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# THE IMPACT OF INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE (STUDY ON BANKING COMPANIES LISTED IN INDONESIA STOCK EXCHANGE PERIOD 2014-2017)

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**Abstract**

*The purpose of this study is to determine the effect of Intellectual Capital on Financial Performance in Banking Company listed on the Indonesia Stock Exchange Period 2014 – 2017. The independent variables in this study were measured by VAIC™ proxied by Value Added Capital Employed (VACA), Value Added Human Capital (VAHU), and Structural Capital Value Added (STVA). The dependent variable in this study is Financial Performance as measured by Return On Equity (ROE). The data analysis techniques used in this study is Multiple Regression Analysis with the help of SPSS program version 22.00. The results of this study indicate the influence between VACA, VAHU, STVA on ROE. For the t-test, only VACA and VAHU have an effect on ROE, while STVA has no effect on ROE.*

*Keywords: Intellectual Capital, VAIC™, VACA, VAHU, STVA, ROE, SIZE*

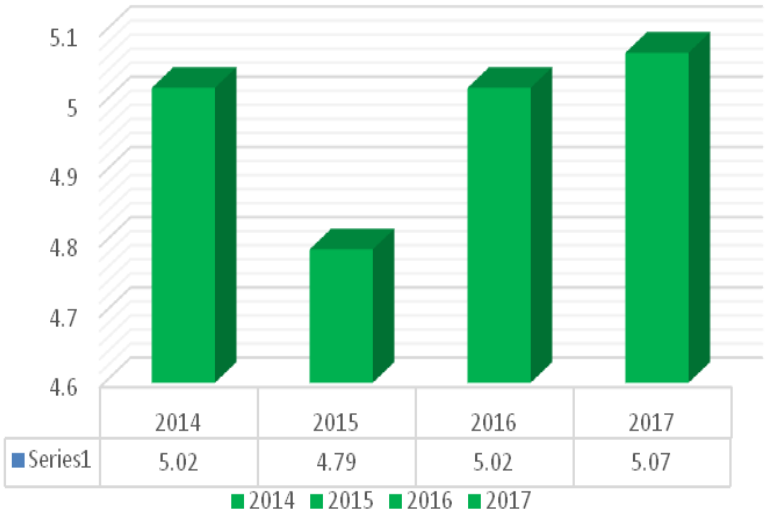
## INTRODUCTION

The current era of globalization has brought changes to the business world in any sector that has an impact on the development of the business world that is so rapid. This is indicated by the growing number of industries, ranging from small-scale industries to large-scale industries, as

well as the high interest of foreign investors to invest in Indonesia. The development of this business world has a high intensity of competition and the change in information technology used is not only dynamic but also innovative so it requires companies to make changes to the way business is managed and determine their competitive strategies to be able to compete with competing companies. Along with the advancements in technology, companies will be increasingly facilitated to carry out their company's activities.

In addition, globalization in the economic field was also shown by the increasing number of international community collaborations carried out by several countries, including in the ASEAN region. In 2015, the ASEAN Economic Community (MEA) came into effect, which has attracted foreign investors to invest. This condition makes business people expand their international network, penetration, and expansion into regional markets, and develop innovative products so that business people can create added value for their business and enhance competitive advantage in competitive markets. Investments for developing countries will have a significant impact on economic development, sources of foreign capital funds as a basis for accelerating economic growth.

Figure 1. Indonesian Economic Growth 2014 – 2017 (in percent)




Source: Badan Pusat Statistik, 2018

According to Ghosh and Amitava (2012) that now the business world has entered the era of knowledge (knowledge-based). Where in this era of knowledge-based, knowledge economy, information, and information technology play an important role. Knowledge economy consists of science, technology and industrial policies that are in synergy (OECD, 1996). Business people

need to invest in science, ability (skill), information technology, and various things that can improve the knowledge of a business entity. Then from improving knowledge will create a sustainable competitive advantage for business people. Usually, investment in the form of knowledge is intangible which will lead to Intellectual Capital (IC) for the company.

