Intellectual Capital, Financial Performance, and Value of Company

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Abstract—Economic actors are no longer looking at a business entity based on intangible assets and financial assets, but also based on intangible assets that can affect its survival and to improve the competitve advantage by considering the intellectual capital. This work evaluates the effect of intellectual capital on financial performance and the value of the company.VAIC ™ method was used to gauge the capital. Variables in this work are Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE). The financial performance of the company is proxied by Return on Assets (ROA), while the value of the company is proxied by Tobins'Q. The samples of this study are 25 companies indexedin Indonesian Stock Exchange (ISE) 2009-2012. The analysis technique used in this study was multiple linear regression. The research proves that HCE hadsignificant negative effect on ROA and not notable negative effect on Tobins'Q. SCE exhibited a positive, but not significant effect on ROA and the Tobins'Q. CEE demonstrated significant positive effect on ROA and a negative non- significant effect on Tobins'Q.

Keywords—Intellectual Capital, financial performance of corporate, and value of corporate

I. Introduction

Economic development brings significant changes to the management of a business and the determination of competitive strategy [1]. Globalization, significant technological advances and information in this century have created economic development in a highly competitive business environment.

In this situation, company administrators are required to create and deliver corporate value to stakeholders, establish effective business models, change the way business strategy, implement valuable innovation processes, and leverage the company's strategic resources to achieve superior corporate performance [2].

The change in a labor-based business strategy to a knowledge-based business strategy is a form of change in the way businesspeople see not only a business entity based on tangible assets and financial aspects, but also based on intangible assets either in the form of knowledge or information that may affect business continuity. In this case, Intellectual Capital (IC) comes as an important factor in encouraging and supporting the improvement of company's performance [3].

Noe et al. [4] stated that that economic growth is no longer determined by the number of people employed (labor-based), but through continuous improvement of productivity by utilizing resources that generate competitive advantage, ie resources in the form of knowledge work and knowledge-based. Therefore, it is very important for companies to measure the value of the ICs they have [5].

Implementation of IC itself is something that is still novel in Indonesia as certain developed countries such as America and the Scandinavian countries [6]. Research on intellectual capital continues to grow with other variables that are associated with the level of cost efficiency that can be managed by the company.According to Rasmini et al. [7] and Sidharta et al. [8], IC is still not widely known in Indonesia. Until now, companies in Indonesia tend to use conventional based in building their business so that the resulting product is still poor technological content. Furthermore, it is stated by Setianto et al. [9] that companies in Indonesia will be able to compete with the creative values created throughICs of the company.The recognition of the influence of ICs in creating corporate value has increased, but a suitable evaluation for IC is still being developed. Kalkan et al. [10]suggested an indirect measurement of the IC by analyzing the efficiency of the added value generated by the company's intellectual capabilities (Value Added Intellectual Capital Coefficient - VAICTM). Furthermore, Dzenopoljac et al.[11] analyzed the effect of ICs on companies outcome in Arab and found that income and productivity were essentially influenced by ICs.

At this time intellectual capital, innovation, and value creation have attracted the attention of managers, investors, economic institutions, and government. Based on the review work done by Cuozzo et al .[12]it was

**Corresponding Author: Muhammad Madyan, E-mail: muhammad_madyan@feb.unair.ac.id*
Article History: Received: 05-01-2019, Revised: 07-04-2019, Accepted: 14-05-2019

evident that various researches about intellectual capitaland its role in encouraging the financial performance of the company has been conducted. Intellectual capital will be able to contribute in creating a better corporate financial performance if it is supported by good corporate governance as well.

This research is a development from the work conducted by Chen et al. [13] who examined the empirical relationship between intellectual capital and corporate value and financial performance. On the other hand, this present work is also adapted from the research work done by Daryaee [14] who examined the relationship between corporate value and intellectual capital during the period 2004-2007. The result of showed that there is a effective relantionship between intellectual capital with financial performance and company value.

Thus for this work, the authors have investigated empirically the relationship between the efficiency of value creation from Value Added Intellectual Capital (VAIC) variables, namely Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE) on financial performance and firm value.

In this study, authors did not use questionnaires to get the value of intellectual capital, financial performance, and corporate value. For this work, authors used the VAIC ™ method proposed by Pulic [15] to find out the value of the company's IC. For organizational performance, researchers chose return on assets as a measurement of the company's financial performance. As for the value of the company, researchers chose Tobin's Q Ratio as a measure of company's value.

