

The Effect of Intellectual Capital and Capital Structure on Financial Performance (A Study of Energy Companies Listed on the Indonesia Stock Exchange 2019-2023 Period)

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ABSTRACT

This research seeks to investigate effect of return on assets (ROA), debt to equity ratio (DER), current ratio (CR), and firm size on stock returns, contributing to empirical insights in the Indonesian energy sector. Using a quantitative approach with panel data regression, the study observes 10 energy firms registered on the IDX 2019 to 2023, chosen based on purposive a sample selection method. The data were analyzed after classical assumption testing to ensure model validity. The results show that ROA and DER significantly affect stock returns, while CR and firm size do not. These findings highlight the importance of profitability and capital structure in influencing investor decisions within the energy industry.

INTRODUCTION

The Energy industry in Indonesia faces a variety of challenges and opportunities related to intellectual capital and capital structure. Intellectual capital—which encompasses knowledge, skills, and innovation—significantly contributes to improving financial outcomes of Energy companies. Recent studies have shown that intellectual capital has a positive and significant impact on the financial performance of Energy firms listed on the Indonesia Stock Exchange (IDX) (Sarumaha et al., 2024). At the same time, capital structure—comprising a firm's mix of long-term debt and equity—remains a critical factor in determining both profitability and business sustainability. Prior research indicates that well-managed capital structures can boost market performance and corporate profitability. In practice, Energy companies in Indonesia often prefer internal financing over external sources, particularly when they achieve higher levels of profitability (Fadila et al., 2024).

Research remains highly relevant to the dynamic nature of Indonesia's Energy market, which remains undergoing rapid transformation driven by technological advancements and economic uncertainties. Effective management of intellectual capital can enable Energy companies to adapt to these changes while enhancing their corporate value. Furthermore, an optimal capital structure can help firms address financial challenges and maintain competitive strength within the industry (Yeni et al., 2025).

The Indonesia Stock Exchange (IDX) plays a pivotal role by overseeing the financial performance of Energy companies, providing a platform for capital access, and promoting transparency through regular financial reporting. Such transparency equips investors with more accurate information for decision-making, particularly concerning companies' financial performance and intellectual capital disclosures (Soetanto & Liem, 2019).

In conclusion, intellectual capital and capital structure are critical drivers of corporate performance and firm value in Indonesia's Energy sector. With the right management strategies, companies can enhance their competitiveness and sustain their operations amid constant market changes. This study highlights the necessity of implementing flexible and responsive approaches to successfully navigate the dynamic landscape of Indonesia's Energy industry.

Despite growing academic interest in the relationship between intellectual capital, capital structure, and firm performance, existing empirical studies in the Indonesian context—particularly within the energy sector—remain limited and fragmented. Prior research tends to focus separately on either intellectual capital or capital structure, without simultaneously examining their combined effects on financial performance over a substantial time frame. Additionally, few studies adopt a multi-year panel data approach to capture variations across time and companies. This leaves a research gap in understanding how these two strategic

elements interact to influence profitability in a volatile and capital-intensive industry such as energy. Hence, this consider points to address this crevice by exploring the impact of mental capital and capital structure on the monetary execution of vitality companies recorded on the Indonesia Stock Trade (IDX) amid the 2019–2023 period. The investigate particularly looks for. To analyze the affect of mental capital efficiency—measured by the Esteem Included Mental Coefficient (VAIC™)—on firms' return on resources (ROA), To evaluate the impact of capital structure, as proxied by the debt-to-equity proportion (DER), on firms' return on resources (ROA), to supply empricial bits of knowledge that bolster key decision-making in monetary administration and knowledge-based asset allotment inside the vitality segment.

THEORETICAL REVIEW

Resource-Based View (RBV)

Agreeing to Barney (1991), firms accomplish maintainable competitive advantage by leveraging assets that are profitable, uncommon, matchless, and non-substitutable (VRIN).