Intellectual capital can use the monetary measurement methods. One measure of monetary that is often used is the method of "Value Added Intellectual Coefficient" (VAIC™). Pulic (1998) in Salim (2013) introduces measurements of intellectual capital by using VAIC™ which is designed to provide information about the efficiency of value creation from tangible and intangible assets owned by the company. The main components of VAIC™ in this study can be seen from the resources owned by the company, namely physical capital which consists of Capital Employed Efficiency (VACA), Human Capital Efficiency (VAHU - Value Added Human Capital), and Structural Capital Efficiency (STVA - Structural Capital Value Added).

The ratio that can be used to measure the company's financial performance is one of them is the profitability ratio, namely Return On Equity (ROE). Return On Equity is the profitability of a company that is measured by connecting the profits obtained from the main activities of the company with capital owned to generate corporate profits. Return On Equity is also one indicator of the company's success in generating profits. So that the higher the profitability, the higher the ability to generate profits for the company.

Tzeng's (2001) study in Taiwan shows that as many as 94.74% of banks consider management of intellectual capital as an important matter. In a study conducted by Chen et al. (2005) using data from listing companies in Taiwan, prove that intellectual capital has a positive effect on market value and financial performance, and can be used as an indicator of financial performance in the future. Different results are shown by Firer and Williams (2003) who conducted research on similar topics using data from 75 public trade companies in South Africa. Their discovery cannot find a strong relationship between Intellectual Capital and company profitability.

According to research conducted by Joshi *et al.* (2013) who used financial sector companies in Australia as research objects during the period 2006-2008. The research shows that VAIC does not contribute much to company performance. According to research conducted by Meles *et al.* (2016) concerning the impact of the efficiency of the use of intellectual capital on the performance of banks in commercial banks in the United States.

Based on the description above, the author feels interested in conducting research with the title "The Impact of Intellectual Capital on Financial Performance (Study in Banking Companies Listed in Indonesia Stock Exchange Period 2014-2017)".

## LITERATURE REVIEW

### Intellectual Capital

Intellectual capital is an intangible asset in the form of information and knowledge possessed by a company in addition to physical and financial assets to provide a competitive advantage that can affect the company's performance in decision making in the present and future. Intellectual capital is measured by VAIC™ (Value Added Intellectual Coefficient). VAIC™ is a method for measuring the performance of a company's intellectual capital (Pulic in Ulum, 2008). This method is the easiest approach because the data needed to calculate VAIC™ is in the accounts of the company's financial statements (balance sheet, profit and loss). There are three component elements in VAIC™, namely VACA (physical capital), VAHU (human capital), and STVA (structure capital). According to Pulic (1998), the formulation and calculation stages of VAIC™ are summarized as follows:

a) *Value Added* (VA)

**VA = OUT - IN**

Where:

OUT (*output)* : total income

IN (*input*) : Expense and other expenses (except employee expenses)

b) *Value Added Capital Employed (VACA), indicator for VA generated by one unit of physical capital. This ratio shows the contribution made by each CE unit to the organization's value added. VACA is formulated as follows:*

**VACA = VA / CE**

Where:

VACA = *Value Added Capital Employed* : ratio of VA to CE

VA = *Value Added*

CE = *Capital Employed*: available funds (equity, net income)

c) *Value Added Human Capital* (VAHU) formulated as follows:

**VAHU = VA / HC**

Where:

VAHU = *Value Added Human Capital* : ratio of VA to HC

VA = *Value Added*

HC = *Human Capital*: employee salaries and employee benefits

d) *Structural Capital Value Added* (STVA) formulated as follows:

**STVA = SC / VA**

Where:

STVA = *Structural Capital Value Added* : ratio of SC to VA

SC = *Structural capital* : VA – HC

VA = *Value Added*

**Financial Performance**

The dependent variable used in this study is Return On Equity (ROE). ROE is formulated as follows:

**ROE = EAT / Total of Equity**

## RESEARCH METHODOLOGY

### Object of Research

The object of research in this paper is fifteen (15) companies engaged in banking which are listed on the Indonesia Stock Exchange based on the ranking of the largest total assets.

### Population and Sampling

The population in this study are banking companies listed on the Indonesia Stock Exchange in 2014 - 2017. Sampling used in this study is purposive sampling method that is sampling that is not random and the sample is selected based on certain considerations and criteria. The criteria used in this sampling are fifteen (15) banking companies based on the ranking of the largest total assets listed on the Indonesia Stock Exchange.