II. Methodology

a. Research Approach

The research approach used in this study is quantitative approach using secondary data to answer the problem formulation. According to Anshori and Iswati [10], quantitative research is a structured study and it enables data to be analyzed in a proper manner. In addition, the data used for this work was in the form of numeric data, thus quantitative approach was used. On the other hand, statistics as an analytical tool wasused in testing the relationship between the variables of this work.

b. Research Variables

The variables used in this study are as follows. Dependent variable in this work is financial performance (ROA) and corporate value (Tobins'Q). The independent variables in this work are Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE).

c. Data Sources

The data used in this study is secondary data in the form of financial statements of manufacturing companies listed on the Indonesia Stock Exchange (BEI) in 2009-2012. Secondary data is obtained and collected from Indonesian Capital Market Directory (ICMD) and Indonesian Stock Exchange (IDX).

d. Population and Sample

For this study , the population is a manufacturing company listed on the Indonesia Stock Exchange (ISE) during the period 2009-2012 and which has published the financial statements of the relevant period.The sample in this research is determined by purposive sampling method, that is sample collection method by determining certain limitation or consideration [10].Sample selection criteria in this study are:

1. Manufacturing companies listed in ISE during 2009-2012 period.

2. Manufacturing companies that have issued audited financial statements continuously from 2009-2012.

3. Manufacturing companies that do not suffer losses and balance sheet do not show negative wealth in the period 2009-2012.

e. Analysis Technique

The value of HCE, SCE, CEE, ROA, and Tobin's Q for each sample over a predetermined period, 2009-2012 is calculated. SPSS software was used to perform multiple regression feasibility test.

III. Result and Discussion

a. Description of Research Variables

The research variables used in this research are ROA, Tobins' Q, HCE, SCE, and CEE.The description of the variable includes mean, standard deviation, minimum and maximum values. The description of data can be seen in

Table 1. Based on Table 1, it can be seen that the average HCE which shows the average labor capital of the the sample companies during the study period amounted to 33.2471 with a standard deviation of 29.51.The company with the lowest HCE is PT Mustika Ratu Tbk in 2012 with an HCE value of 4.53. While the company with the highest HCE value is PT Fajar Surya Wisesa Tbk in 2011 with an HCE value of 133.04.The average SCE that shows structural capital in sample companies during the study period is 0.9379 with a standard deviation value of 0.05677.The company with the lowest SCE value is PT Mustika Ratu Tbk in 2012 with a SCE value of 0.78. While the company with the highest SCE value is PT Fajar Surya Wisesa Tbk in 2010 with a SCE value of 0.99.The average CEE that shows total capital in sample companies during the study period is 2.2108 with a standard deviation of 5.24935.The company with the lowest CEE is PT Roda Vivatex Tbk in 2012 with a CEE value of 0.26. While the company with the highest CEE value is PT Mulia Industrindo Tbk in 2011 with a CEE value of 29.04.The average ROA that shows financial performance in sample companies during the study period is 11.02 with a standard deviation of 9.34.The company with the lowest ROA value is PT Kabelindo Murni Tbk in 2009 with an ROA value of 0.47. While the company with the highest ROA value is PT Mulia Industrindo Tbk in 2009 with a ROA value of 44.52.Tobins' Q average which shows the company's value in sample companies during the study period amounted to 2.087 with a standard deviation of 2.395.The company with the lowest Tobins' value is PT Mustika Ratu Tbk in 2009 with a Tobins'Q value of 0.59. Whereas the highest Tobins' Q company is PT Astra International Tbk in 2012 with a Tobins'Q value of 19.92.

Table 1. Description of Research Variables Year 2009 to 2012

Variables	N	Minimum	Maximum	Average	Std. Deviation
HCE	100	4.53	133.04	33.2471	29.51347
SCE	100	0.78	0.99	0.9379	0.05677
CEE	100	0.26	29.04	2.2108	5.24935
ROA	100	0.47	44.52	11.0202	9.34328
Tobins'Q	100	0.59	19.92	2.0871	2.39573
Valid N (listwise)	100				

b. Model Analysis and Evidence of Hypotheses

Model analysis was done by using multiple linear regression test. This was done to evaluate the significanceof independent variables that amount more than one to the dependent variable.

Residual normality can be known by looking at the P-P plot chart. From Figure 1 and Figure 2 it can be seen that the data spreads around the diagonal line and follows the direction of the diagonal line. Besides, normality can also be confirmed by using the Kolmogorov Smirnov Test. The data is said to be normally distributed if its significance is more than 0.05.

