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The Effect of Green Accounting, Intellectual Capital, Managerial Ownership, and Corporate Social Responsibility on Financial Performance: Evidence from Energy Sector Companies Listed on the Indonesia Stock Exchange (2021–2024)

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Abstract

This study investigates the influence of Green Accounting, Intellectual Capital, Managerial Ownership, and Corporate Social Responsibility (CSR) on the financial performance of energy sector firms listed on the Indonesia Stock Exchange (IDX) during 2021–2024. A quantitative approach was employed using secondary data drawn from annual reports and sustainability reports. From a population of 87 energy firms, purposive sampling produced 21 companies, yielding 84 firm-year observations. Multiple linear regression was conducted using SPSS 26, supported by classical assumption tests. The findings indicate that Green Accounting, Intellectual Capital, Managerial Ownership, and CSR disclosure jointly exert a significant positive effect on Return on Assets (ROA). Partially, each independent variable also shows a positive and statistically significant relationship with ROA. These results suggest that environmental accounting practices, intangible resource efficiency, internal ownership alignment, and social responsibility disclosure collectively strengthen profitability in Indonesia's energy industry.

Keywords: Green Accounting, Intellectual Capital, Managerial Ownership, CSR, ROA; Energy Firms, Indonesia Stock Exchange.

INTRODUCTION

Firm financial performance remains a central indicator of operational success and sustainability, particularly in capital-intensive industries such as energy. Investors evaluate corporate prospects by examining profitability across periods, with Return on Assets (ROA) often used to capture how efficiently firms convert assets into earnings. In

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practice, many corporations still prioritize profit maximization while underestimating ecological and social externalities resulting from operational activities.

The energy sector plays a strategic role in Indonesia's economy, spanning renewable and non-renewable businesses such as oil, gas, coal, and emerging clean energy. Mining and extraction activities, however, are frequently associated with waste generation, pollution, and ecological degradation. These environmental burdens heighten the importance of sustainable accounting and reporting, making Green Accounting and CSR disclosure relevant determinants of performance.

Alongside sustainability concerns, competitive advantage in energy firms increasingly depends on intangible resources. Intellectual Capital (IC)—including human, structural, and relational capital—supports innovation, efficiency, and adaptive capacity amid energy transition pressures. In parallel, corporate governance mechanisms such as managerial ownership can reduce agency conflicts by aligning managerial incentives with shareholder interests.

Empirical evidence concerning these variables is still mixed, and research on Indonesia's energy sector remains limited, especially for the 2021–2024 period. This study extends prior work by integrating CSR as an additional explanatory variable and focusing on energy-sector firms.

Research Questions

1. Does Green Accounting positively affect financial performance of energy firms listed on IDX (2021–2024)?
2. Does Intellectual Capital positively affect financial performance of energy firms listed on IDX (2021–2024)?
3. Does Managerial Ownership positively affect financial performance of energy firms listed on IDX (2021–2024)?
4. Does CSR disclosure positively affect financial performance of energy firms listed on IDX (2021–2024)?

THEORETICAL FRAMEWORK AND HYPOTHESES

Stakeholder Theory

Stakeholder theory asserts that firms must generate value not only for shareholders but also for broader stakeholder groups such as communities, regulators, employees, and the environment. Environmental and social accountability practices (Green Accounting and CSR) strengthen legitimacy and stakeholder trust, potentially improving firm performance.

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Agency Theory

Agency theory explains conflicts between principals (shareholders) and agents (managers). Managerial ownership is expected to mitigate these conflicts through incentive alignment, leading to better performance outcomes.

Legitimacy Theory

Legitimacy theory views corporate survival as dependent on societal approval. Disclosure of environmental costs and CSR initiatives signals compliance with social norms, reducing reputational risk and supporting financial stability.

Green Accounting and Financial Performance

Green Accounting incorporates environmental expenditures and disclosures into corporate accounting systems. By identifying ecological costs and promoting efficiency, Green Accounting can lower long-run operational risk and increase profitability.

Intellectual Capital and Financial Performance

Intellectual Capital reflects intangible resources enabling firms to create value and sustain competitiveness. Efficient IC management improves innovation and productivity, which should translate into higher profitability.

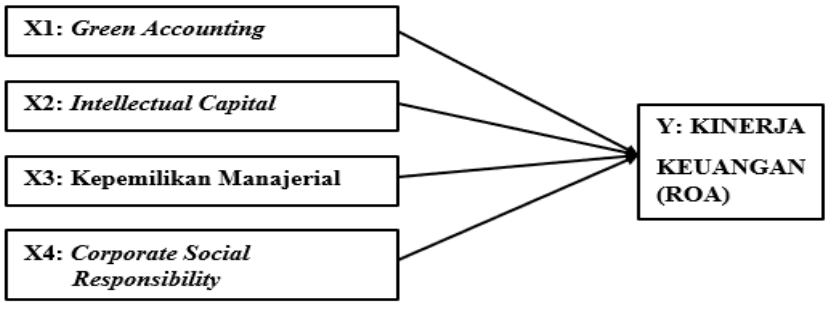
Managerial Ownership and Financial Performance

When managers hold shares, they internalize firm outcomes and are more likely to make value-maximizing decisions, improving corporate performance.