### Types and Data Sources

In this study, the type of data used is secondary data, namely in the form of annual reports of each sample company. Data is obtained by accessing the Indonesia Stock Exchange (IDX) website, www.idx.co.id.

### Procedure of Data Collection

The procedure of data collection used in this writing is by literature study, namely the collection of supporting data in the form of literature and previous research to get an overview of the problems to be studied. Besides that, it also uses documentation techniques carried out by means of secondary data collection, in the form of audited company financial statements and company prospectuses for the period 2014-2017 which are listed on the Indonesia Stock Exchange, then followed by recording and calculation. The data needed in this study was obtained through www.idx.co.id.

**Data Analysis Techniques**

To analyze the effect of changing independent variables on the dependent variables both partially and jointly, multiple linear regression analysis was used using software of SPSS version 22.

**a) Descriptive Test**

According to Ghozali (2014) descriptive statistics provide an overview or explanation of a data seen from the average value (mean), standard deviation, variance, maximum and minimum.

**b) Classic Assumption Test**

**1) Normality Test**

The normality test aims to test whether in the regression model, the disturbing or residual variables have a normal distribution. The way to find out whether the data is normally distributed or not is by testing Kolmogorov-Smirnov (K-S) non-parametric statistics. Data is normally distributed if the Kolmogorov-Smirnov results show a significant value above 0.05.

The normality test can also be done using the normal-probability plot (P-P plot) test. Detection of normality can be done by looking at the spread of data (points) on the diagonal axis of the graph. If the data spreads around the diagonal line and follows the direction of the diagonal line, then the regression model meets the assumptions of normality.

**2) Multicollinearity Test**

Multicollinearity test is a condition where there is a perfect or near perfect linear relationship between independent variables in the regression model. Multicollinearity test is used to test whether the regression model is found to have a correlation between independent variables. A good regression model should be free of multicollinearity or there is no correlation between the independent variables. Multicollinearity test can be seen from a) Tolerance value must be> 0,1 or; b) Variance Inflation Factor (VIF) value <10.

**3) Autocorrelation Test**

The autocorrelation test aims to examine whether in the linear regression model there is a correlation between the confounding errors in period t with the interfering errors in the t-1 period or the previous period. Autocorrelation problems may occur in data of time series (data of sequential time), whereas in cross section data (cross time), autocorrelation problems are rare. A good regression model is a regression model that is free of autocorrelation.

This autocorrelation test is done using the Run Test. Run Test is used to see whether residual data occurs randomly or not (systematically). If between residuals there is no correlation, it is said that the residuals are random or random. The absence of the symptoms of autocorrelation can be seen in a significant probability greater than $\alpha = 0.05$.

**4) Heteroscedasticity test**

Heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residual one observation to another observation. If the residual variance from one observation to another observation remains, it is called homoskedasticity. A good regression model is that homoskedasticity or heteroscedasticity does not occur.

One way to detect the presence or absence of heteroscedasticity symptoms is to look at the plot graph between the predictive value of the dependent variable (ZPRED) and the residual (SRESID). If there are certain patterns, such as the existing points form a certain pattern that is regular (wavy, widened and then narrowed), then it indicates that heteroscedasticity has occurred. If there is no clear pattern, and the points spread above and below the number 0 (zero) on the Y axis, then there is no heteroscedasticity.

**c) Multiple Linear Regression Analysis**

Multiple linear regression analysis is used to predict how the dependent variable (ups and downs), if two or more independent variables as predictor factors are manipulated (increase-decrease in value). This analysis model was chosen because this study was designed to examine the independent variables that influence the non-independent variables.

The multiple linear regression equation can be formulated as follows:

$$\mathbf{Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e}$$

Where:

| | |
|---|---|
| Y | = Return On Equity (ROE) |
| $\beta_1 - \beta_3$ | = Regression Coefficient |
| $X_1$ | = Value Added Capital Employed (VACA) |
| $X_2$ | = Value Added Human Capital (VAHU) |
| $X_3$ | = Structural Capital Value Added (STVA) |
| e | = Standard Error |

**d) t-Test**

The t-test is used to test how far the influence of independent variables individually on the dependent variable. The value of the t-test can be seen based on the results of SPSS software processing in the coefficients table, sig column. on each independent variable, with the decision-making criteria as follows:

a. If the probability is > 0.05 then $H_A$ is rejected
b. If the probability is < 0.05 then $H_A$ is accepted

In addition, another way to find out the results of the t-test is to compare the t-count with the t-table value. If the value of t-count is greater than the value of t-table, it means that the hypothesis is accepted, i.e. independent variables individually affect the dependent variable.