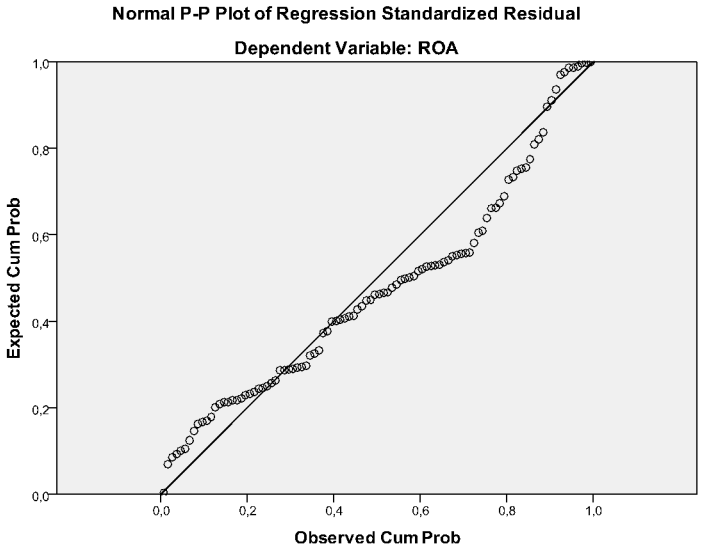

Figure 1. Normality Test Results Model 1.

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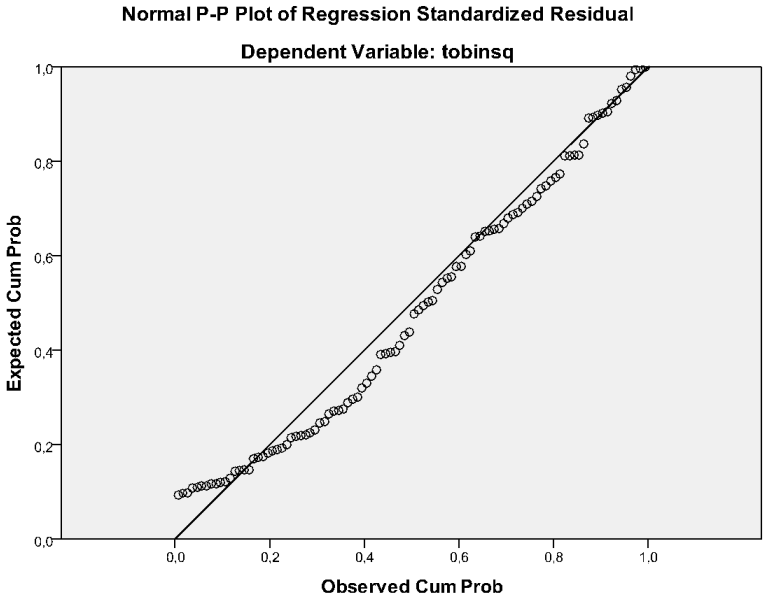

Figure 2. Normality Test Results Model 2.

In Table 2, the calculation results of Model 1 obtained Kolmorov-Smirnov value of 1.598 with a significance level of 0.012. This significance value is less than 0.05 which means that the data is not normally distributed. While in Model 2, calculation results obtained value Kolmorov-Smirnov of 0.919 with significance of 0.367. Thus, the data is normally distributed as significance value is more than 0.05.

Table 2. Normality Test Model 1 and 2 Regression

Test	Unstandardized Residual Model 1	Unstandardized Residual Model 2
Kolomorov-Smirnov Z	1.598	0.919
Asymp. Sig. (2-tailed)	0.012	0.367

Multicollinearity means that there is a perfect or definite linear relationship, between several or all variables that explain the regression model. Thus, to detect the presence of multicollinearity symptoms, the regression model was tested using Variance Inflation Factor (VIF).Multicollinearity occurs when the VIF value is ≥ 10.The results of multicolinearity testing in this study are shown in Table 3. Thus, the results showed that VIF results from Model 1 and 2 showed that all independent variables, namely HCE, SCE, and CEE have IF values <10. Thus, it can be concluded that the multicollinearity regression model does not occur.

Table 3. Multicollinearity Test Results Model 1 and 2

Constant	Collinearity Statistics	
	VIF Model 1	VIF Model 2
HCE	1.718	1.718
SCE	1.750	1.750
CEE	1.030	1.030

Tests of heteroscedasticity symptoms performed to determine whether there is a relationship between confounding variables with independent variables. If heteroscedasticity symptoms occur in the model used, it means there is no relationship between the confounding variable and the independent variable. The test of heteroscedasticity symptoms can also be known by using scatter analysis. If the points spread and do not form a typical pattern then the regression test is not exposed to the assumption of heteroscedasticity.

