

Analysis of the Effect of Capital Structure, Intellectual Capital, and Firm Size on Firm Performance

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Abstract— Company performance needs to be measured and evaluated to determine how well a company can maximize profits for its shareholder. Therefore, this study aims to analyze the influence of capital structure, intellectual capital, and firm size on firm size. The research focuses on energy sector companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2022. The population consisted of 87 energy sectors companies, with 53 companies selected using purposive sampling for this study. Secondary data in the form of audited financial statements and annual reports were collected from the official website of the Indonesia Stock Exchange (IDX) and analyzed using multiple linear regression methods. In this study, firm performance is measured using Return On Asset (ROA). The findings indicate the capital structure, as measured by the Debt to Equity Ratio (DER), positively affects the performance of energy sector companies. Intellectual capital, as measured by the Value Added Intellectual Coefficient (VAIC), does not significantly influence firm performance. However, firm size, measured by Ln (Total Assets), has a positive impact on firm performance.

Keywords—Capital Structure; Intellectual Capital; Firm Size; Firm Performance

I. INTRODUCTION

The performance of a company is crucial to measure because it shows to what extent the company can utilize resource to achieve maximum profit. However, not all companies have good performance and can generate profits. Many companies need to improve their performance, both financially and non-financially. Various faktor affect a company's performance, starting from its management and strategies in achieving goals. It is essential to evaluate whether the management and strategies can still be effective or need improvement and change. Therefore, evaluating the company's performance is nescessary for its progress and to support its development.

Many companies in Indonesia are established across various sectors and contribute significantly to the country's economy. This research focuses on the performance of energy companies in Indonesia. Energy companies are increasingly crucial in people's lives as the fulfill essential needs and facilitate daily live, especially in Indonesia. These companies engage in the production, distribution, and sale of energy, They offer various products such as coal, oil, natural gas, and electricity, operating on both national and international scales.

Companies that can perform well are influenced by their ability to effectively utilize existing resources. Company performance can be affected by several factors, including capital structure, intellctual capital, and firm size. Capital structure is particularly relevant as it determines the extent to which a company's assets are financed through corporate debt. Previous research indicates that capital structure negatively impact company performance; an increase in debt, if not managed properly, can adversely affect performance [1]. Conversely, other studies suggest that capital structure has a positive but statistically insignificant effect on firm performance, accounting for only 7.3 percent of the variance [2].

Other factors such as intellectual capital, also influence company performance. Intellectual capital refers to knowledge possessed by individuals within the company [3]. Previous research indicates that intellectual capital positively impacts the knowledge acquisition and exploration of subsidiaries of

multinational enterprises (MNEs) on the digital platforms, thereby enhancing company performance [4]. This finding aligns with other studies that suggest intellectual capital has a positive effect on organizational performance [5]. Firm size is another factor that affect company performance. A previous study found that firm size influences financial performance [6]. Building on these findings, researchers need to revisit and update the understanding of how capital structure, intellectual capital, and firm size collectively influence company performance, addressing gaps left by previous studies.

II. RESEARCH METHODS

This research employs an associative research approach, which examines the influence of two or more independent variables on a dependent variable. The focus of this study is companies in the energy sector list on the Indonesia Stok Exchange (IDX) from 2018-2022. The population comprises 83 issuers, with a sample size of 53 selected through purposive sampling. The selection criteria include companies that went public after 2018.

Secondary data for this study were sourced from audited financial statements and annual reports, obtained from the official website of the Indonesia Stock Exchange (IDX). The data collected include total assets, total debt, total equity, net income, and components of intellectual capital. The study examines one dependent variable, namely firm performance, and three independent variables: capital structure, Intellectual capital, and firm size. Data analysis employs linear regression analysis.

The dependent variable ROA requires the measurement of net profit and total asset value. The effectiveness of a company’s management can be assessed by the percentage derived from this calculation. ROA is a tool used to gauge how efficiently capital invested in assets can generate expected profits [7]. ROA indicates the net profit earned per unit of total assets owned by a company [8].

The independent variables in this study are capital structure, intellectual capital, and firm size. Capital structure refers to the balance beetwen permanent short-term debt, long-terb debt, preferred stock, and common stock [9]. It represents the comparison between external capital and equity capital. The Debt Equity Ratio (DER) measures the relationship between total debt and total equity [10]. Intellectual Capital, a new knowledge-based resource, encompasses intangible assets that, when effectively utilized, enable companies to execute their strategies proficiently [11]. Firm size serves as a metric for categorizing a company’s magnitude in various dimensions, such as logarithmic size, total assets, and market capitalization [12]

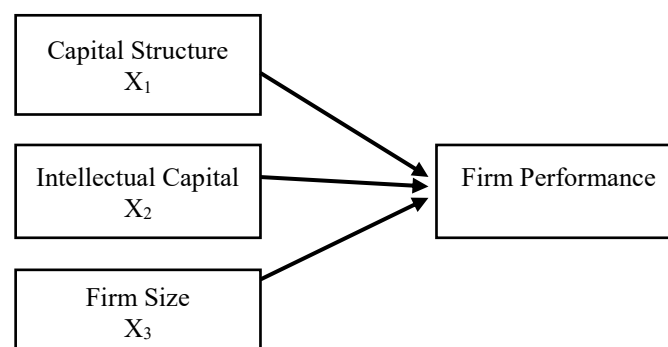


Figure 1. Conceptual Framework

Hypotheses:

H₁: Capital Structure affects Firm Performance

H₂: Intellectual Capital affects Firm Performance

H₃: Firm Size affects Firm Performance

III. RESULT AND DISCUSSION

The following are the results and discussion of tests conducted on energy sector companies from 2018 to 2022, totaling 53 companies. The data obtained for analysis comprises 265 annual report based on the sampling criteria.

