THE IMPACT OF INTELLECTUAL CAPITAL ON FIRM VALUE AND FINANCIAL PERFORMANCE AS INTERVENING VARIABLES IN MANUFACTURING COMPANIES IN THE BASIC AND CHEMICAL INDUSTRIAL SECTORS ON INDONESIA STOCK EXCHANGE YEAR 2012-2020

Pertiwi Marpaung¹, Rina Br Bukit², Yeni Absah³
Faculty of Economic and Business Universitas Sumatera Utara
Corresponding Email: tiimarpaung21@gmail.com

Abstract
This study aims to determine the effect of intellectual capital on firm value and financial performance as an intervening variable. In addition, this study also aims to determine whether financial performance can be used as an intervening variable in this research model. This type of research is quantitative research. The population in this study are manufacturing companies in the basic and chemical industrial sectors listed on the Indonesia Stock Exchange. Samples were taken using a non-probability sampling technique with purposive sampling method, so that 13 companies were selected with 117 total observations. The data analysis technique used path analysis technique. The results of the analysis show that VACA and VAHU have no significant effect on financial performance while STVA has a significant effect on financial performance. VACA and VAHU have a significant effect on firm value while STVA has no significant effect. The financial performance variable cannot mediate the effect of VACA and VAHU on firm value while it can mediate the effect of STVA on firm value.

Keywords: Intellectual Capital, Firm Value, Financial Performance

1. INTRODUCTION
An increase in the value of the company signifies a great achievement of the company's main goals, therefore it is very important for the company to do so. According to Riny (2018), in the company's stock price, the value of the company refers to the investor's assessment of the success rate of managing company resources. The higher the stock price, the higher the value of the company. Meanwhile, according to Noerirawan (2012) the value of the company is something that must be owned by the company, because it reflects the public's trust in the company after several years since its inception until now.

The explanation above shows how often the stock price is associated with the value of the company and the level of success of the investor's company. High stock prices can reflect high company value and increase investor confidence in both the company's current performance and its long-term prospects.

Good companies generally have a firm value (PBV ratio) greater than 1 (Elia, 2016). The greater the PBV value, the greater the share price in relation to book value per share. The greater the share price, the better the company's ability to create value for its shareholders. The company's success in creating this value certainly gives hope to shareholders in the form of significant income. The higher the stock price, the higher the value of the company; conversely, the lower the stock price, the lower the firm value (Elia, 2016). Research on the use of intellectual capital is interesting in Indonesia. Despite the controversy, there is no uniform approach in Indonesia to measure intellectual capital. The application of capital is a new phenomenon that has not been widely used by Indonesian companies (Meizaroh and Lucyanda, 2012: 66). In addition, much of the important data of the accounting profession is solely related to physical capital. The achievement of capital is the main topic that must be discussed in the company's annual report. In fact, public companies in Indonesia are still weak and do not disclose information about the intellectual property of their
capital. According to research by Purnomosidhi (2006), the average number of intellectual capital traits listed in the annual reports of public companies in Indonesia is 56%. Meanwhile, research by Suhardjanto and Wardhani (2010) shows that the average level of intellectual capital achievement of large companies in Indonesia is only 34.5%. Pulic (2000) proposes an indirect measurement of intellectual capital based on this concept, namely measuring the efficiency of the added value generated by the company's intellectual ability, known as the Value, added Intellectual Coefficient, or VAICTM. The main components of VAICTM can be seen in the company's resources, namely physical capital with value added from capital used (VACA), human capital with value added human capital (VAHU) and the structure of value-added capital adding structural capital (STVA). Then the components of intellectual capital can be analyzed separately to determine the ability of each variable to increase firm value. In addition, this study was chosen to focus on manufacturing companies in the basic and chemical industrial sectors because these industries have an important role in the Indonesian economy. Since the beginning of 2017, on the Indonesia Stock Exchange (IDX), the basic and chemical industry sectors have been able to record significant developments. Companies in the basic and chemical industries have seen their financial performance improve as a result of this. Even the most fundamental industrial and chemical sectors experienced unwavering growth, surpassing the financial sector as the second highest-growing sector.

The questions in this research are:
1. Does VACA affect financial performance?
2. Does VAHU affect financial performance?
3. Does STVA affect financial performance?
4. Does VACA affect firm value?
5. Does VAHU affect firm value?
6. Does STVA affect firm value?
7. Does financial performance affect firm value?
8. Does financial performance mediate the effect between VACA and firm value?
9. Does financial performance mediate the effect between VAHU and firm value?
10. Does financial performance mediate the effect between STVA and firm value?

