

THE EFFECT OF CORPORATE SOCIAL RESPONSIBILITY ON ECONOMIC AND ENVIRONMENTAL PERFORMANCE WITH THE MODERATING EFFECT OF SUSTAINABILITY-BASED INNOVATION

Anny Widiasmara ¹⁾, Richo Diana Aviyanti²⁾, Mayang Yekti Untari ³⁾

¹ Faculty of Economics and Business, Universitas PGRI Madiun
email: annywidiasmara@unipma.ac.id

² Faculty of Economics and Business, Universitas PGRI Madiun
email: rdiana@unipma.ac.id

³ Faculty of Economics and Business, Universitas PGRI Madiun
email: nntariii@gmail.com.

Abstrak

Penelitian dilakukan dikarenakan hasil penelitian sebelumnya mengenai efektivitas *Corporate Social Responsibility* (CSR) masih menunjukkan perbedaan temuan. Tujuan penelitian adalah menganalisis pengaruh CSR terhadap kinerja ekonomi dan kinerja lingkungan, serta menguji peran moderasi inovasi berbasis keberlanjutan pada perusahaan sektor energi yang terdaftar di Bursa Efek Indonesia periode 2021–2024. Metode yang digunakan adalah pendekatan kuantitatif dengan data sekunder dari laporan keberlanjutan, sedangkan sampel dipilih menggunakan purposive sampling sebanyak 76 perusahaan. Analisis data dilakukan dengan regresi linier berganda dan Moderated Regression Analysis (MRA). Hasil penelitian menunjukkan bahwa CSR tidak berpengaruh signifikan terhadap kinerja ekonomi, tetapi berpengaruh positif signifikan terhadap kinerja lingkungan. Inovasi berbasis keberlanjutan terbukti memoderasi pengaruh CSR terhadap kinerja lingkungan, namun tidak pada kinerja ekonomi. Temuan ini menegaskan pentingnya integrasi CSR dengan inovasi berkelanjutan, khususnya pada aspek lingkungan. Saran bagi perusahaan adalah agar program CSR dijalankan bukan hanya sebagai formalitas, tetapi diintegrasikan dengan inovasi berkelanjutan untuk mendukung keberlanjutan bisnis jangka panjang sekaligus meningkatkan legitimasi di mata stakeholder.

Kata Kunci: *Corporate Social Responsibility, kinerja ekonomi, kinerja lingkungan, inovasi berbasis keberlanjutan*

Abstract

This study aims to analyze the effect of Corporate Social Responsibility (CSR) on economic and environmental performance, and to examine the moderating role of sustainability-based innovation in energy companies listed on the Indonesia Stock Exchange for the 2021–2024 period. This research employed a quantitative method with secondary data obtained from sustainability reports. A purposive sampling technique was used, resulting in 76 companies as the sample. Data analysis was conducted using multiple linear regression and Moderated Regression Analysis (MRA). The results showed that CSR did not significantly affect economic performance, but had a significant positive effect on environmental performance. Sustainability-based innovation was found to moderate the effect of CSR on environmental performance but did not moderate the effect of CSR on economic performance. This study emphasizes the importance of integrating CSR with sustainable innovation to support long-term business sustainability.

Keywords: *Corporate Social Responsibility, economic performance, environmental performance, sustainability-based innovation*

A. INTRODUCTION

Economic performance is the main benchmark that shows the extent to which a company is able to manage resources and create added value (Zakiah, 2016). Economic performance plays a vital role because the energy sector is the main foundation of national economic activity (Wardhani & Hidayati, 2023). Energy is not only needed by households but is also an important component in the production process that drives economic growth (Saragih & Said, 2023). Statistics show that the energy sector contributes significantly to Indonesia's Gross Domestic Product (GDP) with a positive growth trend in recent years (Puspitaningrum & Indriani, 2021).

Economic performance is a key aspect that can create CSR effectiveness (Rambe *et al.*, 2023). Good CSR implementation can enhance reputation, strengthen relationships with stakeholders, and open up new market opportunities, which contribute to improved economic performance. Research shows that energy companies that integrate CSR into their business strategies are able to drive sustainable innovation that improves efficiency and productivity, thereby positively impacting economic performance. PT Sumatera Persada Energi (SPE) is a company that operates within the oil and gas industry, particularly serving as the operator of the West Kampar Block located in North Sumatra, which highlights its key role in regional energy production. This block actually has significant oil and gas reserves that can support the national energy supply. However, SPE began to experience financial problems when it was unable to pay its debts to banks, one of which was PT Bank CIMB Niaga Tbk, amounting to more than Rp1.3 trillion. In 2014, SPE filed for a debt payment deferral (PKPU) and reached an amicable agreement with its creditors to remain operational.