In Figure 3 and 4it can be seen that spreading dots do not form a distinctive pattern, thus it can be concluded that there is a symptom of heteroscedasticity.

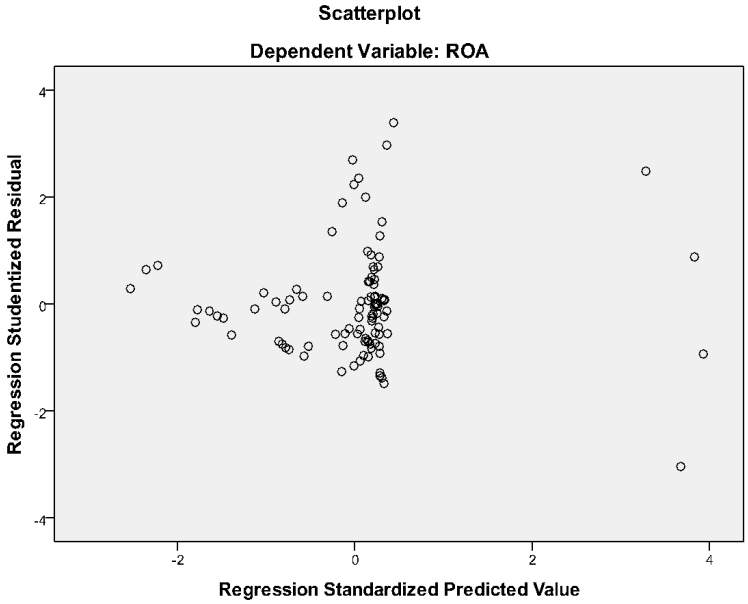

Figure 3. Test symptoms heteroscedasticity Model 1.

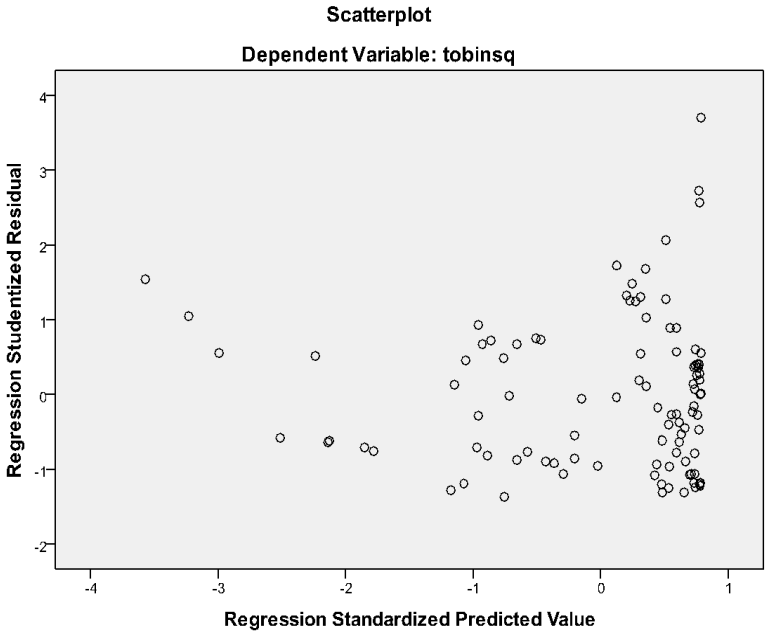

Figure 4. Test symptomsheteroscedasticity Model 2

Autocorrelation test is used to find out whether in a linear regression model, there is a correlation between the confounding error in period t, with error in period t-1. Symptoms of autocorrelation can be determined by Durbin-Watson (D-W). Result of the autocorrelation symptoms test obtained Model 1 D-W value at the count of 1.582 for ROA, because the value of the test is less than 2 then there is no autocorrelation. As for Tobins'Q the results of the D-W symptom testing calculated on Model 2 of 1.619, because the value of the test is less than 2 then there is no autocorrelation.

The results of multiple linear regression test consisting of HCE, SCE, and CEE against ROA and Tobins'Q is shown in Table 4.Based on the results of the above regression calculation can be formulated regression equation as follows:

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Article History: Received: 05-01-2019, Revised: 07-04-2019, Accepted: 14-05-2019

ROA = 4.877 – 0.108 HCE + 9.841 SCE + 0.626 CEE

The regression coefficients of the study showed varying signs, ie positive and negative.

