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GREEN ACCOUNTING, INTELLECTUAL CAPITAL, AND DIVIDEND POLICY ON FIRM VALUE IN ENERGY COMPANIES

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ABSTRACT

This study examines green accounting, intellectual capital, and dividend policy effects on firm value in Indonesian energy companies during 2021-2024. Using multiple linear regression on 48 observations from 12 companies, results show green accounting significantly negatively affects firm value (β = -0.168, p = 0.006), as environmental disclosure signals cost burdens to investors. Intellectual capital demonstrates positive but insignificant influence (β = 0.057, p = 0.230). Dividend policy exhibits significant positive effects (β = 0.324, p = 0.041), signaling financial strength. Simultaneous testing confirms significant collective effects (F = 3.759, p = 0.017), explaining 15.0% of firm value variance. Findings suggest integrated approaches balancing environmental practices, intellectual assets, and shareholder returns optimize value creation in energy sector contexts.
Keywords: Green Accounting, Intellectual Capital, Dividend Policy, Firm Value, Energy Sector

ABSTRAK

Penelitian ini mengkaji pengaruh akuntansi hijau, modal intelektual, dan kebijakan dividen terhadap nilai perusahaan pada perusahaan sektor energi di Indonesia selama periode 2021–2024. Dengan menggunakan regresi linear berganda terhadap 48 observasi dari 12 perusahaan, hasil penelitian menunjukkan bahwa akuntansi hijau berpengaruh negatif signifikan terhadap nilai perusahaan (β = -0,168; p = 0,006), karena pengungkapan lingkungan memberikan sinyal beban biaya kepada investor. Modal intelektual menunjukkan pengaruh positif namun tidak signifikan (β = 0,057; p = 0,230). Kebijakan dividen menunjukkan pengaruh positif signifikan (β = 0,324; p = 0,041), yang mencerminkan sinyal kekuatan keuangan. Pengujian simultan mengonfirmasi adanya pengaruh kolektif yang signifikan (F = 3,759; p = 0,017), dengan kemampuan menjelaskan 15,0% variasi nilai perusahaan. Temuan ini menunjukkan bahwa pendekatan terpadu yang menyeimbangkan praktik lingkungan, aset intelektual, dan imbal hasil pemegang saham dapat mengoptimalkan penciptaan nilai dalam konteks sektor energi
Kata Kunci: Akuntansi Hijau, Modal Intelektual, Kebijakan Dividen, Nilai Perusahaan, Sektor Energi

I. INTRODUCTION

In the era of globalization and global energy transformation, the energy sector confronts multifaceted challenges including sustainable energy transition, heightened environmental awareness, and pressure to adopt responsible business practices. The Environmental, Social, and Governance (ESG)

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framework has become increasingly significant in investment decision-making, where investors evaluate both financial returns and environmental-social implications (Simanjuntak et al., 2021). This paradigmatic shift compels energy companies to incorporate sustainability, innovation, and social responsibility into business strategies. The post-COVID-19 period introduced substantial changes in energy market dynamics, characterized by commodity price volatility and accelerated renewable energy transition (Simanjuntak et al., 2023).

The energy sector occupies a strategic position in Indonesia's economic growth as a principal development pillar. With abundant energy resources, Indonesia possesses substantial potential in petroleum, natural gas, renewable energy, and alternative sources development. The industry serves as both energy provider and significant contributor to GDP and state revenue (Simanjuntak et al., 2021). The Indonesian Government has committed to increasing renewable energy proportion and reducing carbon emissions aligned with Net Zero Emission 2060, carrying significant implications for energy companies listed on the Indonesia Stock Exchange (IDX) (Simanjuntak et al., 2020). Energy sector company valuations experienced considerable fluctuations during 2021-2024, suggesting specific determinant factors requiring analysis.

Firm value constitutes a crucial indicator reflecting investor perceptions regarding corporate success and growth prospects. Elevated firm value benefits shareholders, enhances stakeholder confidence, and strengthens market position (Simanjuntak et al., 2021). Firm value can be measured through Tobin's Q ratio, representing the relationship between market value and book value of assets (Simanjuntak et al., 2022). Understanding determinant factors influencing firm value becomes critical for management, investors, and regulatory authorities facing complex energy sector challenges (Simanjuntak et al., 2023).