PT Sumatera Persada Energi (SPE) was unable to fulfill the terms of the agreement. As a result, in October 2016, the court annulled the settlement agreement and declared the company bankrupt. After being declared bankrupt, all of SPE's operational activities, including oil and gas exploration and production, had to be terminated. The main project previously carried out by PT Sumatera Persada Energi (SPE) was oil and gas exploration and production in the West Kampar Block, located in the Riau - North Sumatra region. The contract for the management of this block was signed in 2005 and was planned to run until 2035. However, due to SPE's financial difficulties and eventual bankruptcy, all activities in the block, including exploration

and production, had to be stopped. As a result, the project, which was initially expected to help meet national energy needs, was abandoned and could no longer be utilized (Wicaksono *et al.*, 2021).

Corporate Social Responsibility (CSR) is one of the company's strategies to contribute to social, economic, and environmental aspects. In the energy sector, CSR is crucial because operational activities have a significant impact on the environment. However, previous research results still show inconsistencies: some find that CSR has a positive effect on financial performance, while other studies show no significant effect. In addition to CSR, sustainability-based innovation is considered capable of strengthening the impact of CSR, particularly on environmental performance. Innovations that support energy efficiency, waste management, and environmentally friendly technologies can be key factors for success. This study adds the moderating variable of sustainability-based innovation to examine the extent to which this factor strengthens the influence of CSR on the performance of energy companies in Indonesia.

B. METHOD

This research employs a quantitative approach that utilizes secondary data. The information was collected from companies in the energy sector that are listed on the Indonesia Stock Exchange for the years 2021 to 2024, sourced from sustainability reports which were accessed via the official IDX website at www.idx.co.id. The entire study was carried out over a duration of three months, specifically from May through July 2025, to ensure thorough data analysis.

Table 1.1 Sample Criteria

No	Criteria	Number
1.	Energy companies listed on the Indonesia Stock Exchange	90
2.	Energy companies that did not publish sustainability reports on the IDX 2021-2024	(14)
Total research sample		76

C. RESULTS AND DISCUSSIONS

1. Descriptive Statistics

Tabel 2. Descriptive Statistic

	N	Minimum	Maximum	Mean	Std. Deviation
CSR	175	.07	.87	.4508	.14743
Economic Performance	175	-.12	.28	.0580	.07496
Environmental Performance	175	1	4	3.43	.840
Sustainability-based	175	.00	.99	.5677	.19522
Sustainability-Based CSR	175	.00	.58	.2569	.12659
Valid N (listwise)	175				

Based on the results of the descriptive statistical test above, it can be explained that:

- a. The CSR (Corporate Social Responsibility) variable has a minimum value of 0.07 and a maximum value of 0.87, with an average value of 0.4508 and a standard deviation of 0.14743. This indicates that the implementation of CSR in companies has a moderate value with relatively low variation.
- b. Environmental performance variables have a minimum value of 1 and a maximum value of 4, with an average value of 3.43 and a standard deviation of 0.840. This indicates that most companies have good environmental performance values despite differences between companies.
- c. Sustainability-based variables have a minimum value of 0.00 and a maximum value of 0.99, with an average value of 0.5677 and a standard deviation of 0.19522. This reflects that the company's sustainability level is in the moderate to high category.
- d. The sustainability-based CSR variable* has a minimum value of 0.00 and a maximum value of 0.58, with an average value of 0.2569 and a standard deviation of 0.12659. This means that the influence between CSR and sustainability has a significant value with a varied data distribution.

2. Multiple Regression Analysis

Tabel 3. Multiple Regression Analysis Y1

Model		Unstandardized		Standardized
		Coefficients		Coefficients
		B	Std. Error	Beta
1	(Constant)	.028	.018	
	CSR	.066	.038	.130

a. Dependent Variable: Economic Performance

Based on the results presented in the multiple linear regression test table, the following regression model can be formulated: $\text{Economic Performance} = 0.028 + 0.066(\text{CSR}) + e$.