Table 1. Descriptive Statistic

<i>Capital Structure</i>		<i>Intellectual Capital</i>		<i>Firm Size</i>		<i>Firm Performance</i>	
Mean	1,2488	Mean	68,0952	Mean	28,8129	Mean	4,1096
Standard Error	0,2964	Standard Error	15,6747	Standard Error	0,1269	Standard Error	0,9829
Median	0,9026	Median	30,0417	Median	28,8513	Median	3,2935
Standard Deviation	4,8249	Standard Deviation	255,1663	Standard Deviation	2,0653	Standard Deviation	16,0011
Sample Variance	23,2794	Sample Variance	65109,8550	Sample Variance	4,2655	Sample Variance	256,0344
Kurtosis	40,9530	Kurtosis	199,5920	Kurtosis	2,6657	Kurtosis	5,5735
Skewness	-1,0166	Skewness	13,4156	Skewness	-1,0507	Skewness	-0,1695
Range	77,1419	Range	3924,2085	Range	12,1334	Range	134,9286
Minimum	-43,0864	Minimum	-0,6470	Minimum	20,6244	Minimum	-73,2940
Maximum	34,0556	Maximum	3923,5614	Maximum	32,7578	Maximum	61,6346
Sum	330,9353	Sum	18045,2197	Sum	7635,4082	Sum	1089,0315
Count	265	Count	265	Count	265	Count	265

Based on the descriptive table, it can be seen the value of the minimum, maximum, mean or average, and standard deviation of 265 data. The minimum value of the capital structure is -43.0864, the maximum value is 34.0556, the mean value is 1.2488, and the standard deviation is 4.8249. Capital intellectual minimum value is -0.6470, maximum value is 3923.5614, mean value is 68.0952 and standard deviation is 255.1663. The minimum firm size value is 20.6244, the maximum value is 32.7578, the mean value is 28.8129, and the standard deviation value is 2.0653. The minimum value of firm performance is -73.2940, the maximum value is 61.6346, the mean value is 4.1096, and the standard deviation value is 16.0011.

Table 2. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.835258	(52,209)	0.0000
Cross-section Chi-square	209.306001	52	0.0000

Based on the Chow test results, where the cross-section F probability value is 0.0000, which is less than 0.05, it indicates that the Fixed Effect Model (FEM) is the appropriate model to use. Consequently, the next step involves conducting the Hausman test.

Table 3. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	14.051983	3	0.0028

Based on the Hausman test results, where the cross-sectional random probability value is 0.0028, which is less than 0.05, it indicates that the Fixed Effect Model (FEM) is the most suitable model to use.

Table 4. F-Test

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	11144,8	3714,934	17,17675	3,28E-10
Residual	261	56448,28	216,2769		
Total	264	67593,08			

Besed on the results of the F-test above, it can be observed that the significance value of 3.28E-10 is less than 0.05, indicating that the independent variables namely, capital structure, intellcetual capital, and firm size simultaneously affect firm performance.

Table 5. t Test (Linear Regression)

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-79,2804	12,82467727	-6,18186	2,43E-09
Capital structure	-0,7081	0,190492113	-3,71721	0,000246
Intellectual Capital	0,0031	0,003555324	0,871851	0,384091
Firm Size	2,917556	0,445822685	6,544207	3,15E-10

Based on the results of the linear regression analysis test above, we can conclude, by examining the p-values for each independent variable on the dependent variable, the following: capital structure has a p-value of 0.000246, which is less than the significance value of 0.05. This indicates that capital structure has a positive influence on firm performance, thus supporting the acceptance hypothesis 1. Intellectual capital has a p-value of 0.384091, which is greater than the significance value of 0.05. This suggests that intellectual capital does not significantly affect firm performance, leading to the rejection of hypothesis 2. Firm size has a p-value of 3.15E-10, which is less than the significance value of 0.05. This indicates that firm size has a positive influence on firm performance, supporting the acceptance of hypothesis 3.

IV. CONCLUSION

Based on the purpose of this research, which aims to empirically demonstrate the influence of capital structure, intellectual capital, and firm size on firm performance, the study reveals the following insights: The research confirms that both capital structure and firm size positively impact firm performance. A higher Debt Equity Ratio (DER) is associated with increased profitability for companies that effectively manage ther debt and capital. Conversely, intellectual capital does not show a significant effect on firm performance in this study.

Specifically, companies with higher DER values tend to achieve better performance when their financial leverage is managed effectively to generate profits. On the other hand, variations in intellectual capital do not significantly impact firm performance. Furthermore, the study highlights that company size plays a crucial role in attracting investors, as larger companies tend to have increased operational activities and profitability, thereby enhancing overall firm performance [13]. This suggests that larger companies generally exhibit stronger performance due to their operational scale and capacity to generate profits.

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