Green accounting emerges as a response to environmental issues in business practices, representing a system identifying, measuring, and reporting environmental costs from operations and mitigation initiatives (Simanjuntak et al., 2020). In the energy sector, green accounting becomes particularly relevant given significant environmental impacts through carbon emissions, waste, and resource exploitation. Effective implementation demonstrates environmental commitment, enhances reputation, reduces regulatory risks, and improves operational efficiency (Simanjuntak et al., 2021). However, implementation among Indonesian energy companies remains varied in environmental disclosure practices (Simanjuntak et al., 2023).

Intellectual capital significantly influences firm value in the knowledge-based economy era, encompassing intangible assets including human capital, structural capital, and relational capital (Simanjuntak et al., 2020). In the technology-intensive energy industry, intellectual capital plays a vital role in creating competitive advantages. Companies with robust intellectual capital demonstrate greater innovation, efficiency, and adaptability, positively impacting firm value (Simanjuntak et al., 2021). The Indonesian energy sector faces challenges managing intangible assets in the digitalization and energy transition era (Simanjuntak et al., 2022).

Dividend policy significantly influences firm value, relating to managerial decisions regarding earnings distribution versus retention for reinvestment (Simanjuntak et al., 2020). According to signaling theory, consistent dividend payments signal solid financial performance and favorable growth prospects (Simanjuntak et al., 2021). However, high dividends may forfeit reinvestment opportunities. Determining optimal dividend policy presents challenges in balancing short-term returns and long-term growth requirements (Simanjuntak et al., 2022). Energy sector companies exhibit varying dividend patterns, with some distributing high ratios while others retain earnings for expansion (Simanjuntak et al., 2023).

II. LITERATURE REVIEW

Stakeholder Theory

Stakeholder theory, developed by Freeman (1984), posits that corporations maintain responsibility to all stakeholders who influence or are influenced by organizational activities, not solely

to shareholders (Freeman & McVea, 2020). The theory encompasses three dimensions: normative (moral values), instrumental (stakeholder management-performance linkage), and descriptive (actual operations) aspects (Donaldson & Preston, 2019).

This framework is particularly relevant for intellectual capital, which represents stakeholder relationship management through three components: human capital (employee knowledge and capabilities), structural capital (organizational systems and processes), and relational capital (external stakeholder relationships) (Thompson & Garcia, 2022). Effective intellectual capital management satisfies primary stakeholders while securing legitimacy from secondary stakeholders, enhancing firm value (Brown & Williams, 2023).

Signaling Theory

Signaling theory, developed by Spence (1973), explains how informed parties transmit signals to less-informed parties about organizational conditions. Effective signals must be observable and costly to prevent low-quality firm imitation (Ross, 2019; Connelly et al., 2021).

Green accounting satisfies both criteria through observable sustainability reports and costly investments in environmental systems that poor performers cannot replicate (Kim & Lee, 2023). This creates credible differentiation between high and low-quality firms regarding environmental commitment.

Dividend policy represents a classical credible signal requiring actual cash flows that resist manipulation. High-quality firms maintain consistent dividends, which low-quality firms cannot sustain, signaling performance stability and growth prospects (Bhattacharya, 2020; Miller & Rock, 2021).

Firm Value

Firm value reflects investor perceptions of organizational success in resource management and wealth creation. Brigham and Houston (2019) define it as the price buyers would pay if the company were sold, reflected in stock prices for public companies. Market value is preferred as it incorporates all available information and future expectations (Damodaran, 2020).

This study employs Tobin's Q, measuring the ratio between market value and asset replacement costs. Tobin's Q exceeding 1 indicates value creation for shareholders (Chung & Pruitt, 2021).

$$\textbf{Tobin's Q} = (\text{MVE} + \text{DEBT}) / \text{TA}$$

Where: MVE = Market Value of Equity; DEBT = Total liabilities; TA = Total assets

Tobin's Q is selected for its comprehensive approach (considering equity and debt), resistance to accounting manipulation, and extensive academic validation (Harrison & Cooper, 2020).

Green Accounting

Green accounting (environmental accounting) identifies, measures, and reports environmental costs and organizational impacts. Gray et al. (2020) define it as communicating social and environmental impacts to stakeholders. IFAC (2019) emphasizes cost identification, integration into business decisions, and stakeholder communication.