Dynamic Capabilities Theory

This hypothesis amplifies RBV by highlighting a firm's capacity to adjust, coordinated, and reconfigure inside assets in reaction to natural changes. Within the vitality division, mental capital is fundamental in building energetic capabilities such as advancement, key nimbleness, and organizational learning.

Intellectual Capital

Inwtellectual capital is a key component of intangible assets that companies can leverage to build and sustain competitive advantage. When effectively managed, intellectual capital has the potential to significantly enhance firm value. Pulic (1998) emphasized that within an information-driven economy the primary objective aims to generate economic surplus. Accomplishing this requires precise estimation not as it were of physical capital (budgetary assets) but too of mental potential, reflected within the abilities and capabilities of workers.

Broadly, mental capital comprises of three fundamental components: human capital, auxiliary capital, and client capital. Human capital refers to the collective knowledge within an organization, represented through employees' skills, expertise, and competencies. organizational knowledge assets encompasses every intangible asset excluding human capital, such as systems, procedures, and databases that support business operations. Meanwhile, customer capital captures the knowledge related to marketing channels and customer relationships that the organization develops and maintains over time.

Intellectual capital plays a critical role in enhancing business competitiveness by creating added value for companies. It covers a range of resources, including employee knowledge and expertise, organizational

experience, and strong external relationships – all of which contribute to value creation and the achievement of sustainable competitive advantage. Investors tend to assign higher valuations to companies with strong intellectual capital compared to those with weaker intellectual resources. This tendency is reflected in the share prices offered to investors, indicating that intangible knowledge assets are progressively valued as essential asset in modern financial markets (Yudha, 2021).

H1 : Intellectual Capital Affects Financial Performance

Agency Theory

Agency theory explores conflicts between managers (agents) and shareholders (principals). The use of debt can act as a monitoring mechanism to control managerial behavior by imposing mandatory interest payments. However, excessive debt may also exacerbate agency problems and increase the risk of underinvestment or financial distress.

Trade-Off Theory

This hypothesis contends that companies decide their ideal capital structure by adjusting the assess focal points of obligation with the potential costs of money related trouble and office issues. As long as the negligible benefits of obligation surpass the minimal costs, expanding use is advantageous.

Capital Structure

The trade-off hypothesis was presented by Jensen and Meckling (1976). This hypothesis sets that an ideal capital structure can be accomplished by adjusting the impacts of charges, organization costs, liquidation costs, and other related components . It explains the correlation involving bankruptcy risk and leverage utilization, emphasizing that capital structure decisions inherently involve trade-offs. The theory suggests that as long as the benefits of additional debt outweigh the associated costs, increasing leverage is justified. However, once the marginal cost of debt surpasses its marginal benefit, further borrowing should be avoided. Thus, the trade-off theory highlights the careful balancing act companies must perform to optimize their capital structure while managing financial risks effectively.

H2: Capital Structure Affect Financial Performance

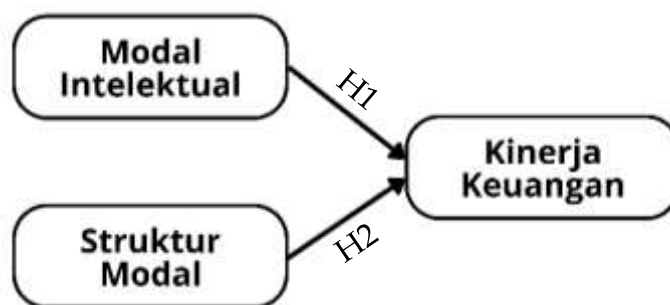


Figure 1. Conceptual Framework

METHODOLOGY

This consider embraces a quantitative approach, which includes exploring a particular populace or test utilizing investigate disobedient and factual information investigation to test the speculations that have been defined (Sugiyono, 2021). This study employs indirect data quantitative accounting-based information related to energy sector companies for the period 2019–2023. These reports were gotten from the companies' official websites as well as from the official site of the Indonesia Stock Trade (IDX) at www.idx.co.id.

