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THE COMPONENTS OF INTELLECTUAL CAPITAL THAT AFFECT FIRM PERFORMANCE IN STATE-OWNED COMPANIES

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ABSTRACT

The purpose of this study is to examine the effect of independent variables of human capital efficiency (HCE), capital employed efficiency (CEE), and structural capital efficiency (SCE) on firm performance. This study uses firm size as a control variable. The sample in this study was selected using purposive sampling which resulted in 11 state-owned companies from 12 companies listed on the Indonesia Stock Exchange (IDX) during the 2019-2022 period were used as research objects. This study uses a panel data regression model with a Common Effect Model (CEM) approach using Eviews version 12 program. Based on the analysis, the results of this study shows that human capital efficiency (HCE), capital employed efficiency (CEE) and firm size have a positive and significant effect on firm performance, while structural capital employed (SCE) have an insignificant effect on firm performance. These findings also revealed that companies that can manage their assets including intangible assets will improve company performance.

Keywords: *human capital, capital employed, structural capital, firm performance.*

1. INTRODUCTION

Performance appraisal is important to do in order to evaluate the success of a company based on its financial activities so that the company can advance the company and increase employee motivation. Financial performance is a formal attempt to evaluate how effectively and efficiently a firm generates profits and a particular cash position (Hery, 2016). Financial performance measurement is used to assess the performance of resources owned which makes it possible to find out how far the prospects for growth and financial development of a company, where a company is said to be successful if it has achieved certain predetermined performance. Performance appraisals are usually closely related to financial statements and are calculated using financial ratios, one of them is Return on Assets (ROA).

State-owned companies often have problems in their company performance, one example is PT Garuda Indonesia. PT Garuda Indonesia experienced a decline in performance due to corruption and poor governance. Reporting from Detik Finance on April 22, 2022, Garuda Indonesia suffered a loss of US$ 1.66 billion or equivalent to Rp. 23.73 trillion assuming an exchange rate of Rp. 14,300 in September 2021 according to an unaudited interim report. When compared to the same period the previous year, PT Garuda Indonesia's loss increased by US $ 1.07 billion. According to the financial statements until September 2021, the amount of revenue and sales, assets and equity of PT Garuda Indonesia has decreased. The amount of decline was US$ 191.98 million, US$ 1.36 billion, and US$ 5.54 billion, respectively. Meanwhile, PT Garuda Indonesia's total liabilities increased by US$ 290 million compared to the previous period. PT Garuda Indonesia's poor performance cannot be separated from problems, SOE Minister, Mr. Erick Thohir, presented evidence of alleged corruption, one of which was related to the procurement of ATR 72-600 aircraft at Garuda Indonesia.

Several studies that have been conducted on firm performance show that human capital efficiency, capital employed efficiency, and *structural capital efficiency* affect firm performance. Research according to Maji and Gosmawi (2016), Ozkan et al. (2017), Trinita and Dewi (2019), Astari and Darsono (2020).

This research is expected to provide benefits for academics, practitioners, and companies to pay attention to intellectual capital in an effort to improve company performance. The purpose of this study is to determine the influence of each component of intellectual capital on company performance.

Our Contribution

This study is a replication of research conducted by Ozkan et al. (2017). The differences between this study and the research of Ozkan, et al. are as follows. The first difference is that the control variable used in this study only used company size. The second difference is that the sample used in this study is a state-owned company in Indonesia. The last difference is that the period of this study used the years 2019-2022.

2. THEORETICAL REVIEW

Resource-Based View Theory

This research is based on Resource-Based View (RBV) theory. RBV theory is a management framework in determining strategic resources to obtain sustainable competitive advantage. This theory focuses on the internal resources that a company has as an effort to identify assets, capabilities, and competencies (Ghozali, 2020). By owning, mastering, and utilizing strategic assets, the company will gain a competitive advantage and improve the company's financial performance.