CSR Disclosure and Financial Performance

CSR disclosure communicates corporate responsibility to stakeholders. In high-impact industries like energy, strong CSR engagement reduces social conflict risk and strengthens stakeholder support, potentially improving ROA.

Research Model



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Hypothesis

H1: Green Accounting Has a Positive Impact on Financial Performance.
H2: Intellectual Capital Has a Positive Impact on Financial Performance.
H3: Managerial Ownership Has a Positive Impact on Financial Performance.
H4: Corporate Social Responsibility Has a Positive Impact on Financial Performance.

RESEARCH METHODOLOGY

This study applies a quantitative explanatory design using panel secondary data from annual and sustainability reports. The population consists of 87 energy sector firms listed on IDX. Purposive sampling yielded 21 firms meeting criteria of consistent listing, complete reporting, and available data for all variables across 2021–2024. Total observations were 84 firm-years. Statistical analysis was performed in SPSS 26, involving descriptive statistics, classical assumption tests (normality, multicollinearity, heteroskedasticity, autocorrelation), and hypothesis testing using t-tests and F-tests.

RESULTS

Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA (%)	84	6.82	10.09	8.57	.71
Green Accounting (0/1)	84	0	1	.87	.34
Intellectual Capital	84	2.81	4.49	3.72	.36
Kepemilikan Manajerial (%)	84	3.70	13.50	8.55	2.30
CSRDI (0-1)	84	.70	.89	.79	.04
Valid N (listwise)	84				

The sample shows relatively stable profitability and high sustainability disclosure, ROA ranged roughly from 6.82% to 10.09%, with a mean about 8.57%, indicating generally solid asset profitability. GA mean of 0.87 suggests most firms already disclose environmental costs. IC (VAIC) mean about 3.72, signaling strong intangible resource efficiency. Managerial ownership averaged 8.55%, indicating meaningful internal ownership participation. CSRDI mean around 0.79, reflecting high CSR disclosure levels across firms.

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Classical Assumption Tests

1) Residuals were normally distributed (Sig. > 0.05).
2) No multicollinearity detected (Tolerance > 0.10; VIF < 10).
3) No heteroskedasticity found via Glejser test (Sig. > 0.05).
4) Durbin–Watson value (0.911) indicated positive autocorrelation, noted as a limitation typical in panel-type observations.

REGRESSION RESULTS

Model fit and significance:

1) R = 0.811, indicating a strong relationship between predictors and ROA.
2) R^2 = 0.658; Adjusted R^2 = 0.640, meaning ~64% of ROA variation is explained by the four predictors.
3) F = 37.917; Sig. = 0.001, confirming joint significance.

Partial effects (t-test):

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.005	.964		1.042	.301
	Green Accounting (0/1)	.515	.151	.248	3.416	.001
	Intellectual Capital	.845	.146	.434	5.784	<,001
	Kepemilikan Manajerial (%)	.103	.023	.335	4.540	<,001
	CSRDI (0-1)	3.931	1.205	.240	3.262	.002

a. Dependent Variable: ROA (%)

Regression equation:

$$ROA = 1.005 + 0.515GA + 0.845IC + 0.103MO + 3.931CSRDI$$

DISCUSSION

1. Green Accounting → ROA.

   The positive and significant coefficient supports the idea that recognizing and disclosing environmental costs improves profitability. In the energy sector, transparency about ecological costs encourages efficiency, reduces environmental penalties, and strengthens stakeholder trust, consistent with stakeholder and legitimacy theories.

2. Intellectual Capital → ROA.

   IC exhibits the strongest effect, implying that intangible resource efficiency is a key driver of profitability. Energy companies rely heavily on innovation,

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technical expertise, and organizational systems to optimize extraction, production, and transition strategies; thus, IC materially enhances ROA.

3. Managerial Ownership → ROA.

   The significant positive relationship confirms agency theory predictions: managerial shareholding aligns incentives, lowers agency costs, and promotes decisions focusing on long-term asset profitability.

4. CSR Disclosure → ROA.

   CSRDI's positive influence suggests that broader social and environmental programs reduce social conflict risk and improve corporate legitimacy. For energy firms operating in environmentally sensitive areas, CSR strengthens operational continuity and reputation, improving performance.

Overall, the findings show that sustainability practices, intangible value creation, governance alignment, and social responsibility form a mutually reinforcing system for higher profitability in Indonesia's energy industry.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study provides evidence that, among energy sector companies listed on IDX during 2021–2024:

1) Green Accounting positively and significantly affects ROA.
2) Intellectual Capital positively and significantly affects ROA and is the most dominant driver.
3) Managerial Ownership positively and significantly affects ROA.
4) CSR disclosure positively and significantly affects ROA.
5) Collectively, all predictors significantly explain ROA with Adjusted R^2 of 0.640.

Recommendations

1) For companies: deepen Green Accounting implementation, sustain IC investment (training, technology, systems), expand CSR transparency, and consider stock-based incentives to strengthen managerial alignment.
2) For regulators: reinforce sustainability accounting standards and CSR disclosure enforcement.
3) For future research: apply robust panel regression (fixed/random effects) to address autocorrelation and extend variables (leverage, firm size, environmental ratings).

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