The population in this study refers to the entire group of subjects or objects possessing certain characteristics and qualities defined by the researcher for the purpose of study and from which conclusions will be drawn. The research sample includes energy firms on IDX during the years 2019–2023, comprising a total of 86 data points that meet the following criteria:

1. Companies must have complete financial reports available for the entire 2019–2023 period.
2. Financial reports must be publicly accessible through the IDX or the companies' official websites.
3. Companies must have consistently operated within the energy sector without significant diversification into other sectors.

a. Dependent Variable

ROA is calculated with the following formula

- Return on asset (ROA) = $\frac{\text{Net Profit}}{\text{Total Assets}} \times 100\%$

b. Independent Variables

- Intellectual Capital

The VAICTM method utilizes firm accounting data to assess the productivity of intellectual and employed resources. The combination of these three value-added components is represented by the term VAICTM, which was developed by Pulic (as cited in Ulum, 2013). The measurement of intellectual capital is conducted as follows:

$$\text{VAIC}^{\text{TM}} = \text{VACA} + \text{VAHU} + \text{STVA}$$

Information :

VAIC = Value Added Intellectual Coeficient

VACA = Value Added Capital Employed

VAHU = Value Added Human Capital

STVA = Structural Capital Value Added

The formulation and stages of VAICTM calculation are as follows:

- According to Ulum (2013), Value Added (VA) is calculated as the difference between output and input. The calculation of Value Added is as follows:

- $\text{VA} = \text{OUT} - \text{IN}$

Information :

OUT = Output: Total sales and other revenues

IN = Input: Selling expenses and other operational costs (excluding employee expenses)

- Calculate Value Added Capital Employed (VACA) as follows (Ulum,2013)

- $VACA = \frac{VA}{CE}$

Information :

VACA = Value Added Capital Employed

VA = Value Added

CE = Capital Employed : selisih total – total hutang

- Calculate Value Added Human (VAHU) as follows (Ulum,2013)

- $VAHU = \frac{VA}{HC}$

Information :

VAHU = Value Added Human Capital

VA = Value Added

HC = Human Capital: Beban karyawan

- Calculate Structural Capital Value Added (STVA) as follows (Ulum,2013)

- $STVA = \frac{SC}{VA}$

Information :

STVA = Structural Capital Value Added

SC = Structural Capital: VA - HC

VA = Value Added

- According to Rondoni and Ali (2014), capital structure refers to the percentage of a company's funding needs that is fulfilled through a combination of long-term financial sources, originating originating from inside and outside the organization.

- **Debt to Equity Ratio** = $\frac{\text{Total Liabilities}}{\text{Total Equity}}$

The Data Collection

The information collection strategies utilized in this think about incorporate writing survey and documentation. The writing survey was conducted by analyzing and analyzing different sources, such as books, diaries, and other pertinent references related to the investigate point. Documentation was carried out by recording and preparing information gotten from budgetary reports distributed by the Indonesia Stock Trade (IDX) and the official websites of the companies related to the investigate factors.

Data Analysis Techniques

1. Classical Assumption Tests

According to Ghozali (2016), classical assumption testing in research data involves four testing models: normality test, multicollinearity test, autocorrelation test, and heteroscedasticity test.

- Normality Test

Agreeing to Ghozali (2016), the ordinariness test points to decide whether the relapse model's subordinate and free factors are regularly dispersed. In this think about, the ordinariness test was conducted utilizing the Kolmogorov-

Smirnov measurable test through a Monte Carlo approach. Information are considered regularly conveyed in the event that the centrality esteem (Sig.) is more noteworthy than 0.05.

- Multicollinearity Test

Ghozali (2016) states that multicollinearity is tested by observing multicollinearity tolerance metrics.

1. Tolerance above 0.1 and VIF below 10 indicate absence of variable overlap.
2. If the tolerance value is greater than 0.1 but the VIF exceeds 10, multicollinearity exists.

