Kunci: ESG, Investasi, Arus Kas, HRD, R&D

INTRODUCTION

The Financial Services Authority (OJK) has released the second phase of the Sustainable Finance Roadmap (2021-2025), following the success of the first phase in introducing sustainable finance principles, categorizing sustainable business criteria, developing incentives, and implementing outreach and training for the financial industry. Despite these achievements, the sector still faces significant challenges, including a low level of understanding of sustainable finance, a lack of agreement on national green standards, and underutilization of business opportunities in the sustainable sector (OJK, 2021).

According to data from Bappenas, quoted by OJK, Indonesia requires IDR 67.803 trillion in financing for the sustainable sector until 2030. This sector is still growing, although Indonesia already has the SRI KEHATI stock index, published twice a year, with 25 listed companies demonstrating strong performance in promoting sustainable businesses and showing awareness of environmental, social, and governance (ESG) aspects, also known as Sustainable and Responsible Investment (SRI).

ESG awareness can be demonstrated through green innovations via research and development (R&D). Studies show that R&D investment positively impacts green innovation performance, and ESG performance can increase the number of green invention patents. Additionally, ESG performance moderates the relationship between R&D investment and green innovation performance (Xu et al., 2021). R&D and patent development can demonstrate a company's ability to achieve sustainable development (Dicuonzo et al., 2022).

To reflect their commitment to ESG, companies must disclose their sustainable development efforts to the public. Disclosures regarding environmental, social and governance are proven to improve financial performance (Chen & Xie, 2022). Companies today focus not only on investors but also on employees, customers, and the broader society. A company's commitment to environmental, social, and governance practices positively impacts profits and shareholder value (Cornell & Damodaran, 2020).

To achieve both financial performance and ESG performance, companies need adequate costs. ESG performance provides the advantage of reducing the cost of capital through loans from financial institutions (Eliwa et al., 2021). Companies with high ESG performance find it easier to get financing or credit from financial institutions. This aligns with the OJK's roadmap that financial institutions are expected to contribute to sustainable businesses by providing innovative financing products and schemes.

Based on the above description, this study examines the impact of costs incurred by companies to achieve ESG performance and how profitability, as a measure of financial performance, mediates between costs and ESG performance. Identification of ESG costs is important to study because if a company has sufficient resources related to environment, social, and governance then the company can achieve good ESG performance and respond to the wishes of the public who are following global trends in the ESG aspect. For this reason, financial institutions can take on the role of providing funds for companies investing in ESG in order to achieve sustainable development.

Human Resources and Financial Performance

Human resources (HR) is an important resource owned by the company to achieve competitive advantage (Barney, 1991). HR is a measure in determining the amount of

company intellectual capital. Intellectual capital tested together with ROE shows a positive effect on company value (Ferdiansyah & Fahmi, 2020).

Companies have effective HR management to get benefits from HR. HR management has a positive impact on company performance (Halid et al., 2020). The best HR management includes recruitment activities, outreach, job design, training and development, participation, career development, performance appraisal, employee appreciation, and work safety (Huselid, 1995). HR management activities have a positive impact on the company's financial performance, both in the short and long term. These activities require sufficient cost allocation. This is also supported by Al-Zahrani & Almazari (2014) who show that effective HR management practices can improve financial performance.

H1: HR expenditure can improve financial performance.

Research and Development and Financial Performance

R&D intensity has a positive effect on financial performance as measured by ROA and ROE (Erdogan & Yamaltdinova, 2019). Research and development activities can produce new knowledge (Boiko, 2021) This knowledge results better company's operating activities. The company's resources are meaningless without knowledge management and technology to manage them. An interesting finding is shown by Coad & Grassano (2019) that policies to increase R&D would be better for targeting sales and employment growth than market capitalization or profits.

Through a literature study conducted by Boiko (2021) it shows that Research and Development (R&D) is an indicator of technological change that can increase company productivity. Furthermore, the company's investment in R&D activities has a positive impact on the company's growth. Company growth is synonymous with a long period of time. Singh & Soni (2022) describes that the benefits of R&D can improve performance in the medium term (5 years) in India. Thus, companies still need to be encouraged to allocate R&D investment funds in order to improve their performance.