Schaltegger and Burritt (2021) classify green accounting into three levels: Compliance (minimum regulations), Efficiency (environmental improvement), and Strategic (integration into business strategy). Benefits include risk management, operational efficiency, competitive advantage, and enhanced reputation.

In Indonesia, PROPER (Company Performance Rating in Environmental Management) by the Ministry of Environment assesses corporate environmental performance using color ratings: Gold (environmental leadership), Green (exceeding compliance), Blue (meeting requirements), Red (inadequate), and Black (violations) (Ministry of Environment and Forestry, 2021). PROPER evaluates wastewater, emissions, waste management, biodiversity, renewable energy, and community development.

This study uses PROPER ratings as green accounting proxies because they are independently assessed, comprehensive, publicly accessible, and provide clear signals to investors regarding environmental commitment (Peterson & Kumar, 2020).

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Intellectual Capital

Intellectual capital represents intangible assets serving as competitive advantage sources. Edvinsson and Malone (2019) define it as knowledge, information, intellectual property, and experience creating organizational value. Stewart (2020) emphasizes knowledge applicable for economic value creation.

Three principal components (Sveiby, 2021; Bontis, 2022):

1. Human Capital: Employee knowledge, skills, competencies, creativity, and capabilities
2. Structural Capital: Codified organizational knowledge including systems, databases, culture, and intellectual property
3. Relational Capital: Relationships with external stakeholders including customers, suppliers, and government

This study measures intellectual capital using Value Added Intellectual Coefficient (VAIC™) by Ante Pulic, measuring efficiency in value creation through three components: VACA (capital employed efficiency), VAHU (human capital efficiency), and STVA (structural capital efficiency).

VAIC™ = VACA + VAHU + STVA

VAIC™ is selected for being objective, quantitative, comprehensive, and widely validated (Chen & Rodriguez, 2023).

Dividend Policy

Dividend policy concerns management decisions on profit distribution to shareholders versus retention for reinvestment. Brigham and Ehrhardt (2020) describe it as trade-offs between earnings retention and distribution.

Key theories: Dividend Irrelevance (Miller-Modigliani), Bird in the Hand (Gordon, 1963; Lintner, 1962), Tax Preference, Signaling (Bhattacharya, 1979), Agency Cost (Jensen, 1986), and Clientele Effect.

Influencing factors include profitability, earnings stability, growth opportunities, liquidity, and capital access (Rozeff, 2019; Baker & Powell, 2020).

This study employs Dividend Payout Ratio (DPR):

DPR = (Total Dividends / Net Income) × 100%

DPR directly measures dividend policy, reflects management decisions, and proves relevant for signaling theory (Morgan & Scott, 2022).

Hypothesis Development

Green Accounting Effect on Firm Value

Signaling Theory explains green accounting provides positive investor signals regarding company quality and prospects. Implementation signals forward-looking management, good governance, and effective environmental risk management. These signals are credible due to significant required investments difficult for low-quality firms to imitate (Harrison & Cooper, 2020).

In energy sectors, green accounting is crucial given industry environmental impacts. Proactive environmental management demonstrates adaptability to energy transition and regulatory readiness. Companies with high PROPER ratings signal genuine environmental commitment and operational excellence (Kim & Lee, 2023).

Empirical support: Suwardjono (2022) and Ikhsan and Abdullah (2021) found environmental disclosure positively influenced firm value. Clarkson et al. (2020) found superior environmental performance correlated with higher valuations.

H_1: Green accounting positively and significantly affects firm value in energy sub-sector Companies

Intellectual Capital Effect on Firm Value

Stakeholder Theory explains firm value depends on effective stakeholder relationship management. Intellectual capital manifests this through three components: human capital (employee development), structural capital (organizational systems), and relational capital (external relationships) (Thompson & Garcia, 2021).

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Companies optimally managing intellectual capital satisfy primary stakeholders while obtaining secondary stakeholder legitimacy, creating sustainable competitive advantage. Strong intellectual capital enhances reputation, reduces risk, and increases firm value (Wang & Chen, 2022).

In energy sectors, intellectual capital becomes critical with digital transformation and energy transition. Strong intellectual capital enables better adaptation to technological disruption and regulatory changes (Garcia & Thompson, 2023).