Stakeholder Theory

In addition to resource based view theory, this research is also based on stakeholder theory. Stakeholder theory was first proposed by Freeman in 1984 to explain corporate responsibility to several parties. Stakeholder theory emphasizes that the operation of a company not only provides its own benefits, but also benefits stakeholders (creditors, shareholders, government, suppliers, consumers, society) (Ghozali, 2020).

Firm Performance

Firm performance is a result or achievement that is influenced by the company's operational activities by using the resources it has over a certain period of time (Galib and Hidayat, 2018). Companies can see their performance from two perspectives, namely from the financial and non-financial sides. The financial side is assessed based on financial statements, while the non-financial side is assessed from customer or employee satisfaction, the development of company activities, and so on (Yulianingtyas, 2016).

Human Capital Efficiency

Human capital is one of the factors that affect company performance. Human capital in the form of knowledge, expertise and abilities of employees that can help increase the

competitiveness of a company because it cannot be imitated by other companies so that it can gain advantages compared to other companies and become an important role in the sustainability of the company (Djampagau et al., 2018).

Capital Employed Efficiency

Capital employed is capital in the form of physical and financial assets needed for the company's operational activities that come from outside the company (Astari and Darsono, 2020). A company can create added value and improve its performance when a firm can use its intellectual capital and physical capital simultaneously. Capital employed can also assist companies in developing good internal and external relationships with employees, consumers, suppliers, creditors, and governments (Nguyen, 2023).

Structural Capital Efficiency

Structural capital efficiency shows the company's ability to support employee efforts in terms of achieving facilities and infrastructure that can be utilized by employees to support their performance. Company employees who have high intellect are useless if the system and facilities are not supportive. Therefore, companies must provide supporting systems and facilities so that their financial performance can grow optimally (Persulessy et al., 2022). Company systems and facilities can be databases, organizational charts, corporate strategies, and so on (Astari and Darsono, 2020).

Hypothesis Development

The Effect of Human Capital Efficiency on Firm Performance

Human capital efficiency is an indicator of the ratio of comparison between human capital (HC) and value added (VA), where human capital efficiency is one of the sources of added value of the company (Pulic, 1998). Companies that can manage knowledge, *skills* and competencies optimally, then it can increase the value of return on asset and earn profits. This is supported by resource-based view theory and stakeholder theory, companies that are able to manage human resources well will increase company competitiveness, create added value and increase stakeholder confidence to invest their capital. In this study, firm performance was measured by proxy ROA. The higher the value of human capital efficiency, the higher the value of ROA.
H_1: Human capital efficiency has a positive and significant effect on firm performance.

The Effect of Capital Employed Efficiency on Firm Performance

Capital employed efficiency is the ratio of value added (VA) to capital employed (CE) (Pulic, 1998). If the company can use capital employed efficiently, then the company can reduce operational costs and increase added value. The company will also generate a high return when the company is able to optimize capital employed. The higher the value of capital employed efficiency, the higher the value of ROA. According to resource-based view theory and stakeholder theory, good capital management can be the key to success for the company. This can improve the welfare of stakeholders who invest in a company.
H_2: Capital employed efficiency has a positive and significant effect on firm performance.

The Effect of Structural Capital Efficiency on Financial Performance

Structural capital efficiency is an indicator of the ratio between structural capital (SC) and value added (VA) (Pulic, 1998). Structural capital is a component that plays a role in creating added value for the company. Companies that manage structural capital optimally will encourage companies to increase return on assets. The higher the value of structural capital efficiency, the higher the value of ROA. This is supported by resource-based view theory and stakeholder theory, where companies that manage their resources optimally will create added value and improve company performance so that stakeholders also achieve their welfare.
H_3: Structural capital efficiency has a positive and significant effect on firm performance.

It can be concluded, the hypotheses in this study are:
H_1: Human capital efficiency has a positive and significant effect on firm performance.
H_2: Capital employed efficiency has a positive and significant effect on firm performance.
H_3: Structural capital efficiency has a positive and significant effect on firm performance.