H2: R&D investments can improve financial performance

Cashflow and Financial Performance

Cash flow is a factor used as the basis for making decisions, especially investments. Companies that have available cash flow will increase investment in working capital, conversely, companies with limited cash flow will reduce investment in working capital. Meanwhile, working capital has an influence in improving company performance (Afrifa, 2016).

The availability of cash can be characterized by free cash flow which makes the company's resources more flexible to reach profitability (Sapuan et al., 2021). Supatminingsih (2018) found that only operating and investing cash flows has role in improving performance, while funding activities did not. The effect of cash flow from operating activities on company performance is also confirmed by Olagunju et al. (2022). This research focuses on cash flow from investing activities because the ESG dimension requires resources that have long-term sustainability such as fixed assets and intangible assets.

H3: Cash for investing activities can improve financial performance

ESG and Financial Performance

Several studies show the effect of ESG on financial performance, especially the effect of ESG disclosure. El Khoury et al. (2021) show that investment in ESG is related to financial performance. The relationship depends on 3 things, namely pillars, size and ESG level. The effect of disclosing ESG information on profitability, which is the company's financial performance, has different results between the capital markets in Europe and America. In America, ESG determines investors to choose companies with higher profitability as investment destinations, whereas this is not the case in the European market which shows ESG does not improve its financial performance (Cesarone et al., 2022).

Previous research has focused on the effect of ESG disclosure on company financial performance. Brogi & Lagasio (2019) uses the ESG score instrument to test its effect on financial performance. The results of the study show that there is a significant and positive relationship between ESG and that environmental awareness in banks is strongly related to profitability, providing implications for policy makers and policy makers. Qoyum et al. (2022) tested several financial performance instruments for companies registered in Islamic securities on ESG performance. The financial performance of companies labeled sharia has higher environmental and social performance than non-sharia, while the same thing does not occur in governance performance. This shows that there is a relationship between ESG and financial performance.

Companies that disclose information about ESG performance can attract more investors (Cornell & Damodaran, 2020). Companies need to have reliable human resources. Based on the Resources-based theory previously stated, HR is a resource that fulfills three conditions. HR is a valuable resource, but it also needs to get special treatment so that the company's HR is also a rare resource and its expertise is not easily imitated. For this reason, the allocation of costs for HR training should be a priority to achieve sustainable performance. Several companies already have policies regarding labor, but their implementation is still not in accordance with these policies (Schleich, 2022). The intended implementation is not only about training, but also about the supply chain, protection of occupational health and safety as well as policies on diversity and opportunities.

Apart from human resources, company investment also needs to be allocated in R&D activities. R&D has been shown to increase green innovation performance, and ESG performance can amplify that influence (Xu et al., 2021). Kocmanová & Dočekalová (2012) formulated company Key Performance Indicators (KPI) to assess ESG performance by incorporating several economic performance indicators, including cash flow, ROA, ROE and R&D expenditure. This shows that in order to achieve ESG performance, companies should have sufficient resources in the form of cash, pay attention to the ability of assets and equity to generate profits and allocate budgets for R&D activities.

Previous hypothesis have been described how the influence of HR, R&D and investment cash flow on ESG performance. Meanwhile, ESG can have an impact on financial performance (Brogi & Lagasio, 2019; Cesarone et al., 2022; El Khoury et al., 2021). This study further tests that ESG can mediate the influence of HR, R&D and investment cash flow on financial performance.

H4a: ESG performance mediates the effect of HR on financial performance

H4b: ESG performance mediates the effect of R&D on financial performance

H4c: ESG performance mediates the effect of investment cash flow on financial performance

METHODS

The population in this study are companies that are included in the IDX SRI KEHATI ESG index, which are 25 stocks with an ESG performance rating above the industry average. A total of 120 observations from 12 companies for 10 years from 2011 to 2020 were selected as samples in this study. Data sources are financial reports, annual reports and sustainability reports.