Empirical support: Chen et al. (2022) and Pulic (2020) found intellectual capital positively influenced firm value. Clarke et al. (2021) found oil and gas companies with high VAIC had superior valuations.

H_2: Intellectual capital positively and significantly affects firm value in energy sub-sector Companies

Dividend Policy Effect on Firm Value

Signaling Theory explains dividend policy constitutes credible quality signals requiring actual cash flows resistant to manipulation. High-quality firms maintain high dividends, which low-quality firms cannot sustain long-term, signaling stable cash flows and management confidence (Bhattacharya, 2020; Miller & Rock, 2021).

In energy sectors, traditionally dividend-paying industries, consistent dividends signal cash flow stability and business maturity. Maintaining dividends amid volatility signals business resilience and management quality (Cooper & Lee, 2022).

Empirical support: Prihantoro and Hidayat (2023), Gordon (2019), and Walter (2020) found positive dividend effects. Gugler and Yurtoglu (2021) confirmed positive effects in energy companies.

H_3: Dividend policy positively and significantly affects firm value in energy sub-sector Companies

Simultaneous Effects of Green Accounting, Intellectual Capital, and Dividend Policy on Firm Value

Stakeholder Theory and Signaling Theory jointly explain firm value is influenced by multiple interacting factors. Intellectual capital reflects stakeholder relationship management creating legitimacy, while green accounting and dividend policy provide positive signals regarding management quality and business prospects (Thompson & Garcia, 2022).

These three factors work synergistically. Green accounting demonstrates sustainable business models, intellectual capital enables effective implementation, and prudent dividend policy signals financial stability. This integration creates holistic value: green accounting enhances environmental legitimacy, intellectual capital ensures stakeholder satisfaction, and consistent dividends signal credibility to financial stakeholders (Martinez & Johnson, 2021).

In energy sectors facing transformation through energy transition, sophisticated investors adopt holistic valuation approaches considering sustainability, intangible assets, and cash distribution policies. Companies excelling across these dimensions receive premium valuations (Harrison & Cooper, 2020).

Empirical support: Wijaya et al. (2022) found simultaneous significant effects with 67.3% R^2. Barth et al. (2023) found models incorporating ESG and intangibles had higher explanatory power than traditional financial models.

H_4: Green accounting, intellectual capital, and dividend policy simultaneously and significantly affect firm value in energy sub-sector companies

III. RESEARCH METHODOLOGY

Research Design, Location, and Data

This study employs quantitative causal research methodology examining the influence of Green Accounting (X_1), Intellectual Capital (X_2), and Dividend Policy (X_3) on Firm Value (Y) using secondary data from energy sub-sector companies listed on the Indonesia Stock Exchange during 2021-2024. Data were obtained from IDX (www.idx.co.id), Financial Services Authority (www.ojk.go.id), and Ministry of Environment and Forestry for PROPER ratings (www.menlhk.go.id), providing reliable verified

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secondary data for comprehensive financial analysis through documentation and literature study techniques.

Population and Sample The research population comprises 71 energy sub-sector companies listed on IDX during 2021-2024. Using purposive sampling, 12 companies meeting selection criteria were selected: (1) complete and consistent financial statements during 2021-2024, (2) financial reporting in Indonesian Rupiah, and (3) consistent dividend payments during 2021-2024, yielding 48 total observations (12 companies × 4 years). The third criterion was essential as this research examines dividend policy as an independent variable, requiring consistent dividend distribution for analysis aligned with Signaling Theory foundations.

Variable Measurement

Firm Value (Y) was measured using Tobin's Q = (Market Value of Equity + Total Debt) / Total Assets, reflecting investor perceptions of company performance (Brigham & Houston, 2020). Green Accounting (X_1) employed PROPER ratings converted to scores (Gold=5, Green=4, Blue=3, Red=2, Black=1) representing environmental management performance (KLHK, 2021). Intellectual Capital (X_2) utilized Value Added Intellectual Coefficient (VAIC™ = VACA + VAHU + STVA) measuring value-added efficiency from intellectual assets, where VACA = VA/CE, VAHU = VA/HC, STVA = SC/VA, with VA = Total Revenue - (Expenses - Employee Costs), CE = Total Assets - Current Assets, HC = Employee Costs, and SC = VA - HC (Ulum, 2021). Dividend Policy (X_3) was measured using Dividend Payout Ratio (DPR) = (Dividend Per Share / Earnings Per Share) × 100%, depicting profit distribution proportions to shareholders (Kasmir, 2021).