The research model of this study as presented in the following figure:

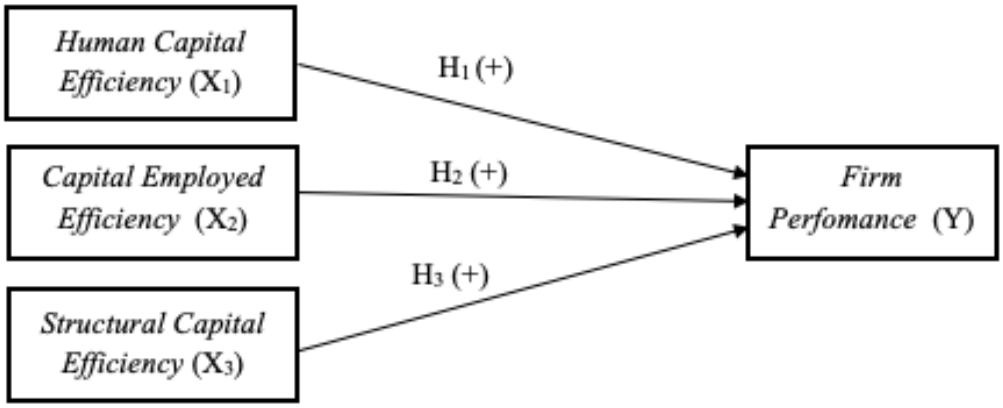

Figure 1. The Research Model

3. RESEARCH METHOD

Sample selection in this study used purposive sampling. The population used in this study is all state-owned companies listed on the Indonesia Stock Exchange (IDX) in the 2019-2022 period. The criteria that must be met are state-owned companies listed on the IDX for consecutive periods 2019-2022, state-owned companies that use IDR (Rupiah) in their financial statements, and state-owned companies that have complete financial statements ending on December 31. From a sample population of 12 state-owned companies, only 11 companies meet the above criteria. But based on the outlier test, the number of companies selected became 8 companies with 4 research periods, so the number of data collected was 32 data. Data is processed using the EViews application version 12. The formula used is as follows:

Table 1. The Operationalization of Research Variables

Variable	Proxies and Formula	Scale
Firm Performance (ROA)	$Return\ On\ Asset\ (ROA) = \frac{Net\ Income}{Total\ Assets} \times 100\%$	Ratio
Human Capital Efficiency	$Human\ Capital\ Efficiency\ (HCE) = \frac{Value\ Added}{Human\ Capital}$	Ratio
Capital Employed Efficiency	$Capital\ Employed\ Efficiency\ (CEE) = \frac{Value\ Added}{Capital\ Employed}$	Ratio
Structural Capital Efficiency	$Structural\ Capital\ Efficiency\ (SCE) = \frac{Structural\ Capital}{Value\ Added}$	Ratio
Firm Size	Size = Ln (Total Assets)	Ratio

4. RESULTS

The results of descriptive statistical analysis tests on 32 dependent and independent variable data in state-owned companies can be seen in the following table:

Table 2. Descriptive Statistics

	ROA	HCE	CEE	SCE	SIZE
Mean	3.125000	2.487297	0.057781	0.543684	33.33783
Median	2.450000	2.252450	0.035307	0.556026	33.31451
Maximum	12.50000	5.097648	0.257988	0.803831	35.22819
Minimum	0.020000	1.182186	0.009934	0.154110	31.61019
Std. Dev.	3.531014	0.945326	0.070029	0.160125	1.332735
Skewness	1.782180	0.942134	2.077434	-0.475927	0.035661
Kurtosis	5.066143	3.333099	5.816546	2.646820	1.432523
Jarque-Bera	22.63148	4.881893	33.59447	1.374350	3.282760
Probability	0.000012	0.087078	0.000000	0.502995	0.193713
Sum	100.0000	79.59349	1.848994	17.39789	1066.811
Sum Sq. Dev.	386.5098	27.70286	0.152026	0.794840	55.06168
Observations	32	32	32	32	32

Source: Data Processed using EViews 12

Based on the results of the Chow Test, the chi-square cross-section value obtained is 0.0070 and below the significance level of 5%. This means that Ha is accepted and the estimated model chosen is Fixed Effect Model (FEM).