To answer research problems, we use explanatory research methods using a quantitative approach. Data analysis used in this research is descriptive and inferential data analysis. Descriptive analysis provides an overview or description of a data seen from the average value (mean), standard deviation, variance, maximum, minimum, sum, range, kurtosis and skewness (Ghozali, 2011). In inferential analysis used Path Analysis, t test and normality test. Prior to inference analysis, the data is presented in the form of descriptive statistics. To assess the quality of the model, the data will also be tested for model selection with the Chow, Hausman and Langrange multiplier tests.

Continue with the relationship between the Effect of ESG Cost on ESG Scores and Profitability as an intervening variable, a Path Analysis is performed which is an extension of multiple linear regression analysis, or the use of regression analysis to estimate the causal relationship between variables (causal model). What path analysis can do is find patterns of relationships between three or more variables and cannot be used to confirm or reject the causality hypothesis (Ghozali, 2011).

The variables examined in this study consist of dependent, independent and mediating variables. Profitability as a measure of financial performance, proxied by ROA is the dependent variable. ESG as a mediating variable is measured by the score obtained by the company regarding ESG published by Asset4 Thompson-Reuters. Meanwhile, the independent variables are the types of company resources related to ESG, namely HR costs, R&D activity costs, and cash flow from investment activities.

To test the regression with the mediating variable, two multiple regression formulas were created bellow:

$$ROA_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 HR_{it} + \beta_3 RD_{it} + \beta_4 CF_{it} + \beta_5 Size_{it} + \varepsilon_{it} \quad (1)$$

$$ESG_{it} = \beta_0 + \beta_1 HR_{it} + \beta_2 RD_{it} + \beta_3 Size_{it} + \beta_4 CF_{it} + \varepsilon_{it} \quad (2)$$

The first regression equation is intended to test the direct effect of the independent variable on the dependent. The second regression equation is to test the effect of the independent variables on the mediating variable. The results of the first and second regression equations will be used to confirm the effect of ESG mediation on performance using the Sobel test.

$$Z = \frac{ab}{\sqrt{(b^2 SE_a^2) + (a^2 SE_b^2)}}$$

RESULT AND DISCUSSION

Descriptive statistics

Before discussing the hypothesized results, the following is a descriptive statistic of the sample collected.

Table 1. Descriptive Statistics

	ROA	HRCOST	RND_COST	CFI	ESG_SCORE
Mean	0.130242	28.70361	25.14846	-0.055622	58.74552
Median	0.052186	28.84593	24.96912	-0.042150	59.88567
Maximum	0.624176	30.90134	28.76012	0.031859	88.27610
Minimum	-0.054972	25.98022	22.02046	-0.238481	17.86316
Std. Dev.	0.147466	1.329707	1.678076	0.053451	15.65925
Skewness	1.561743	-0.320459	0.424010	-1.083111	-0.503482
Kurtosis	4.799820	2.000591	2.430752	4.091216	2.862053

Source: Processed data, 2024

The results of the descriptive statistical test are shown in the table above. The company's average ROA is 13.02% with a minimum value of -5.49% and a maximum value of 62.41%. The average investment cash flow value is -5.5% compared to the total assets owned, the minimum investment is -23.8% and the maximum is 3.1%. The costs incurred for HR averaged 28.70 with a minimum value of 25.98 and a maximum of 30.90 where this value is the natural logarithm value of HR costs. The cost for research and development has an average of 25.14 with a minimum value of 22.02 and a maximum of 28.76. Finally, the highest ESG score is 88.27, the minimum score is 17.86 with an average score of 58.74.

Hypothesis Test

Prior to testing the hypothesis, the researcher implemented a series of diagnostic tests to determine the most appropriate econometric model for the analysis. These included the Chow test, Hausman test, and Lagrange Multiplier (LM) test. The results of these preliminary tests indicated that the random effects model was the optimal choice for regression analysis in this study. Specifically, the Chow test revealed no significant structural differences across groups, suggesting the suitability of pooled or random effects models. The Hausman test further confirmed that the random effects model provided a more efficient estimator, as there was no evidence of correlation between the individual effects and the explanatory variables. Finally, the LM test supported the random effects specification, as it indicated no significant presence of heteroscedasticity or autocorrelation that would necessitate a fixed effects model. Collectively, these diagnostic tests affirmed the random effects model as the most robust and appropriate for examining the data.