1. The constant value of 0.028 indicates that if the CSR variable is equal to zero, the economic performance is estimated to be 0.028, reflecting the baseline level of performance in the absence of CSR influence.
2. The CSR variable has a regression coefficient of 0.066, accompanied by a standard error of 0.038 and a standardized coefficient of 0.130, which suggests that each one-unit increase in CSR is predicted to raise economic performance by 0.066, demonstrating a positive relationship between CSR and economic outcomes.

Tabel 4. Multiple Regression Analysis Y2

Model		Unstandardized		Standardized
		Coefficients		Coefficients
		B	Std. Error	Beta
1	(Constant)	5.548	.720	
	CSR	-3.864	1.518	-.190

a. Dependent Variable: Environmental Performance

Referring to the results of the multiple linear regression test table, the regression model obtained can be expressed as follows: $\text{Environmental Performance} = 5.548 - 3.864(\text{CSR}) + e$, which illustrates the relationship between CSR and environmental performance within the studied context.

- a. A constant value of 5.548 indicates that when the CSR variable is zero, environmental performance is estimated to be 5.548.
- b. The CSR variable has a regression coefficient of -3.864 with a standard beta value of -0.190 . This indicates that every one-unit increase in CSR will decrease environmental performance by 3.864.
- c. Classic Assumption Test

- Multicollinearity Test
Tabel 5. X ke Y1

Model	Collinearity Statistics	
	Toleranc	VIF
1	(Constant)	
	CSR	1.000 1.000

a. Dependent Variable: Economic Performance

Based on the multicollinearity test results for the regression model examining the relationship between CSR (X) and Economic Performance (Y1), the Tolerance value was found to be 1.000, while the Variance Inflation Factor (VIF) value was also 1.000. Since a Tolerance value above 0.10 and a VIF below 10 indicate the absence of multicollinearity, it can be concluded that the model does not exhibit any multicollinearity issues.

Tabel 6. X ke Y2

Model	Collinearity Statistics	
	Tolerance	VIF
1	(Constant)	
	CSR	1.000 1.000

a. Dependent Variable: Environmental Performance

According to the results of the multicollinearity test for the regression model involving CSR (X) and Environmental Performance (Y2), both the Tolerance and Variance Inflation Factor (VIF) values were found to be 1.000. Because a Tolerance value exceeding 0.10 and a VIF value below 10 signify the absence of multicollinearity, it can be inferred that this

regression model does not show any multicollinearity problems.

3. Uji t

Tabel 7. Uji t Y1

Coefficients ^a		
Model		
		t Sig.
1	(Constant)	1.548 .123
	CSR	1.730 .085

a. Dependent Variable: Economic Performance

Based on the results of the partial (t) test, the CSR variable yielded a calculated t-value of 1.730 with a significance level of 0.085. Since the t-value (1.730) is less than the t-table value (1.974) and the significance level (0.085) exceeds 0.05, it can be concluded that CSR does not exert a significant effect on economic performance, leading to the rejection of hypothesis 1.

Tabel 8. Uji t Y2

Coefficients ^a		
Model		
		t Sig.
1	(Constant)	7.708 .000
	CSR	-2.546 .012

a. Dependent Variable: : Environmental Performance

Based on the outcomes of the partial (t) test, the CSR variable produced a calculated t-value of -2.546 with a significance level of 0.012. Since the t-value (-2.546) is less than the t-table value (-1.974) and the significance level (0.012) is below 0.05, it can be concluded that CSR has a significant impact on environmental performance, resulting in the acceptance of hypothesis 2.

Tabel 9. Moderation Y1 Equation 2

Unstandardized Coefficients		Standardized Coefficients			
Model	B	Std. Error	Beta	t	Sig.
1	(Constant)	.039		16.913	.000
	CSR	.044	.692	12.518	.000
	SUSTAINABLE INNOVATION	-.002	-.035	-.628	.531

a. Dependent Variable: Economic Performance

The Sustainable Innovation variable has a regression coefficient of –

0.002 with a significance level of 0.531, which is greater than 0.05. This suggests that Sustainable Innovation does not exert a significant influence on Economic Performance. Moreover, the effect direction appears to be slightly negative, although it is minimal and statistically insignificant. This finding can be interpreted as indicating that the innovation initiatives undertaken by companies have not yet directly contributed to enhancing economic performance.