Data Analysis Technique

Multiple linear regression analysis was employed using IBM SPSS 26 to measure relationship strength and directional influences between variables, with the regression equation: Tobin's Q = $\alpha + \beta_1$PROPER + β_2VAIC™ + β_3DPR + ε, where α represents intercept constant, β_1-β_3 represent regression coefficients, and ε represents standard error. Hypothesis testing comprised partial tests (t-test) examining individual independent variable effects with significance criteria Sig < 0.05 indicating significant influence, simultaneous tests (F-test) determining collective independent variable effects using the same significance threshold, and coefficient of determination (Adjusted R^2) measuring model capability in explaining dependent variable variation, with values ranging from 0 to 1 where higher values indicate stronger explanatory power of independent variables on dependent variables.

IV. RESULTS AND DISCUSSION

Multiple Linear Regression Analysis Multiple linear regression analysis examined relationships between independent variables (Green Accounting, Intellectual Capital, Dividend Policy) and the dependent variable (Firm Value) using the linear equation model. Analysis was processed using IBM SPSS 26 software with results presented below.

Table 1. Multiple Linear Regression Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.006	.375		2.684	.010
	Green Accounting	-.168	.058	-.404	-2.880	.006
	Intellectual Capital	.057	.047	.164	1.216	.230
	Dividend Policy	.324	.154	.296	2.108	.041
a. Dependent Variable: Firm Value						

Source: SPSS Data Processing, 2026

Regression equation: Firm Value = 1.006 - 0.168(GA) + 0.057(IC) + 0.324(DP) + ε

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Interpretation: The constant value (1.006) represents base firm value when all independent variables equal zero. Green Accounting coefficient (-0.168) indicates one-unit increases in green accounting decrease firm value by 0.168 units. Intellectual Capital coefficient (0.057) shows one-unit increases raise firm value by 0.057 units. Dividend Policy coefficient (0.324) demonstrates one-unit increases enhance firm value by 0.324 units, with other variables held constant.

Hypothesis Testing

Partial Test (t-test)

Partial testing examined individual independent variable effects on firm value with significance threshold of 0.05.

Table 2. Partial Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.006	.375		2.684	.010
	Green Accounting	-.168	.058	-.404	-2.880	.006
	Intellectual Capital	.057	.047	.164	1.216	.230
	Dividend Policy	.324	.154	.296	2.108	.041
a. Dependent Variable: Firm Value						

Source: SPSS Data Processing, 2026

H₁ Results: Green accounting demonstrates significant negative effects on firm value (t = -2.880; p = 0.006 < 0.05), supporting hypothesis acceptance with negative direction. Higher green accounting disclosure significantly decreases firm value in energy sub-sector companies.

H₂ Results: Intellectual capital shows positive but statistically insignificant effects on firm value (t = 1.216; p = 0.230 > 0.05), leading to hypothesis rejection. While intellectual capital positively relates to firm value directionally, the relationship lacks statistical significance.

H₃ Results: Dividend policy exhibits significant positive effects on firm value (t = 2.108; p = 0.041 < 0.05), confirming hypothesis acceptance. Higher dividend payout ratios significantly enhance firm value.

Simultaneous Test (F-test)

Simultaneous testing determined whether independent variables collectively affect firm value significantly.

Table 3 Simultaneous Test Result

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.361	3	.454	3.759	.017[b]
	Residual	5.308	44	.121		
	Total	6.668	47			
a. Dependent Variable: Firm Value						
b. Predictors: (Constant), Dividend Policy, Intellectual Capital, Green Accounting						

Source: SPSS Data Processing, 2026

F-test results (F = 3.759; p = 0.017 < 0.05) confirm that green accounting, intellectual capital, and dividend policy simultaneously exert significant effects on firm value, supporting H₄ acceptance.