- Heteroscedasticity Test

Heteroscedasticity testing was performed using the scatterplot method by observing the distribution of data points produced through SPSS processing. The decision criteria are as follows:

1. Heteroscedasticity is indicated if the scatterplot displays a specific pattern, such as a wave, expansion, or narrowing.
2. If no clear pattern is observed, it suggests the absence of heteroscedasticity.

- Autocorrelation Test

Autocorrelation issues arise when residuals (disturbance errors) are not independent across observations. The Durbin-Watson (DW) test was used to detect autocorrelation, with the decision rules as follows:

1. If A Durbin-Watson statistic under -2 signals upward bias.
2. If Durbin-Watson results within this interval suggest independence of errors.
3. If A DW score over +2 denotes inverse residual correlation.

2. Multiple Linear Regression Analysis

According to Ghozali (2016), multiple linear regression analysis is used to examine the influence of more than one independent variable on a dependent variable. The multiple linear regression model used in this study is formulated as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \epsilon$$

Information :

- Y = ROA (Financial Performance)
X1 = Intellectual Capital
X2 = Capital Structure
 ϵ = Error

3. Hypothesis Testing

- Coefficient of Determination Test (R^2)

The coefficient of assurance (R^2) is utilized to degree the degree to which the autonomous factors are able to clarify the variety of the subordinate variable (Ghozali, 2016). This test surveys how much of the subordinate variable can be clarified by the autonomous factors, whereas the remaining variety is clarified by other components not included within the demonstrate.

- Partial Test (t-Test)

The t-test evaluates the singular influence of predictors (Ghozali, 2016). The test is performed through evaluating the observed t-score (t-count) with the critical t-value (t-table) and reviewing the p-value (Sig.). The decision criteria are as follows:

1. If the t-count > t-table or the significance value (Sig.) < 0.05, the hypothesis is accepted, meaning the predictor meaningfully influences the outcome.
2. If the t-count < t-table or the significance value (Sig.) > 0.05, the hypothesis is rejected, indicating that the independent variable does not have a significant effect on the dependent variable.

RESULTS

The investigate question in this consider comprises all vitality division companies recorded on the Indonesia Stock Trade (IDX) amid the period 2019–2023. Within the past chapter, the criteria for selecting the inquire about test were portrayed, where a purposive testing strategy was utilized. Based on these criteria, 15 companies were chosen as the inquire about test.

Table 1. Research Table Data

No	STOCK CODE	COMPANY NAME
1	ADRO	PT Adaro Energy Indonesia Tbk
2	PTBA	PT Bukit Asam Tbk
3	PGAS	PT Perusahaan Gas Negara Tbk
4	MEDC	PT Medco Energi Internasional
5	INDY	PT indika Energy Tbk
6	ABMM	PT ABM Investama Tbk
7	HRUM	PT harum Energy Tbk
8	ITMG	PT Indo Tambangraya Megah Tbk
9	BSSR	PT Baramulti Suksessarana Tbk
10	DOID	PT Delta Dunia Makmur Tbk
11	ENRG	PT Energi Mega Persada
12	ELSA	PT Elnusa Tbk
13	DSSA	PT Dian Swastatika Sentosa Tbk
14	BREN	PT Barito Renewables Energy Tbk
15	PGEO	PT Pertamina Geothermal energy Tbk

Source:: <https://www.idx.co.id/>

Descriptive Statistical Test

Tabel 2. Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
VAIC	75	2,98	16,65	6,5335	3,24207
DER	75	,10	13,14	1,7349	1,96382
ROA	75	0,00	,59	,1244	,13612
Valid N (listwise)	75				

Source : Primary data processed (2025)

This research uses ROA as an indicator of financial outcomes. The minimum recorded ROA value was 0.00, while the maximum was 0.59. The average ROA during the observation period was 0.1244, with a dispersion value of 0.13612, implying, in general, the financial performance of energy companies remained moderate, with some companies still unable to generate optimal profits from their asset utilization.