**e) F-Test**

The F-test is used to test the effect of the independent variables together on the dependent variable. Decision making is based on the sig. value. Obtained from the results of data processing using SPSS software with the following decision-making criteria:

a. If the probability is > 0.05 then $H_A$ is rejected
b. If the probability is < 0.05 then $H_A$ is accepted

In addition, another way to find out the results of the F-test is to compare the value of F-count with the value of F-table. If the value of F-count is greater than the value of F-table, then the hypothesis is accepted, meaning that all independent variables together affect the dependent variable.

**f) Coefficient of Determination**

This test is intended to determine the best level of certainty in the regression analysis expressed by the coefficient of determination ($R^2$). The magnitude of the coefficient of determination is 0 to 1. The closer it is to 0, the smaller the influence of all independent variables on the dependent variable, or in other words the smaller the ability of the model to explain changes in the value of the dependent variable. If the coefficient of determination approaches 1, it can be said that the model is stronger in explaining the independent variables to the dependent variable.

## RESULTS AND DISCUSSION

### Descriptive Statistics

Table 1. Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| ROE (Y) | 60 | ,0149 | ,2480 | ,116583 | ,0506436 |
| VACA (X1) | 60 | ,1295 | ,3870 | ,248758 | ,0602902 |
| VAHU (X2) | 60 | 1,1340 | 3,5724 | 2,324390 | ,5945043 |
| STVA (X3) | 60 | ,1182 | ,7201 | ,538442 | ,1321997 |
| Valid N (listwise) | 60 | | | | |

*Source: Secondary data processed, 2019*

During the period of 2014-2017, the financial variables in the form of profitability (ROE) of banking companies listed on the Indonesia Stock Exchange had an average of 0.1166 or 11.66%. This shows that the average sample company is able to get a net profit of 11.66% of the company's equity. The lowest ROE value is 0.0149 or 1.49% and the highest ROE value reaches 0,2480 or 24,80%. From the table, column N shows the amount of data used, which is 60 datas.

The lowest (minimum) VACA value of 0,1295 is found in Bank Danamon Tbk in 2015 and the highest value (maximum) of 0,3870 is in Bank Jabar Banten, Tbk in 2015. Whereas the average value is 0,2487 and the standard deviation value is 0,0603.

The lowest (minimum) VAHU value of 1,1340 is found in Bank Bukopin Tbk in 2017 and the highest value (maximum) of 3,5724 is in Bank Central Asia, Tbk in 2017. While the mean value is 2,3848 and the standard deviation value is 0,6104.

The lowest STVA value (minimum) of 0,1182 is found in Bank Bukopin Tbk in 2017 and the highest value (maximum) of 0,7201 is in Bank Central Asia, Tbk in 2017. While the average value is 0,5384 and the standard deviation value is 0,1322.