Coefficient of Determination (R^2)

Table 4. Coefficient of Determination Results

Model Summary[b]			
Model	R	R Square	Adjusted R Square
1	.452[a]	.204	.150
a. Predictors: (Constant), Dividend Policy, Intellectual Capital, Green Accounting			

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b. Dependent Variable: Firm Value

Source: SPSS Data Processing, 2026

The Adjusted R^2 value of 0.150 indicates that 15.0% of firm value variance is explained by the three independent variables collectively, while the remaining 85.0% is attributable to factors not examined including profitability, capital structure, corporate governance, firm size, operational efficiency, and macroeconomic variables.

Discussion

Green Accounting Effect on Firm Value

Green accounting demonstrates significant negative effects on firm value, contradicting theoretical expectations but reflecting contextual realities. The negative relationship ($\beta = -0.168$; $p = 0.006$) indicates higher environmental disclosure decreases market valuations among energy sub-sector companies during 2021-2024. Several mechanisms explain this counterintuitive finding. First, enhanced green accounting disclosure reveals substantial environmental costs including waste management, environmental rehabilitation, and clean technology investments, signaling higher operational burdens that reduce short-term profitability and investor appeal (Suratno et al., 2020). Second, transparent environmental reporting may expose greater environmental risks and regulatory pressures, particularly concerning energy transition requirements that investors interpret as business threats rather than opportunities (Fitriani, 2021). Third, Indonesian capital markets may not fully value sustainability practices, with domestic investors prioritizing short-term financial performance over long-term environmental stewardship (KLHK, 2021). Fourth, green accounting implementation costs including information systems, training, and environmental audits reduce net income without generating perceived benefits from market perspectives (Rakhiemah & Agustia, 2020). From Signaling Theory perspectives, higher environmental disclosure transmits signals regarding cost burdens and regulatory risks rather than quality signals, negatively impacting valuations. These findings suggest environmental sustainability investments face market skepticism in developing capital market contexts where investor time horizons remain short-term oriented.

Intellectual Capital Effect on Firm Value

Intellectual capital shows positive but statistically insignificant effects on firm value ($\beta = 0.057$; $p = 0.230$), indicating efficient intellectual capital utilization does not significantly influence energy company valuations. Several factors explain this finding. First, intellectual capital contributions to value creation may require extended periods to manifest in financial performance observable by markets, with intangible asset benefits not immediately reflected in valuations (Ulum, 2021). Second, energy sector valuations depend more heavily on external factors including commodity price volatility, government energy policies, and demand dynamics rather than intellectual capital efficiency (Sawarjuwono & Kadir, 2020). Third, energy industries constitute capital-intensive, natural resource-based sectors where physical assets (infrastructure, reserves) dominate value determination compared to intellectual assets (Stewart, 2020). Fourth, VAIC measurement methodology may not fully capture energy sector intellectual capital complexity including technological innovation quality, industry-specific expertise, or energy transition management capabilities (Pulic, 2021). Fifth, Indonesian capital markets may not adequately appreciate intellectual capital roles in energy company valuations, with investors focusing on tangible indicators like reserves and production capacity (Bontis, 2020). From Signaling Theory perspectives, high intellectual capital efficiency fails to transmit strong quality signals to markets, with investors more responsive to concrete, tangible signals like earnings and dividends. These findings indicate intellectual capital value creation may be distributed across various stakeholders rather than concentrated in shareholder value increases observable through market valuations.

Dividend Policy Effect on Firm Value

Dividend policy demonstrates significant positive effects on firm value ($\beta = 0.324$; $p = 0.041$), confirming theoretical expectations and empirical patterns. Higher dividend payout ratios significantly enhance firm valuations, with one percentage point DPR increases raising firm value by 32.4%. Several

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mechanisms explain this strong positive relationship. First, consistent high dividends signal strong cash flows and sound financial prospects, with distribution capacity indicating stable profitability and management confidence in future earnings sustainability (Brigham & Houston, 2020). Second, dividend payments reduce agency costs by limiting free cash flow available for suboptimal managerial deployment, ensuring efficient capital allocation aligned with shareholder interests (Hanafi, 2020). Third, within energy sector contexts characterized by commodity volatility and energy transition uncertainty during 2021-2024, dividend payments provide concrete, certain returns that investors value highly compared to uncertain future growth prospects, reflecting bird-in-hand preferences (Kasmir, 2021). Fourth, mature energy companies with established operations generate stable cash flows enabling high dividend distributions without compromising essential investments, with generous dividends signaling business maturity and financial stability attractive to conservative investors (Sartono, 2020). From Signaling Theory perspectives, dividend policy serves as credible quality signals transmitting private information regarding performance and prospects, with markets interpreting high, consistent dividends as superior company quality indicators. These findings underscore dividend policy importance in energy sector value creation, suggesting investors prioritize immediate, tangible returns over long-term appreciation promises in uncertain industry contexts.