Table 3. Chow Test Result

Redundant Fixed Effects Tests
Equation: FEM
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.385779	(7,20)	0.0602
Cross-section Chi-square	19.425817	7	0.0070

Source: Data Processed using EViews 12

Based on the results of the Hausman Test, the random cross-section value obtained is 0.3335 and above the significance level of 5%. This means that Ha is rejected and the estimated model chosen is the Random Effect Model (REM).

Table 4. Hausman Test Result

Correlated Random Effects - Hausman Test
Equation: REM
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.576770	4	0.3335

Source: Data Processed using EViews 12

Based on the results of the Lagrange Multiplier Test, the probability value of cross-section obtained is 0.4620 and above the significance level of 5%. This means that Ha is rejected and the estimation model chosen is the Common Effect Model (CEM).

Table 5. Lagrange Multiplier Test Result

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.540957 (0.4620)	0.311179 (0.5770)	0.852136 (0.3559)
Honda	0.735498 (0.2310)	-0.557834 (0.7115)	0.125627 (0.4500)
King-Wu	0.735498 (0.2310)	-0.557834 (0.7115)	-0.063869 (0.5255)
Standardized Honda	1.886169 (0.0296)	-0.288992 (0.6137)	-2.174342 (0.9852)
Standardized King-Wu	1.886169 (0.0296)	-0.288992 (0.6137)	-2.254346 (0.9879)
Gourieroux, et al.	--	--	0.540957 (0.4218)

Source: Data Processed using EViews 12

This study used panel data that combined cross-section data and time-series data. The classical assumption tests used in this study are normality test, multicollinearity test, autocorrelation test, and heteroscedasticity test.

Table 6. Classical Assumption Test Result

Classical Assumption Test	Method	Requirement	Result	Conclusion
Normality Test	Jarque-Bera	p-value prob.>0.05	0.061274	Residual data is normally distributed
Autocorrelation Test	Durbin-Watson	dU<DW<4-dU	2.008141	There is no autocorrelation
Heteroscedasticity Test	White	Prob. Chi-square > 0.05	0.4416	No heteroscedasticity
Multicollinearity Test	VIF	Centered VIF < 10	HCE = 8.918056 CEE = 2.126551 SCE = 7.753975	No multicollinearity issues

Source: Data Processed using EViews 12

From the results of multiple regression analysis in Table 5, the Adjusted R-squared value obtained is 0.992622. This shows that 99.26% of the dependent variable (firm performance) can be explained by independent variables consisting of human capital efficiency, capital employed efficiency, structural capital efficiency. While the remaining 0.74% was explained by other variables outside this study. The value of Prob (F-statistics) indicates the number 0.0000, which means that the independent variable simultaneously affects the dependent variable.

Table 7. Path Coefficients

Dependent Variable: ROA
Method: Panel Least Squares
Date: 10/19/23 Time: 11:51
Sample: 2019 2022
Periods included: 4
Cross-sections included: 8
Total panel (balanced) observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HCE	0.373217	0.172079	2.168866	0.0391
CEE	44.12112	1.134317	38.89666	0.0000
SCE	1.456456	0.947279	1.537516	0.1358
SIZE	0.112416	0.044784	2.510214	0.0184
C	-4.892236	1.428404	-3.424966	0.0020

R-squared	0.993574	Mean dependent var	3.125000
Adjusted R-squared	0.992622	S.D. dependent var	3.531014
S.E. of regression	0.303288	Akaike info criterion	0.594334
Sum squared resid	2.483561	Schwarz criterion	0.823356
Log likelihood	-4.509352	Hannan-Quinn criter.	0.670249
F-statistic	1043.734	Durbin-Watson stat	2.008141
Prob(F-statistic)	0.000000		