2. THEORY BASIS AND LITERATURE REVIEW
2.1. Theory Basis
Stakeholder Theory

In stakeholder theory according to Ghozali and Chariri (2007: 409) states that the company is not an entity that operates solely for its own benefit, but rather for stakeholders (shareholders, employees, creditors, consumers, suppliers, government, society and others). Companies need to maintain relationships with their stakeholders by meeting their wants and needs, especially stakeholders who have authority over the availability of resources used in the company’s operations, for example labor, markets for company products and others.

2.2. Resources Based Theory

In this study, the theory used in company valuation using resource-based theory (RBT) is a theory that discusses assets owned by companies and how companies can process and use their resources properly (Bontis, 2000). A company is considered as a collection of tangible and intangible assets or capabilities (Firer and Williams, 2003). When all intellectual capital resources owned by a company are managed and used properly, it will create added value for the company that affects financial performance, company growth and market value. Resource Based Theory-based approach can conclude that intangible assets (intellectual capital) are resources owned by the company that can affect the company’s performance and in turn increase the value of the company, one of which can come from the company's stock price.
3. LITERATURE REVIEW

3.1. Firm Value

The value of the company is a value that reflects the market price of the company's shares that describe dividend decisions and investor assessments of the company's development. The value of a company is related to the company’s stock price. "Corporate value is the company's performance as reflected by the stock price formed by the demand and supply of the capital market which reflects the public's assessment of the company's performance” Harmono (2009: 233).

\[ PBV = \frac{\text{Share}}{\text{Book Value Per Share}} \]

3.2. Financial Performance

Financial performance is a complete view or condition of the company's finances for a certain period/period of time. Financial performance is a description of the financial condition of a company, Sawir (2005). Meanwhile, according to Munawir, (2006) financial performance is the work performance that has been achieved by the company in a certain period and is stated in the financial statements of the company concerned. Through financial performance the company can evaluate the efficiency and effectiveness of the company's activities in a certain period and financial performance can reflect the company's ability to manage and allocate its resources. Measurement of company performance is needed in relation to customer satisfaction, internal processes, activities and innovations in the organization.

\[ \text{ROA} = \frac{\text{Net Profit After Tax}}{\text{Total Assets}} \]

3.3. Intellectual Capital

In Indonesia itself, the IC phenomenon began to develop, especially after the emergence of PSAK N0 19 regarding intangible assets although it was not stated explicitly, where in Paragraph 09 mentioned several examples of intangible assets including knowledge and technology, design and implications of new systems, licenses, rights intellectual property, market knowledge and trademarks. Intellectual capital can be said as added value is the most objective indicator in assessing business success and also because IC cannot create its own value. According to Hansen and Mowen (2009) added value is very important for management in improving profitability through efficiency that focuses on the relationship between various activity inputs and activity outputs.

3.4. Intellectual Capital Component

Dewi (2011) explains that in calculating intellectual capital, the 3 main components in it are:

Value added of Capital Employed (VACA)

\[ \text{VACA} = \frac{\text{VA}}{\text{CE}} \]

Value added of Human capital (VAHU)

According to Tan et. al. (2007) VAHU indicates the ability of human capital to create value added in the company, the formula used is:

\[ \text{VAHU} = \frac{\text{VA}}{\text{HC}} \]

Structural capital value added (STVA)

STVA is an indicator of structural capital (structural capital) or SC on value added in the company. The company's structural capital consists of four elements, namely System, structure, strategy, and culture, the formula used:

\[ \text{STVA} = \frac{\text{SC}}{\text{VA}} \]

4. RESEARCH METHODS

4.1. Descriptive Statistical Analysis

Descriptive statistical analysis was used to determine the characteristics of the sample used and to describe the variables in the study. Descriptive statistical analysis consists of the number of samples, range, minimum value, maximum value (Ghozali, 2013).
4.2. Panel Data Regression Analysis

Panel data is data collected by cross section and at a certain time period. In estimating model parameters with panel data, there are several techniques, namely:

1. Common Effect Model or Pooled Least Square
   This technique assumes that the existing combined data shows the actual condition. The results of the regression analysis are considered valid for all objects at all times. The weakness of this assumption is the incompatibility of the model with the actual situation. The condition of each object is different, even one object at a time will be very different from the condition of the object at another time (Winarno, 2015).