The results show that CEE and SCE have a positive influence on ROA, whereas HCE has a negative effect on ROA. The result of t test for independent variables shows that HCE has a significant negative effect and CEE has a significant positive effect on ROA, while SCE variable to ROA has positive effect,it is not significant at α of 0.05.

F test result on regression equation equal to 9,074 with significance equal to 0.000, it means all independent variable have significant effect to ROA. R Square value of 0.221, indicating 22.1% ROA variables can be explained by variables HCE, SCE, and CEE, while the rest is explained by other variables.

Table 4. Multiple Linear Regression Coefficients Model 1

Variable	Coefficient	Std. Error	t-stat	Sig. T/2
(Constant)	4.877	17.579	0.277	0.782
HCE	-0.108	0.037	-2.886	0.0025
SCE	9.841	19.612	0.483	0.315
CEE	0.626	0.163	3.846	0.000
Correlation Coefficient (R)	0.470			
Determinant Coefficient (R^2)	0.221			
F Test	9.074			
Significance	0.000			

The multiple linear regression coefficients for Model 2 is shown in Table 5.

Based on the results of the above regression calculation can be formulated regression equation as follows:

Tobins'Q = -0.854 - 0.004 HCE + 1.534 SCE + 0.000 CEE

The regression coefficients of the study show varying signs: positive and negative. The results show that SCE and CEE have a positive influence on Tobins'Q, whereas HCE has a negative influence on Tobins'Q. The result of t test for independent variables shows that CEE, HCE, and SCE have no significant effect on Tobins'Q on α of 0.05.

The result of F test on the regression equation is 0.717 with the significance of 0,544, it means that not all independent variables have no significant effect on Tobins'Q.The R Square value is 0.022, indicating that 2.2% of the Tobins'Q variable can be explained by the HCE, SCE, and CEE variables, while the rest is explained by other variables that was not analyzed in this work.

Table 5. Multiple Linear Regression Coefficients Model 2

Variable	Coeff	Std. Error	t-stat	Sig. T/2
(Constant)	-0.854	1.416	-0.603	0.548
HCE	-0.004	0.003	-1.461	0.0735
SCE	1.534	1.580	0.971	0.167
CEE	0.000	0.013	-0.029	0.4885
Correlation Coefficient (R)	0.148			
Determinant Coefficient (R^2)	0.022			
F Test	0.717			
Significance	0.544			

The results showed that Human Capital Efficiency (HCE) had a significant negative effect on Return On Assets ROA). The results of this study support the Saengchan [9] and Haldami et al [11] studies. Increased salaries and benefits to employees are expected to motivate these employees to increase productivity in the production process so as to increase the productivity of the company. However, the results of this study prove the negative effect between Human Capital Efficiency (HCE) and the company's financial performance. The negative influence can be due to employees who are less productive.

The results showed that Structural Capital Efficiency SCE has no significant positive effect on Return On Assets (ROA). The results of this study support the research of Chen et al. [13] indicating that Structural Capital Efficiency (SCE) have positive effect but not significant to company's performance. Structural capital is defined as supporting infrastructure and information systems to support employee's performance. Structural capital is expected to improve

employee's performance which will result in increased productivity and company profit. On the other hand, with the results of this study proves that the ability of organizations or companies in using capital structure to support employee's performance in producing optimal intellectual performance does not always run in accordance with company expectations.

Therefore, the utilization of good structural capital may not necessarily result in added value or profit for the company. This is because not only structural capital that affects corporate profits, but also there are other factors such as interest rate and taxes. So, the use of good structural capital may not necessarily improve the company's financial performance.According to Chen et al. [13] allegedly Structural Capital Efficiency (SCE) is not a good indicator in explaining the company's structural capital. Structural capital is measured only by Value Added (VA) minus Human Capital (HC). The way these measurements are indicated is not able to capture the overall shape of structural capital.Each company also has different standards in giving salaries and wages to its employees. This can lead to Human Capital Efficiency (HCE) to have a significant negative effect on Return On Assets (ROA).

The results showed that Capital Employed Efficiency (CEE) had a significant positive effect on financial performance (ROA). The results of this study support Chen et al. [13] and Zeghal et al. [18], which indicates that, management and investors provide more valuation of physical capital in creating net income. Companies that can utilize their physical capital well will increase the added value for the company and will also increase the return on a number of assets owned by the company. This means the company has better financial performance

This proves that the company has utilized and increased capital owned by the company and this will improve the company's financial performance and will increase the corporate profits. In addition, the company's efficiency in managing asset capital is an important factor in company's financial performance.