Source: Data Processing using EViews 12

The equation of multiple regression analysis in this study is as follows:

ROA = -4.892236 + 0.373217 HCE + 44.12112 CEE + 1.456456 SCE + 0.112416 SIZE + e

Based on the results of the t-statistical test, the independent variables that have a probability value below 0.05 and affect the dependent variables are human capital efficiency, capital employed efficiency and firm size. While structural capital efficiency has a probability value

above 0.05, which means that it does not have a significant effect on the dependent variable. The results of the hypothesis test will be presented in the following table:

Table 8. The Results of Hypotheses Testing

Hypothesis		Coefficient	Significance	Conclusion Ha
H_1	Human capital efficiency has a positive and significant effect on firm performance	0.373217	0.0391	Accepted
H_2	Capital employed efficiency has a positive and significant effect on firm performance	44.12112	0.0000	Accepted
H_3	Structural capital efficiency has a positive and significant effect on firm performance	1.456456	0.1358	Rejected

Source: Data Processing using EViews 12

5. CONCLUSIONS

The conclusions based on testing the data that has been collected are as follows:

First, the first hypothesis is accepted, which means that human capital efficiency has a positive and significant effect on the firm performance of state-owned companies in the 2019-2022 period. This shows that the company is able to manage its human resources well in improving its company performance. The results of this study are in line with research conducted by Maji and Gosmawi (2016), Ozkan et al. (2017), Andika and Astini (2022), Chandra and Agnes (2021).

Second, the second hypothesis is accepted, which means that capital employed efficiency has a positive and significant effect on the firm performance of state-owned companies in the 2019-2022 period. Companies that are able to manage assets optimally, both physical assets and financial assets, will help the company in making profits. The results of this study are in line with research conducted by Maji and Gosmawi (2016), Ozkan et al. (2017), Aprilyani et al (2020), Astari and Darsono (2020).

Third, the third hypothesis is rejected which means that structural capital efficiency does not have a significant effect on firm performance. The results of this test show that structural capital is not the main factor affecting company performance. Some possibilities that cause structural capital efficiency have no significant effect on firm performance are the lack of company samples taken and because of the Covid-19 pandemic. The results of this study are in line with research conducted by Maji and Gosmawi (2016), Chandra and Agnes (2021), Trinita and Dewi (2019).

6. LIMITATIONS AND SUGGESTIONS

This study has the following limitations:
1. There are only three independent variables used in this study, such as human capital efficiency, capital *employed efficiency*, and *structural capital efficiency*.
2. The number of samples used in this study was only 11 state-owned companies.
3. The period in this study was only four years, namely from 2019 to 2022.

To overcome the above limitations, some suggestions that can be given are as follows:

1. For future research: (a) adding other control variables, such as firm age or leverage; (b) use different types of companies and sectors, such as manufacturing or financial companies; (c) increase the number of study periods.
2. For investors: investors should invest in companies that are able to manage their resources that can provide profits.
3. For the companies studied, it is expected to continue to manage their intangible assets properly so that they can improve company performance and obtain profits.

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REFERENCES

Andika, S., Astini, D. (2022). Pengaruh Intellectual Capital Terhadap Profitabilitas Dalam Perspektif Syariah. *JAS (Jurnal Akuntansi Syariah)*, 6(2), 228-244. DOI: https://doi.org/10.46367/jas.v6i2.849

Aprilyani, R. V. D., Susbiyani, A., dan Aspirandi, R. M. (2020). Pengaruh Capital Employed, Human Capital, Structural Capital Terhadap Kinerja Keuangan Pada Perusahaan Perbankan Yang Terdaftar Di BEI Tahun 2017-2020. *Jurnal Akuntansi Profesi*, 11(2). DOI: https://doi.org/10.23887/jap.v11i2.30693

Astari, R. K., dan Darsono (2020). Pengaruh Intellectual Capital Terhadap Kinerja Perusahaan. *Diponegoro Journal of Accounting*, 9(2).