2. Fixed Effect Model
   This model can show differences in constants between objects, even with the same regressor coefficient. The fixed effect here means that an object has a constant constant whose magnitude for various time periods and also its regression coefficient (Winarno, 2015).

3. Random Effect Model

4.3. Classic assumption test

Normalization test
The analytical tool used in this study is the Kolmogorov – Smirnov test with Lilliefors correction. Decision making regarding normality is as follows:

a. If \( p < 0.05 \) then the data distribution is not normal
b. If \( p > 0.05 \) then the data distribution is normal

Data processing in this study was carried out with the help of a computer using SPSS 20.

Multicollinearity Test
The way to detect multicollinearity is by observing the Variance Inflation Factor (VIF) and TOLERANCE values. The VIF limit is 10 and the TOLERANCE value is 0.1. If the VIF value is greater than 10 and the TOLERANCE value is less than 0.1, then multicollinearity occurs.

Autocorrelation Test
For autocorrelation test, the test is done through Run Test. This test is part of non-parametric statistics that can be used to test whether there is a high correlation between residuals. Decision making is done by looking at the Asymp value. Sig (2-tailed) test Run Test. If the Asymp.Sig (2-tailed) value is greater than the 0.05 significance level, it can be concluded that there is no autocorrelation.

Heteroscedasticity Test
The way to detect the presence or absence of heteroscedasticity is to look at the graph plot between the residual value of the dependent variable (SRESID) and the predicted value (ZPRED) (Santoso, 2006). The basis of the analysis is: (a) If there is a certain pattern, such as dots that form a regular pattern (wavy, widen and then narrowed), then it indicates that heteroscedasticity has occurred. (b) If there is no clear pattern, and the points spread above and below the numbers on the Y axis, then there is no heteroscedasticity. Uji Hipotesis.

Simultaneous Significant Test (F Test)
This test shows whether all the independent variables, namely VACA, VAHU and STVA, which are included in this research model have a simultaneous or joint effect on the dependent variable, namely firm value. These independent variables are said to have a simultaneous and significant effect on the independent variables if they have a significant value (sig) below 0.05. (Ghozali, 2013).

4.4. Partial Significance Test (t-test)
This test is carried out to see the magnitude of each independent variable by using a t-test, which is a test carried out to see whether there is a significant effect of each independent variable on the dependent variable. Partial test was used to determine the effect of each independent variable, namely VACA, VAHU and STVA on the dependent variable, namely firm value. The
independent variable is said to have an influence on the dependent variable if the variable has a significant value (sig) below 0.05.

4.5. Coefficient of Determination Test ($R^2$)

The coefficient of determination is the magnitude of the contribution of the independent variable to the dependent variable. The measurement of the percentage of truth from the regression test can be seen through the value of the coefficient of determination. If the $R^2$ value of a regression is close to one, then the regression is getting better and if it is getting closer to zero, then the independent variable as a whole cannot explain the dependent variable.

4.6. Path Analysis

Direct effect is the effect of one independent variable to the dependent variable without going through another variable called the intervening variable. The direct and indirect effects can be seen as follows:

1. Direct Effect

The results of the influence of X1, X2, and X3 on Y and Z on Y. Or more simply can be seen as follows:

$$X_1, X_2, X_3 \rightarrow Y$$

$$Z \rightarrow Y$$

2. Indirect Effect

The result of the indirect effect is from X to Y through Z, or more simply it can be seen as follows:

$$X_1 \rightarrow Y \rightarrow Z$$

$$X_2 \rightarrow Y \rightarrow Z$$

$$X_3 \rightarrow Y \rightarrow Z$$

The explanation of the formula above shows that the direct result is obtained from the path analysis of the beta value, while the indirect result is obtained by multiplying the rho coefficient (beta value) passing through the intermediate variable (connector) with the direct variable. The regression equation can be formulated as follows:

$$ROA = \alpha + \beta_1VACA + \beta_2VAHU + \beta_3STVA + \varepsilon_2$$

$$PBV = \alpha + \beta_1VACA + \beta_2VAHU + \beta_3STVA + \beta_4ROA + \varepsilon_1$$

4.7. Classic assumption test

Normality test

Note that based on Figure, it is known that the probability value of the J-B statistic is 0.327534. Because the probability value of p, which is 0.327534, is greater than the significance level, which is 0.05. This means that the assumption of normality is met.
Multicollinearity Test

The results of the multicollinearity test, it can be concluded that there are no symptoms of multicollinearity between the independent variables. This is because the VIF value < 10 (Ghozali, 2013).