The result of the research shows that Human Capital Efficiency (HCE) is negative andnot significant against Tobins'Q. Human Capital Efficiency (HCE) is the most important element which analyzes the level of efficiency of human capital used, that can be utilized to create added value. Increased salaries and benefits are expected to support employee's performance so as to increase the productivity of the company. Increased productivity is expected to attract investors. However, in this study, it gives unsuitable results that Human Capital Efficiency (HCE) can not be a determinant of corporate value because the increase or decrease in human capital utilized by the company does not affect the value of the company's shares. This is because, the value of a company's stock is determined based on the value of shares in the market. These results are similar to those in done by Ozkan et al.[19] where these results indicate that investors do not consider the human resource aspects as a source of corporate competitive advantage when making their investment decisions in the sample companies.

In addition, there is also the possibility it happening because the company's efforts in improving Human Capital Efficiency (HCE) through training, seminars, and others can not be directly perceived as benefits by the company. On the other hand, the possibility of companies in Indonesia whom use this method is still very little[7,8]. So, investors in Indonesia have not used Human Capital Efficiency (HCE) as one of the considerations to invest in the capital market.

The results showed that Structural Capital Efficiency (SCE) had positive effect but not significant to firm's value (Tobins'Q). The results of this study are in accordance with the research of Chen et al. [13]. Utilization of structural capital in this case, is the usage ofsupporting infrastructure and good information system that does not affect the value of a company's stock.This indicates a lack of company attention in supporting employee's performance with the lack of complementary infrastructure and information systems within the company.

The results of this study indicate that the level of efficiency of supporting infrastructure and information systems (such as hardware, software, organization chart, etc.) used to support the performance of company's employees does not influence investors in making decisions in determining the investment in the company. This is because the good use of the sructural capital despite having a positive relationship with the value of the company but not necessarily can increase the value of the company. This is because the value of stock is strongly influenced by the stock price in the market. Therefore, investors do not use Strcutural Capital Efficiency (SCE) as a priority in determining the decision.

The results showed that the Capital Employed Efficiency (CEE) had a positive effect that was not significant on Tobins'Q. The results of this study are in accordance with the research of Muhammad et al. [20]. This indicates that the use of physical capital is good or efficient by the company may not necessarily affect the value of the company's stock. This is because the change in the rise or fall of a company's stock price is determined by the stock price in the market. In addition, most companies in Indonesia have not used this method in doing its activities [7,8]. Thus, it does not have influence on stock prices.

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Article History: Received: 05-01-2019, Revised: 07-04-2019, Accepted: 14-05-2019

This condition indicates that the physical capital used or utilized by the company in creating added value for the company does not affect the investors in determining the investment. Investors tend to ignore the capital employed or the physical capital of a company in determining its investment in a company.

IV. Conclusion

Based on the results of data analysis that refers to the purpose of research, hypothesis, and model analysis, it can be drawn conclusion as follows. First,Human Capital Efficiency (HCE) has a significant negative effect on the company's financial performance (ROA). This study proves that companies that provide higher salaries and benefits to employees without accompanied by increased productivity in the production process will have little impact on financial performance. Secondly, Structural Capital Efficiency (SCE) have a positive effect but not significant to financial performance (ROA). This study proves that the company's ability to meet the company's routine process and structure in supporting employee performance to produce optimal financial performance does not always work well because there are other factors that determine the company's profit, that is interest and tax. Thirdly, Capital Employed Efficiency (CEE) has a significant positive effect on financial performance (ROA). This proves that the company has been able to utilize and increase the capital employed owned by the company well so as to improve the financial performance of the company. In addition, Human Capital Efficiency has no significant negative effect on firm's value (Tobin's Q). This suggests that investors are less likely to consider the human resource aspects that are recognized as a source of corporate competitive advantage when making investment decisions. Also, Structural Capital Efficiency has positive non-significant effect on firm's value (Tobins'Q). Good utilization of structural capital may not necessarily increase the value of the company's shares, this is because the stock price of the company is strongly influenced by the stock price in the market. Finally, Capital Employed Efficiency has positive non-significant effect on firm's value (Tobin's Q). Demonstrating that efficient use of CEE may not necessarily increase the value of the firm and this method has not been the priority of investors in making decisions for their investments.

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Article History: Received: 05-01-2019, Revised: 07-04-2019, Accepted: 14-05-2019