Intellectual resources quantified via VAIC methodology method, recorded the data ranged from a low of 2.98 to a high of 16.65. The average VAIC score obtained was 6.5335, with a dispersion measure of 3.24207. These figures indicate variations in the companies' ability to create value through intellectual capital, which includes the efficiency in utilizing human capital, structural capital, and capital employed. Companies such as PT Medco Energi Internasional Tbk (MEDC) and PT Barito Renewables Energy Tbk (BREN) demonstrated a high utilization of intellectual capital, particularly in their innovation strategies and resource development initiatives.

The CS metric, assessed via DER, ranged from 0.10 to 13.14 with a mean of 1.7349 and dispersion value of 1.96382. These figures indicate considerable variation in the capital structure of the observed energy sector companies. While most firms maintained a healthy capital structure, some—such as PT Energi Mega Persada Tbk (ENRG)—exhibited a high dependency on debt financing during the 2019–2023 period.

Financial performance is the outcome factor, assessed using the asset profitability ratio ratio. The minimum ROA recorded was 0.00, while the maximum was 0.59. The average ROA throughout the observation period stood at 0.1244, with a standard deviation of 0.13612. This suggests that, overall, the financial performance of energy companies remains moderate, with some firms still struggling to generate optimal returns from their assets.

Classical Assumption Test

Normality Test

Table. 3 Normality Test Result

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		75
Normal Parameters ^{a,b}	Mean	,0000000
	Std. Deviation	,12032604
Most Extreme Differences	Absolute	,163
	Positive	,163
	Negative	-,121
Test Statistic		,163
Asymp. Sig. (2-tailed)		.000 ^c

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.

Source : Primary data processed (2025)

The statistical table above presents the results of the normality test using the Kolmogorov-Smirnov method on the unstandardized residuals. This analysis checks for normality in residuals. The Kolmogorov-Smirnov test statistic was 0.163, with an Asymp. Sig. (2-tailed) value of 0.000 ($p < 0.05$).

Based on this significance value, it is inferred that residual data deviate from normality, as the significance level is lower than the 0.05 alpha threshold. Therefore, the assumption of normality is not met in this dataset.

Multicollinearity Test

Table. 4 Multicollinearity Test Result

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,043	,033		1,324	,190		
	VAIC	,022	,006	,535	4,010	,000	,611	1,637
	DER	-,038	,009	-,543	-4,076	,000	,611	1,637

a. Dependent Variable: ROA

Source : Primary data processed (2025)

The comes about of the multicollinearity test within the relapse demonstrate are demonstrated by the Resistance and Fluctuation Swelling Figure

(VIF) values for each autonomous variable. The Resilience values for VEIC (Value-Added Mental Capital) and DER (Obligation to Value Proportion) are both 0.611, whereas their particular VIF values are 1.637.

Since all Resistance values are more noteworthy than 0.1 and all VIF values are underneath 10, it can be concluded that there's no multicollinearity display within the relapse show. Subsequently, the autonomous factors don't altogether impact one another, and the relapse demonstrate is considered substantial for encourage examination.

Heteroscedasticity Test

Table. 5 Heteroscedasticity Test Result

		Coefficients ^a						
		Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-,005	,017		-,324	,747		
	VEIC	,018	,003	,746	6,251	,000	,611	1,637
	DER	-,011	,005	-,284	-2,382	,020	,611	1,637

a. Dependent Variable: ROA-Kinerja Keuangan (Y)

Source : Primary data processed (2025)

The table above presents the results of the heteroskedasticity test using a regression method on the absolute residual values. This test aims to determine whether heteroskedasticity is present in the regression model. The test results show that the significance (Sig.) values for the VEIC (Value-Added Intellectual Capital) and DER (Debt to Equity Ratio) variables are 0.000 and 0.020, respectively – both below the 0.05 threshold.