Autocorrelation Test with Durbin-Watson Test

<table>
<thead>
<tr>
<th>Log likelihood</th>
<th>-146.0397</th>
<th>Hannan-Quinn criter.</th>
<th>2.652313</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>10.00523</td>
<td>Durbin-Watson stat</td>
<td>2.242846</td>
</tr>
</tbody>
</table>

Source: EViews 10 Software Results

The value of the Durbin-Watson statistic is 2.242846. Note that since the Durbin-Watson statistic is between 1 and 3, i.e. 1 < 2.242846 < 3, the non-autocorrelation assumption is met. In other words, there is no high autocorrelation symptom in the residuals.

Heteroscedasticity Test

<table>
<thead>
<tr>
<th>Breusch-Pagan-Godfrey</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
</tr>
<tr>
<td>Obs*R-squared</td>
</tr>
<tr>
<td>Prob. F(4,111)</td>
</tr>
<tr>
<td>Prob. Chi-square(4)</td>
</tr>
</tbody>
</table>

Source: EViews 10 Software Results

Based on the results of the Breusch-Pagan test in Table 5.3 it is known the value of Prob. in the line Obs*R-squared 0.8978> 0.05, which means there is no heteroscedasticity.

4.9. Determination of the Estimated Model between the Common Effect Model (CEM) and Fixed Effect Model (FEM) with the Chow.

Test to determine whether the estimation model is CEM or FEM in forming a regression model, the Chow test is used. The hypothesis being tested is as follows.

H_0: The CEM model is better than the FEM model.
H_1: FEM model is better than CEM model

Here are the results based on the Chow test using EViews 10.

Table of Results from Chow Test

<table>
<thead>
<tr>
<th>Effects Test</th>
<th>Statistic</th>
<th>d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>1.505335</td>
<td>(12,99)</td>
<td>0.1348</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>19.441731</td>
<td>12</td>
<td>0.0784</td>
</tr>
</tbody>
</table>

Source: EViews 10 Software Results

The decision-making rules for the hypothesis are as follows.
If the probability value of Chi-square cross-section <0.05, then H_0 is rejected and H_1 is accepted.
If the Chi-square cross-section probability value is 0.05, then H_0 is accepted and H_1 is rejected.
Based on the results of the Chow test in Table 5.5, it is known that the probability value is 0.0784. Because the probability value is 0.0784 > 0.05, the estimation model used is the common effect model (CEM).

4.10. Determination of the Estimated Model between the Common Effect Model (CEM) and the Random Effect Model (REM) with the Lagrange-Multiplier Test

The following are the results based on the Lagrange-Multiplier Test using EViews 10.

Table of Results from the Lagrange Multiplier Test
Breusch-Godfrey Serial Correlation LM Test:

<table>
<thead>
<tr>
<th></th>
<th>Prob. F(2,109)</th>
<th></th>
<th>Prob. Chi-Square(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>9</td>
<td>Prob. F(2,109)</td>
<td>6</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>4.78759</td>
<td>Prob. Chi-Square(2)</td>
<td>0.091</td>
</tr>
</tbody>
</table>

Source: EViews 10 Software Results

Based on the results of the Lagrange-Multiplier Test in Table 5.6, it is known that the probability value is 0.0913. Because the probability value is 0.0913 > 0.05, the estimation model used is the common effect model (CEM).

Path Analysis

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
<th>Prob. F</th>
<th>R-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.986135</td>
<td>1.729119</td>
<td>1.14864</td>
<td>0.2532</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VACA -&gt; ROA</td>
<td>0.009947</td>
<td>0.023789</td>
<td>0.418121</td>
<td>0.6767</td>
<td>0.16225</td>
<td>0.044611</td>
</tr>
<tr>
<td>VAHU -&gt; ROA</td>
<td>-0.020743</td>
<td>0.041851</td>
<td>-0.495641</td>
<td>0.6211</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STVA -&gt; ROA</td>
<td>5.474562</td>
<td>2.615373</td>
<td>2.093225</td>
<td>0.0386</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.082193</td>
<td>0.266759</td>
<td>-0.308117</td>
<td>0.7586</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VACA -&gt; PBV</td>
<td>0.012158</td>
<td>0.003651</td>
<td>3.329581</td>
<td>0.0012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAHU -&gt; PBV</td>
<td>0.016706</td>
<td>0.006426</td>
<td>2.59973</td>
<td>0.0106</td>
<td>0.000001</td>
<td>0.265003</td>
</tr>
<tr>
<td>STVA -&gt; PBV</td>
<td>0.436191</td>
<td>0.408901</td>
<td>1.066739</td>
<td>0.2884</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA -&gt; PBV</td>
<td>0.028741</td>
<td>0.014492</td>
<td>1.983192</td>
<td>0.0498</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Coefficient of Determination Analysis