Direct Effect of Resources on Financial Performance

There are 3 hypotheses to test the direct effect of resources on financial performance. To obtain these results, the following are the results of the independent variable t test on

the dependent variable of performance with company size as measured by total assets as the control variable:

Table 2. Regression Test Result (1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.062729	0.482135	2.204215	0.0295
ESG_SCORE	-0.000150	0.000491	-0.304853	0.7610
HRCOST	0.037466	0.023180	1.616341	0.1088
R_D_COST	0.022585	0.008422	2.681593	0.0084
CF_TA	-0.487789	0.105667	-4.616295	0.0000
TA	-0.080816	0.021213	-3.809687	0.0002

Source: Processed data, 2024

The results of hypothesis testing presented in Table 2 indicate that company spending on human resources does not have a significant effect on corporate performance. This suggests that expenditures related to recruitment, training, salaries, and bonuses do not translate into measurable improvements in company performance. The sample companies in this study appear to be ineffective in fully utilizing their human resources, implying that such spending is primarily aimed at supporting operational needs rather than driving profit generation. These findings contradict the conclusions of Al-Zahrani & Almazari, (2014) who argue that effective human resource management practices can enhance financial performance.

In contrast to the previous results, R&D spending proved to have a positive effect on financial performance. These findings indicate that the costs incurred by companies in conducting research and development can improve the company's financial performance. This indicates that the products and innovations produced by the company are the main weapon for the company to achieve maximum profit. Without R&D, it is impossible for a company to analyze the advantages and disadvantages of the company's strategy in improving its performance. The results of this study are supported by Boiko (2021), which shows the results that Research and Development (R&D), which is an indicator of technological change, can increase company productivity. Therefore, that the costs incurred for investing in R&D activities have a positive impact on company growth. In addition, these results are also supported by the research of Singh & Soni (2022) showing that the benefits of R&D can improve performance in the medium term (5 years) in India. Resource Based Theory is also supported by the results of this second hypothesis.

The results of the third hypothesis test reveal that investment cash flow has an influence on financial performance. This underscores the idea that the cash allocated for investments—specifically in fixed and intangible assets—plays a pivotal role in improving business outcomes. Investment cash flow enables companies to acquire necessary assets that can generate returns and drive profitability. The availability of cash as a flexible resource is crucial for companies seeking to optimize their performance and capitalize on growth opportunities. These findings are consistent with the work of Sapuan et al. (2021), who emphasize the importance of cash flow in facilitating corporate profitability and expansion.

Indirect Effect of Resources on Financial Performance

Prior to conducting the Sobel test, a two-stage regression analysis was performed. The first regression analysis aimed to examine the direct effects of the independent variables on the dependent variable, providing a baseline understanding of the relationships between the variables. In the second stage, a subsequent regression was conducted to assess the impact of the independent variables on the mediator, which allowed for a clearer understanding of the underlying mechanisms through which the independent variables might influence the dependent variable. This dual approach enabled a comprehensive evaluation of both the direct and indirect pathways, ensuring that the Sobel test could accurately assess the significance of the mediating effect. By establishing these regression models, the analysis facilitated a more nuanced interpretation of the data, laying the groundwork for a robust mediation analysis.

Table 3. Regression Test Result (2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-725.4657	87.22015	-8.317638	0.0000
HRCOST	0.267936	4.818095	0.055610	0.9558
R_D_COST	7.165018	1.508382	4.750134	0.0000
CF_TA	-13.87996	19.34185	-0.717613	0.4746
TA	18.55314	4.530312	4.095335	0.0001

Source: Processed data, 2024

The following is a summary of the results of the first and second regression tests for the basis of Z calculations on the Sobel test:

Table 4. Regression Test Result Summary

Variable Relationship	Coefficient	Std. Error	Prob.
HR>ESG	0,267936	4,818095	0,9558
RD>ESG	7,165018	1,508382	0,0000
CF>ESG	-13,87996	19,34185	0,4746
HR>ROA	0,037466	0,023180	0,1088
RD>ROA	0,022585	0,008422	0,0084
CF>ROA	-0,487789	0,105667	0,0000
ESG>ROA	-0,000150	0,000491	0,7610