Based on these results, it can be concluded that there is an indication of heteroskedasticity in the model, as the significance values of the independent variables fall below the 0.05 level. This suggests that the variance of the residuals is not constant, indicating that the regression model suffers from heteroskedasticity. Therefore, it is necessary to address this issue through alternative approaches, such as data transformation or the application of robust regression methods.

Autocorrelation Test

Tabel. 6 Autocorrelation Test Result

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.467 ^a	.219	.197	.12199	1,254

a. Predictors: (Constant), DER, VAIC

b. Dependent Variable: ROA

Source : Primary data processed (2025)

The autocorrelation test results show a Durbin-Watson (DW) value of 1.254, while the DU value based on the Durbin-Watson table is 1.7809, and the value of 4 - DU is 2.2191. According to the standard criteria, when the DW statistic lies within the DU and 4-DU range, the regression is free from autocorrelation. However, in this case, the DW value (1.254) is below the DU threshold (1.7809), indicating the presence of positive autocorrelation in the research data.

Multiple Regression Results

Table.7 Multiple Regression Results

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	.043	.033		1,324	.190
VEIC	.022	.006	.535	4,010	.000
DER	-.038	.009	-.543	-4,076	.000

a. Dependent Variable: ROA

Source : Primary data processed (2025)

This study applies the following regression formulation:

$$Y = 0.043 + 0.022X_1 - 0.038X_2 + \epsilon$$

Where:

Y = ROA (Financial Performance)

X₁ = VEIC (Value-Added Intellectual Capital)

X₂ = DER (Debt to Equity Ratio)

ε = Error term

Coefficient of Determination Test (R2)

Table. 8 Coefficient of Determination Test (R2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.467	0.219	0.197	0.12199	1.254

a. Predictors: (Constant), VEIC, DER

b. Dependent Variable: ROA

Source : Primary data processed (2025)

The coefficient of determination (R^2) obtained in this study is 0.219, indicating that approximately 21.9% of the variation in firms' ROA-based financial outcomes are influenced by the independent variables: Value-Added Intellectual Capital (VEIC) and Debt-to-Equity Ratio (DER). This level of explanatory power, while modest, is considered acceptable in empirical research involving behavioral or organizational constructs, where numerous exogenous factors may influence firm outcomes.

Hypothesis Testing

First Hypothesis Test (H1)

H1: The Effect of Intellectual Capital on Financial Performance

The discoveries from the relapse examination give discernible information supporting the primary speculation (H1), which sets a noteworthy impact of mental capital (VEIC) on monetary execution (ROA). The t-statistic gotten is 4.010, which surpasses the basic esteem of 1.97509, and the related p-value is 0.000, which is well underneath the routine edge of 0.05. These comes about affirm a positive and factually critical relationship between mental capital proficiency and firms' budgetary results.

This finding recommends that firms within the vitality segment that viably use their non-physical resources—including workforce competence, organizational forms, and interactional networks—are more likely to realize predominant monetary execution. The result is reliable with resource-based hypothesis, which emphasizes the key part of intangible resources in accomplishing supported competitive advantage. In knowledge-intensive businesses like vitality, mental capital serves as a key driver of advancement, operational proficiency, and eventually, productivity.

Second Hypothesis Test (H2)

H2: The Effect of Capital Structure on Financial Performance

The second hypothesis (H2) investigates the influence of funding composition, represented by DER, toward financial performance. The analysis yields a t-statistic of -4.076 and a p-value of 0.000, both of which indicate that the effect is statistically significant at the 5% level. Notably, the negative sign of the coefficient implies that higher leverage is associated with lower financial performance.

This reverse relationship adjusts with the trade-off hypothesis, which sets that whereas obligation can offer charge focal points and teach administration, intemperate dependence on obligation increments monetary chance and trouble costs, subsequently reducing productivity. Within the setting of the vitality division, which is characterized by capital-intensive operations and unstable incomes, an lopsided capital structure may impede the firm's capacity to produce returns on its resources. Hence, judicious obligation administration gets to be basic to protect money related solidness and long-term esteem creation.