Chandra, B., dan Agnes (2021). Pengaruh Intellectual Capital Terhadap Kinerja Perusahaan pada Perusahaan di Indonesia. *Akuntabel*, 18(3), 399-407.

Detik Finance. "Rugi hingga Utang Segunung, Begini Kinerja Garuda yang Mau Diselamatkan". Finance.detik.com. https://finance.detik.com/berita-ekonomi-bisnis/d-6046201/rugi-hingga-utang-segunung-begini-kinerja-garuda-yang-mau-diselamatkan (Accessed on September 18th, 2023)

Djampagau, H. R. D., Salim, U., Rofiaty, dan Wijayanti, R. (2018). The Relationship of Human Capital, Innovation, and Corporate Performance (A Study of Small and Medium Rattan Businesses in Palu City Central Sulawesi Province). *KnE Social Sciences*. DOI: 10.18502/kss.v3i10.3394

Galib, M., dan Hidayat, M. (2018). Analisis Kinerja Perusahaan Dengan Menggunakan Pendekatan Balance Scorecard Pada PT. Bosowa Propertindo. *SEIKO: Journal of Management and Business*, 2(1).

Ghozali, I. (2016). *Aplikasi Analisis Multivariete Dengan Program IBM SPSS 23*. Semarang: Badan Penerbit Universitas Diponegoro.

Ghozali, I. (2020). *25 Grand Theory, 25 Teori Besar Ilmu Manajemen, Akuntansi dan Bisnis*. Semarang: Yoga Pratama.

Hery (2016). *Analisis Laporan Keuangan*. Jakarta: PT Grasindo

Listianawati, L., dan Sampurno, R. D. (2021). Analisis Pengaruh Intellectual Capital Terhadap Kinerja Keuangan Perusahaan (Studi Kasus : Perusahaan Manufaktur di Bidang Food And Beverages yang Terdaftar di Bursa Efek Indonesia Periode 2015-2019). *Diponegoro Journal of Management*, 10(4).

Maji, S. G., dan Goswami, M. (2016). Intellectual Capital and Firm Performance in Emerging Economies: The Case of India. *Review of International Business and Strategy*, 26(3). DOI: 10.1108/RIBS-03-2015-0019

Nawawi, H. H. (1991). *Metode Penelitian Bidang Sosial*. Yogyakarta: Gadjah Mada University Press.

Nguyen, N. T. (2023). The Impact of Intellectual Capital on Service Firm Financial Performance in Emerging Countries: The Case of Vietnam. *Sustainability*, 15. DOI: doi.org/10.3390/su15097332

Ozkan, N., Cakan, S., dan Kayacan, M. (2017). Intellectual capital and financial performance: A study of the Turkish Banking Sector. *Borsa Istanbul Review*, 17(3), 190-198. DOI: http://dx.doi.org/10.1016/j.bir.2016.03.001

Persulessy, G., Junus, A., dan Darmawati (2022). Intellectual Capital on Company Performance Using Economic Value Added (EVA) Method Moderated by Firm Size. *SRAWUNG (Journal of Social Sciences and Humanities)*, 1(2).

Pulic, A. (1998). Measuring The Performance of Intellectual Potential in Knowledge Economy. The 2nd McMaster Word Congress on Measuring and Managing Intellectual Capital by the Austrian Team for Intellectual Potential.

Trinita, O., dan Dewi, S. P. (2019). Faktor-Faktor Yang Mempengaruhi Kinerja Perusahaan Manufaktur Yang Terdaftar Di BEI. *Jurnal Multiparadigma Akuntansi*, 1(3), 748-756.

Yulianingtyas, D. (2016). Pengaruh Corporate Social Responsibility dan Good Corporate Governance Terhadap Kinerja Keuangan. *Jurnal Ilmu dan Riset Manajemen*, 5(10).