**Classic Assumption Test**

***Normality Test***

Figure 2. Normal P-Plot Graph

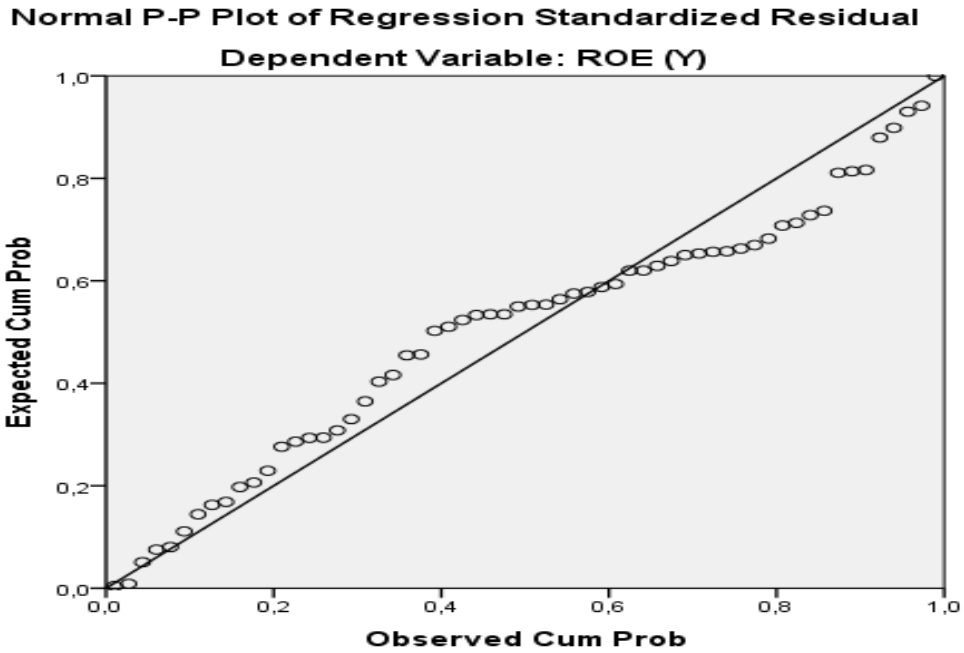


Table 2. One-Sample Kolmogorov-Smirnov Test

| | | Standardized Residual |
|---|---|---|
| N | | 60 |
| Normal Parameters[a,b] | Mean | ,0000000 |
| | Std. Deviation | ,97424460 |
| Most Extreme Differences | Absolute | ,125 |
| | Positive | ,125 |
| | Negative | -,119 |
| Test Statistic | | ,125 |
| Asymp. Sig. (2-tailed) | | ,121[c] |

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

*Source: Secondary data processed, 2019*

Normality testing shows residual values that are normally distributed. This is indicated by Figure 2, namely the P-P Plot graph which shows that the points (data) spread around the diagonal line and follow the direction of the diagonal line. In addition, the probability value of the Kolmogorov Smirnov test shows significance greater than 0,05, which is equal to 0,121. This means that the data in this study are normally distributed.

***Multicollinearity Test***

Table 3. Multicollinearity Test Result

| | | | Collinearity Statistics | |
|---|---|---|---|---|
| Model | | Sig. | Tolerance | VIF |
| 1 | (Constant) | ,000 | | |
| | VACA (X1) | ,000 | ,968 | 1,033 |
| | VAHU (X2) | ,000 | ,111 | 8,993 |
| | STVA (X3) | ,344 | ,111 | 9,000 |

a. Dependent Variable: ROE (Y)

*Source: Secondary data processed, 2019*

Based on the test results above, the independent variables have Tolerance values greater than 0,10 and VIF values that are smaller than 10. This means that all the independent variables used in this study do not show any symptoms of multicollinearity in the regression model.

### *Autocorrelation Test*

Table 4. Autocorrelation Test

| | Standardized Residual |
|---|---|
| Test Value[a] | ,12915 |
| Cases < Test Value | 30 |
| Cases >= Test Value | 30 |
| Total Cases | 60 |
| Number of Runs | 35 |
| Z | 1,042 |
| Asymp. Sig. (2-tailed) | ,298 |

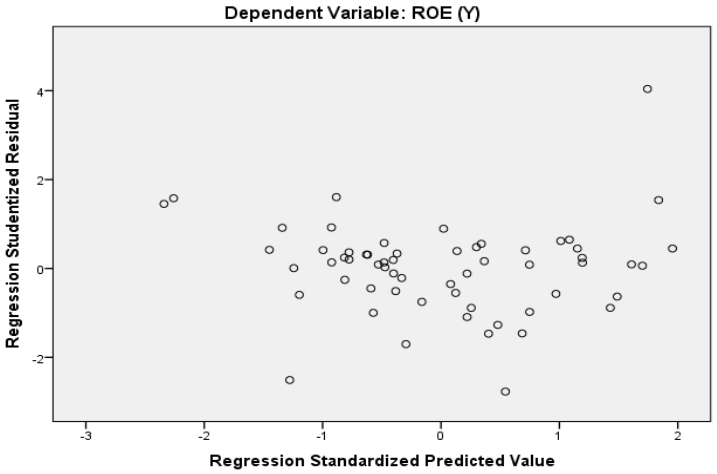
a. Median

*Source: Secondary data processed, 2019*

The SPSS output shows the value of Asymp. Sig. of the residual value of 0,298, which means greater than 0,05 (p > 0,05). Thus, the data used is quite random or random so that there is no problem of autocorrelation between each observation year of the study.