DISCUSSION

The Effect of Intellectual Capital on Financial Performance

The discoveries affirm that mental capital emphatically and altogether impacts budgetary execution. The utilize of the Esteem Included Mental Coefficient (VAIC™), created by Pulic (1998), empowered a strong evaluation of how productively firms utilize human capital, basic capital, and capital utilized to create esteem. The t-test comes about demonstrated a t-statistic of 4.010 with a p-value of 0.000, recommending solid experimental bolster for Theory 1. This finding bolsters the resource-based see, which sets that intangible assets such as information, aptitudes, organizational frameworks, and connections give a economical competitive advantage. Firms that viably use their mental capital are more competent of driving advancement, improving operational productivity, and expanding productivity. Within the vitality sector—characterized by tall innovative reliance and vital investments—intellectual capital plays a basic part in accomplishing execution targets. These comes about adjust with past thinks about by Rahmadhani (2014) and Ningrum (2012), both of which highlight the considerable and positive affect of mental capital on firm execution

The Effect of Capital Structure on Financial Performance

In contrast, capital composition, quantified through DER, was found to have a negative and statistically significant impact on financial performance. The t-statistic for DER was -4.076, with a p-value of 0.000, thereby confirming Hypothesis 2. The negative coefficient suggests that a higher proportion of debt relative to equity reduces profitability, likely due to increased interest obligations and financial risk. This result supports the trade-off theory of capital structure (Jensen & Meckling, 1976), which asserts that while debt can be beneficial due to tax shields, excessive leverage can impose costs that outweigh its benefits, such as agency costs and bankruptcy risk. In capital-intensive sectors like energy, an overreliance on debt can be particularly detrimental, given the cyclical nature of revenues and the substantial investment required for infrastructure and operations. These findings are consistent with those of Yeni et al. (2025), who emphasized the need for an optimal capital structure to safeguard financial performance in volatile industries.

In summary, the study emphasizes the strategic importance of managing both intellectual capital and capital structure effectively. While intellectual capital should be cultivated and leveraged to enhance value creation, capital structure must be balanced to prevent financial strain. Together, these two

elements represent key levers through which firms can drive long-term financial sustainability and competitiveness in the energy industry.

CONCLUSIONS AND RECOMMENDATIONS

This study empirically examines how intellectual capital and financing strategies affect the profitability of Indonesian energy firms (2019–2023). Based on the multivariate regression approach, two key findings emerge.

First knowledge-based assets, gauged by VAICTM, exert a favorable and significant effect on profitability. This indicates that companies that are able to efficiently manage and utilize their intangible assets – such as human expertise, organizational systems, and customer relationships – can enhance profitability and create sustainable value. The results affirm the importance of developing intellectual resources as a strategic lever in improving firm performance, particularly in knowledge-driven sectors like energy.

Second, capital structure, represented expressed via DER, shows a detrimental and meaningful impact on financial performance. This finding suggests that excessive reliance on debt financing can deteriorate financial outcomes, likely due to increased financial risk and interest burdens. It underscores the necessity for firms to establish an optimal capital structure to maintain financial stability and long-term competitiveness.

RECOMMENDATIONS

In light of these findings, it is recommended that energy sector firms place greater emphasis on the development and integration of intellectual capital into their operational and strategic frameworks. Furthermore, prudent debt management should be a key priority in financial planning to mitigate risks associated with high leverage. These strategies are essential not only to improve financial performance but also to sustain resilience and growth amid dynamic industry challenges.

FURTHER STUDY

This study is limited to energy sector firms listed on the IDX during 2019–2023, which may affect the generalizability of the findings. Future research is encouraged to include broader samples across sectors or countries to enhance external validity.

Additionally, while this study used ROA as the sole performance metric and applied a purely quantitative approach, future studies may consider incorporating multiple financial indicators and qualitative methods to capture deeper insights. Including macroeconomic variables or firm-specific governance factors could also refine the analysis and offer more comprehensive conclusions.

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