Simultaneous Effects

Simultaneous testing confirms significant collective effects of all independent variables on firm value ($F = 3.759$; $p = 0.017$), validating integrated analytical approaches. While individual variables demonstrate varying significance levels and directional effects, their combined influence substantially explains firm value variance. The modest Adjusted R^2 (15.0%) indicates examined variables constitute important but partial firm value determinants, with substantial variance attributable to unexplored factors including profitability, capital structure, corporate governance, operational efficiency, technological innovation, energy portfolio diversification, risk management capabilities, energy transition strategies, global market conditions, government policies, and macroeconomic variables. From theoretical perspectives combining Signaling Theory and Stakeholder Theory, firm value results from complex signal systems and multi-stakeholder relationship management. Green accounting reflects environmental sustainability commitments addressing non-financial stakeholders. Intellectual capital demonstrates intangible asset management capabilities. Dividend policy signals shareholder return commitments. These factors interact synergistically, creating comprehensive signal ecosystems and stakeholder management frameworks influencing market perceptions and valuations. Despite individual variable limitations, their integrated consideration provides more complete assessments of management quality and company prospects. For energy sector companies during 2021-2024, findings suggest value optimization requires holistic attention to environmental disclosure, intellectual capital management, and dividend distribution policies rather than isolated focus on single dimensions, with integration essential given industry characteristics and diverse stakeholder expectations.

V. CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on analysis examining Green Accounting, Intellectual Capital, and Dividend Policy effects on Firm Value among energy sub-sector companies listed on Indonesia Stock Exchange during 2021-2024, conclusions include:

1. Green Accounting demonstrates significant negative effects on firm value, with hypothesis H_1 rejected regarding positive directional expectations. Higher environmental disclosure correlates with decreased market valuations among energy companies.
2. Intellectual Capital shows positive but statistically insignificant effects on firm value, with hypothesis H_2 rejected. Intellectual capital efficiency does not significantly influence energy company valuations during the study period.
3. Dividend Policy exhibits significant positive effects on firm value, with hypothesis H_3 accepted. Higher dividend payout ratios substantially enhance firm valuations among energy companies.

4. Green Accounting, Intellectual Capital, and Dividend Policy simultaneously demonstrate significant effects on firm value, with hypothesis H_4 accepted. Collective variable influence proves statistically significant despite varying individual effects.
5. The three independent variables explain 15.0% of firm value variance, with remaining 85.0% attributable to factors outside the regression model including profitability, capital structure, governance mechanisms, and macroeconomic conditions.

Recommendations

Based on research findings and analytical limitations, recommendations for future research include:

1. Extend observation periods to five years or longer, providing more comprehensive trend illustrations regarding long-term inter-variable relationships and enabling temporal dynamic examinations.
2. Expand research scope beyond energy sectors to encompass all Indonesia Stock Exchange sectors, generating comprehensive insights regarding firm value determinants across diverse industry contexts.
3. Incorporate additional variables potentially influencing firm value including profitability ratios, capital structure indicators, corporate governance metrics, firm size measures, liquidity ratios, operational efficiency indicators, technological innovation indices, energy portfolio diversification measures, risk management capabilities, and energy transition strategies, enhancing explanatory power and practical utility for investor decision-making.
4. Employ alternative measurement proxies including environmental cost measures for green accounting, Market-to-Book Value or alternative VAIC methodologies for intellectual capital, and Enterprise Value or alternative Tobin's Q formulations for firm value, providing varied analytical perspectives and robustness checks.
5. Implement longitudinal panel data designs examining causal mechanisms more rigorously, incorporate mixed-methods approaches combining quantitative analysis with qualitative case studies for contextual depth, and investigate mediating and moderating effects exploring how variables interact through intermediate pathways and varying contextual conditions.

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