Based on Table, it is known that the coefficient of determination (R-squared) of ROA is $R^2=0.044$. This value can be interpreted as VACA, VAHU, STVA simultaneously or jointly affect the ROA of 4.4%. It is known that the coefficient of determination (R-squared) of PBV is $R^2=0.265$. This value can be interpreted as VACA, VAHU, STVA, ROA simultaneously or jointly affect the PBV of 26.5%.

Simultaneous Effect Significance Test (F Test)

The F test aims to test the effect of the independent variables together or simultaneously on the dependent variables. Based on Table, it is known that the value of Prob. (F-statistics) of ROA, which is 0.16225 0.05, it can be concluded that VACA, VAHU, STVA, simultaneously, have no significant effect on the ROA variable.

Known the value of Prob. (F-statistics) of PBV, which is 0.000001 0.05, it can be concluded that VACA, VAHU, STVA, ROA, simultaneously, have a significant effect on the PBV variable.

Random effects are used to overcome the weakness of the fixed effect method which uses quasi-variables, so that the model experiences uncertainty (Winarno, 2015). The implementation of
reforms in various fields requires the government to respond community demands. One of the demands is the implementation of regional autonomy in a broad, real, and responsible manner, especially in the financial sector. Some of the central issues of regional autonomy that occurred, including corruption, mark-up of goods and services and other dysfunctional behavior that resulted in financial losses. As a result, local governments are less able to carry out creative activities in the success of regional development and support national development. To support the creation of good governance, a professional internal control is needed in carrying out government duties. Therefore, the regions form an internal supervisory unit called the Regional Inspectorate. Regional Inspectorate has the task of carrying out general supervision activities of the regional government and other tasks assigned by the regional head.

5. CONCLUSIONS AND RECOMMENDATIONS
5.1. Conclusion
Based on the results of research and discussion in the previous chapter, several conclusions can be drawn as follows:
1. VACA has a positive but not significant effect on ROA.
2. VAHU has a negative but not significant effect on ROA.
3. STVA has a positive and significant effect on ROA.
4. VACA has a positive and significant effect on PBV.
5. VAHU has a positive and significant effect on PBV.
6. STVA has a positive but not significant effect on PBV.
7. ROA has a positive and significant effect on PBV.
8. VACA has no significant effect on ROA. Meanwhile, ROA has a significant effect on PBV. So that ROA did not significantly mediate the relationship between VACA and PBV.
9. VAHU has no significant effect on ROA. Meanwhile, ROA has a significant effect on PBV. So that ROA does not significantly mediate the relationship between VAHU and PBV.
10. STVA has a significant effect on ROA and ROA has a significant effect on PBV. Thus, significant ROA mediates the relationship between STVA and PBV.

5.2. Suggestion
The suggestions from researchers for further research are as follows:
1. Further research is recommended to look for other variables that are considered to be able to influence the increase in firm value, such as liquidity, firm size, asset structure and sales growth. This is important to increase added value in the eyes of investors who will invest.
2. It is recommended that further research can take samples and research objects that are broader in covering other sectors.
3. Further research is recommended to extend the research period so that it can see trends that occur in the long term which can describe the actual conditions.
4. Further research may consider the object of research in more than 1 country.
REFERENCES


THE IMPACT OF INTELLECTUAL CAPITAL ON FIRM VALUE AND FINANCIAL PERFORMANCE AS INTERVENING VARIABLES IN MANUFACTURING COMPANIES IN THE BASIC AND CHEMICAL INDUSTRIAL SECTORS ON INDONESIA STOCK EXCHANGE YEAR 2012-2020

Pertiwi Marpaung, Rina Br Bukit, Yeni Absah


Jumaring. 2006. Analisis Laporan Keuangan, Cetakan Pertama, PT Bumi Aksara, Jakarta


Uhum, I. 2008. intellectual capital dan Kinerja Keuangan Perusahaan; Suatu Analisis Dengan Pendekatan Partial Least Square”. Simposium Nasional Akuntansi XI.