### Heteroscedasticity Test

Figure 3. Scatterplot Graph




*Source: Secondary data processed, 2019*

From the scatterplot diagram above it can be seen that the points spread randomly (there are no specific patterns / plots) and spread well above and below the number 0 on the Y axis. This can be concluded that the regression model has no symptoms of heteroscedasticity.

**Multiple Linear Regression Analysis**

Table 5. Multiple Linear Regression Analysis Result

| Model | | Standardized Coefficients Beta | T | Sig. |
|---|---|---|---|---|
| 1 | (Constant) | | -17,260 | ,000 |
| | VACA (X1) | ,647 | 21,078 | ,000 |
| | VAHU (X2) | ,541 | 5,971 | ,000 |
| | STVA (X3) | ,086 | ,954 | ,344 |

a. Dependent Variable: ROE (Y)

*Source: Secondary data processed, 2019*

Based on the results of processing the data above, the regression equation is obtained as:

**$Y = 0{,}647\ X_1 + 0541\ X_2 + 0{,}086\ X_3$**

**t-Test**

Based on the Table 5, it is obtained that the value is greater than the value (21,409 > 1,994) and significance < 0.05 (0,000 < 0.05), then $H_A$ is accepted which means that VACA has an effect on ROE.

Based on the Table 5, it is obtained that the value is greater than the value (4,926 < 1,994) and significance < 0,05 (0,000 < 0,05), then $H_A$ is accepted which means that VAHU has an effect on ROE.

Based on the Table 5, it is found that the value is smaller than the value (1,331 < 1,994) and significance> 0.05 (0,344 < 0,05), then $H_A$ is rejected which means that STVA has no effect on ROE.

**F-Test**

Table 6. ANOVA[a]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | ,144 | 3 | ,048 | 346,774 | ,000[b] |
| | Residual | ,008 | 56 | ,000 | | |
| | Total | ,151 | 59 | | | |

a. Dependent Variable: ROE (Y)

b. Predictors: (Constant), STVA (X3), VACA (X1), VAHU (X2)

*Source: Secondary data processed, 2019*

Based on the table above, it is obtained that the value (346,774 > 2,73) and significance < 0,05 (0,000 < 0,05), then $H_A$ is accepted. So, it can be concluded that VACA, VAHU, STVA have an effect simultaneously on ROE.

**Coefficient of Determination**

Table 7. Coefficient of Determination Result

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | ,974[a] | ,949 | ,946 | ,0117485 |

a. Predictors: (Constant), STVA (X3), VACA (X1), VAHU (X2)

b. Dependent Variable: ROE (Y)

*Source: Secondary data processed, 2019*

In the table above, the value of R indicates multiple correlation, namely the correlation between two or more independent variables on the dependent variable. R values range from 0 to 1. If the value is close to 1, then the relationship is getting tighter. The R number is 0,974; meaning that the correlation between the VACA, VAHU, and STVA variables is 0,974. This means that there is a close relationship because the value is close to 1.

The R Square number is 0,949 which is the result of the square of the correlation coefficient (0,974 x 0,974 = 0,949). The Standard Error of the Estimate is 0,0117.

The adjusted coefficient of determination (Adjusted R Square) is 0,946. This shows that the ability of independent variables (VACA, VAHU, and STVA) in explaining the dependent variable (ROE) is 94,6%, while 5,4% of the rest has not been able to be explained by the three independent variables.

**CONCLUSIONS AND RECOMMENDATIONS**

From the results of the t-Test, VACA on ROE it was found that VACA had an effect on ROE. From the results of the t-Test, VAHU on ROE, the VAHU results affect ROE. The results of the t test between STVA and ROE indicate that STVA does not affect ROE. The results of the F test, VACA, VAHU, and STVA on ROE, indicate that VACA, VAHU, and STVA have a simultaneous effect on financial performance (ROE).

Based on the empirical findings following recommendations are made:

a. For investors it is recommended to conduct an analysis first before investing in a company to minimize losses and investors must be able to know how the investment growth in a company in the future.
b. For the next researcher, it is recommended to use research samples from other companies listed on the Stock Exchange with a longer period, so that the results of the study can describe the conditions of Intellectual Capital in Indonesia.

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