Tabel 10. Moderation Y2 Equation 2

Unstandardized Coefficients		Standardized Coefficients			
Model	B	Std. Error	Beta	t	Sig.
1	(Constant)	3.432		13.364	.000
	CSR	.675	.129	1.719	.087
	SUSTAINABLE INNOVATION	-.542	-.124	-1.650	.101

a. Dependent Variable: Environmental Performance

Based on the regression analysis results, CSR exhibits a positive yet statistically insignificant effect on Environmental Performance, as indicated by a significance value of 0.087, which exceeds 0.05. In contrast, Sustainable Innovation shows a negative effect that is also insignificant, with a significance value of 0.101. These results imply that, within this model, neither CSR nor Sustainable Innovation has a meaningful direct impact on the Environmental Performance of the companies studied.

Tabel 11. Moderation Y1 Equation 3

Coefficients^a

Unstandardized Coefficients		Standardized Coefficients			
Model	B	Std. Error	Beta	t	Sig.
1	(Constant)	.029		24.798	.000
	CSR	.065	.922	34.515	.000
	SUSTAINABLE INNOVATION	-.002	-.040	-1.498	.136
	CSR*INNOVATION SUSTAINABILITY	.002	.086	3.165	.002

a. Dependent Variable: Economic Performance

The regression analysis indicates that CSR exerts a positive and statistically significant impact on Economic Performance ($p = 0.000$), whereas Sustainable Innovation does not show a significant effect ($p = 0.136$). Notably, the interaction term CSR*Sustainable Innovation demonstrates a positive and significant effect ($p = 0.002$), suggesting that Sustainable Innovation acts as a positive moderator in the relationship between CSR and Economic Performance.

Tabel 12. Moderation Y2 Equation 3

Unstandardized Coefficients		Standardized Coefficients			
Model	B	Std. Error	Beta	t	Sig.
1	(Constant)	3.208		37.168	.000
	CSR	1.097	.190	7.935	.000
	INOVASI KERLANJUTAN	B.224	.051	2.138	.034
	CSR*INOVASI KEBERLANJUTAN	B-1.559	-.972	-40.030	.000

a. Dependent Variable: Environmental Performance

The regression results show that CSR and Sustainable Innovation have a positive and significant effect on Environmental Performance ($p = 0.000$ and $p = 0.034$). However, the interaction between CSR*Sustainable Innovation has a negative and significant effect ($p = 0.000$), which means that Sustainable Innovation negatively moderates the relationship between CSR and Environmental Performance.

D. CONCLUSIONS

Based on the conclusions and implications obtained, several recommendations can be made. For companies, given that Corporate Social Responsibility has proven to be important in improving economic and environmental performance, it is highly recommended to continue strengthening and integrating CSR programs into the company's core strategy. Increased transparency in reporting CSR activities, both through annual reports and sustainability reports, also needs to be emphasized to build stakeholder trust and strengthen the company's legitimacy. Overall, this study confirms the importance of CSR as an instrument for improving environmental performance, as well as positioning sustainability-based innovation as a crucial supporting element. For practitioners, the results of this study serve as a reference that the integration of CSR and innovation must be part of a long-term strategy, not just a formal obligation. That way, companies in the energy sector can not only increase their competitiveness but also contribute to the realization of sustainable development. Furthermore, this study enriches the literature on CSR, corporate performance, and sustainable innovation, while providing a new direction for future research to explore other variables that may play a role in strengthening this relationship.

E. SUGGESTIONS

Based on the results of the study, several recommendations can be made. Companies are advised to better integrate CSR programs with sustainability-based innovation so that the results achieved are not limited to improving image and environmental performance, but also have a real impact on long-term economic performance. For investors, the results of this study can be used as a consideration in assessing energy companies by

looking not only at financial performance, but also at how companies implement CSR and sustainable innovation. The government and regulators are expected to promote policies that support the implementation of CSR, particularly those oriented towards the environment and green technology innovation. As for future researchers, it is recommended to add other variables such as corporate governance or profitability, as well as expand the research object to sectors other than energy, so as to provide a more comprehensive picture of the effectiveness of CSR.

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