Source: Processed data, 2024

There are 3 hypotheses that show the indirect effect of resources on financial performance through ESG. By using the Sobel test, the following is the result of calculating the Z value for the three hypotheses:

Table 5. Sobel Test Result

Hypothesis	Z	t-tabel	Description
HR>ESG>ROA	-0.05365302	1,65776	not mediate
RD>ESG>ROA	-0.20389354	1,65776	not mediate
CF>ESG>ROA	0.19629694	1,65776	not mediate

Source: Processed data, 2024

Based on the results of the Sobel test, the Z value is smaller than the t table so that the ESG variable does not succeed as a mediator in the influence of the independent variable on the dependent. This is because in the ESG partial test for ROA it does not have a significance value below 0.05 (no effect). This shows that ESG performance is not influence in the company's financial performance. In signal theory, ESG has not become a concern for stakeholders in their decision making. Husada & Handayani (2021) found that ESG disclosure has no effect on ROA. The negative coefficient of the effect of ESG on ROA is of concern. This means that environmental performance tends to provide a potential decrease in the company's financial performance.

Company expenditures related to HR, have no impact on increasing ESG scores and financial performance. No matter how much the company provides income for its employees, it does not change the company's ESG and financial performance. HR is not only about compensation, but several other activities ranging from recruitment activities, outreach, job design, training and development, participation, career development, performance appraisal, employee appreciation and work safety (Huselid, 1995). Companies need to consider other activities in HR management in order to have an impact on company performance and reputation (Al-Zahrani & Almazari, 2014).

Research and development (R&D) activities also do not have an indirect effect on financial performance through ESG. However, the partial test of R&D on ROA and R&D on ESG shows a positive effect, that the higher the investment in R&D, the ESG and financial performance of the company will increase. This result is in line with the findings of Erdogan & Yamaltdinova (2019) which states that high R&D intensity can improve a company's financial performance.

The company's resources, in the form of cash availability, are still a top priority because cash is the company's most liquid asset. The results of testing the indirect effect of cash flows from investing activities on ROA through ESG were found to be insignificant. ESG is unable to become a mediator because ESG has no effect on ROA. In partial and direct testing, investment cash flow has a negative effect on financial performance and not on ESG. The more cash issued for investment activities, the more financial performance will rise (Supatminingsih, 2018). Companies still need to allocate cash availability for investment activities such as the acquisition of fixed assets and intangible assets. Although in this study it is not proven to improve ESG performance, investment cash flow can still improve a company's financial performance.

CONCLUSION

This study investigates the impact of corporate resources on financial performance, with Environmental, Social, and Governance (ESG) performance posited as a mediating

variable. The analysis is based on data from 12 companies indexed by SRI KEHATI over a ten-year period (2011-2020), employing regression models to assess the direct effects of expenditures related to human resources (HR), research and development (R&D), and investment cash flow on corporate profitability. The findings reveal that while R&D expenditures and investment cash flow positively influence financial performance, HR spending does not exhibit a significant effect. These results suggest that resource allocation toward innovation and strategic investments is more crucial for enhancing financial outcomes, in line with the resource-based view (RBV), which emphasizes the importance of firm-specific resources in achieving competitive advantage. Conversely, HR expenditure, often a fixed cost mandated by legal requirements, does not directly contribute to changes in financial performance metrics such as return on assets (ROA).

Furthermore, the study explores the indirect effect of company resources on financial performance through ESG performance as a mediating factor. However, the results indicate that ESG performance does not successfully mediate the relationship between corporate resources and financial performance. This finding challenges the assumption that improved ESG performance translates into financial gains, as it was found to have no significant impact on profitability. The lack of ESG's influence could be attributed to its relatively low prioritization by firms, which may not view ESG initiatives as critical for driving economic returns in the short term. These results also cast doubt on the applicability of stakeholder theory, as companies failed to leverage ESG performance as a tool for providing positive signals to stakeholders. Consequently, ESG has not yet become a decisive factor in stakeholders' economic decision-making processes.

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