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## Intellectual Capital to Value of Business Creation Considering Previous Return on Assets

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**Abstract.** This research is based on the findings of previous studies that use variable Return on Assets in the same period as the period of the components of intellectual capital measured. In fact, the company in carrying out the components of intellectual capital refers to the previous period of Return on Assets. Therefore, this study aims to investigate the previous period of Return on Assets on the influence of the components of intellectual capital; which consists of Value Added Human Capital, Value Added Capital Employment, and Structural Capital Value Added; to the value of business creation. This study uses moderating regression analysis with panel data for the 2013-2015 period in the manufacturing industry listed on the IDX. The results, using the fixed effects model of panel data, prove that the previous period of Return on Assets weakened the positive influence of Value Added Capital Employment on the value of business creation.

Keywords: Intellectual capital, Return on Asset

### Introduction

Intangible resources began to be considered its urgency since the 1990s and followed by management, measurement and assessment of intangible resources (Edvinson and Malone, 1999). This trend encourages companies to have core competencies that show deep skills to produce significant values or benefits (Hamel and Prahalad, 1994). Core competence encourages companies to gain advantage which is the achievement of economic performance.

Previous research indicates that companies that invest in intangible resources are proven to experience growth in business turnover and use potential strategic assets (Riahi-Belkaiou, 2003). One of the intangible resources studied for more than two decades is intellectual capital. Intellectual capital is referred to as the filler between policy and the book value of the company (Chen et al., (2005); Lev and Radhakrishnan (2003); Pulic (2000); and Edvinsson and Malone (1997)) that direct organizations to gain competitive advantage. For this reason, companies must create added value for physical capital and potential that can be used efficiently (Pulic, 1998).

The measurement of intellectual capital began to develop in an effort to encourage corporate value and increase competitive advantage. The intellectual capital component begins to be explored (Pulic, 1998; 1999; and 2000) in the effort to create value (Bollen et al., 2005). Companies are required to be able to innovate in order to introduce new products and services or improvements that already exist (OECD, 2006). Intellectual capital emphasis on enhancing the development of knowledge and creativity of employees as a means to increase value added began to be studied (Young et al., 2009). Likewise, the company's ability to manage assets, resources, and intellectual capital is considered to create added value and competitive advantage in innovation and performance development to optimize capital in generating income (Ekowati et al, 2012).

Increasing revenue growth from year to year indicates a better value creation. Companies will be able to generate more profits as a result of operating their assets. The company's ability to generate profits by using its assets is what then encourages the company to begin to improve its intellectual capital in gaining competitive advantage in an effort to increase the value of business creation. This condition which encourages this research is different from previous studies, where intellectual capital development

activities proved to encourage the achievement of Return on Assets in the same period (Sirapanji and Hatane (2015); Putera, et al (2014); Mehri, et al (2013); and Khanqah, et al (2012)). While in this study, will investigate whether the magnitude of Return on Assets in the previous period contributed to the influence of the intellectual capital component on income growth as a form of the value of business creation.

## Literature Review

**The knowledge economy.** Companies and national growth are synergies as a result of human mental activities, namely economic activities that focus on production (Lev, 2001). For this reason, knowledge and intellectual ability and innovation are inevitable factors in national economic development (Anon, 1998). This is based on the definition of a knowledge economy issued by OECD (1996) that the production, distribution and use of knowledge are the main drivers of growth, substitution creation, and reduced unemployment. For this reason, companies that are considered successful are companies that have competitive advantages (Prahalad and Hamel, 1998; Drucker, 1999) to contribute to national and global "knowledge" economy growth. To achieve this, it is important to focus on increasing and measuring intellectual capital. The intellectual capital component becomes very strategic (Foray, 2006) and encourages the creation and maintenance of values (Cabrita and Vaz, 2005 and Sveiby, 1997).

**Resource Based Theory.** The company will achieve optimal unity if the company has superior resources, which are scarce resources, difficult for competitors to follow (Porter, 1985). Companies get competitive advantage by holding, acquiring and effectively using strategic assets. These assets include tangible assets and intangible assets (Fierer and Williams, 2003) that are used and developed by companies in pursuit of competition and profitable strategies (Komnencic, 2012). With this superior resource in the form of intellectual capital, namely capital employment, human capital and structure capital, the company can then create value added that is useful for the work environment and companies that affect the profitability of the company itself (Barney, 1991).

**Stakeholder Theory.** Stakeholders have the right to be given information about company activities that affect them (Deegan, 2004). Although in number they need returns, but the value added is a more accurate measure than return because all activities carried out by the company must lead to the creation of value and use of intellectual resources.

Research conducted by Pulic (1998; 1999; 2000), his study did not directly measure the intellectual capital of a company, but proposed a measure to assess the efficiency of value added and as a result the company's intellectual ability (VAIC™). The main components of VAIC™ can be seen from the company's resources namely physical capital (VACA), Human Capital (VAHU), and Structural Capital (STVA).

The development of the intellectual capital component certainly requires the readiness of the company because all company activities must be focused on creating value. Therefore, the support of the company's ability to generate profits from its asset operations is expected to influence the implementation of the intellectual capital component in an effort to increase value creation. This study tries to investigate the role of return on assets, as a proxy of the company's ability to generate profits from operational assets, in the previous period on the influence of intellectual capital components: physical capital (VACA), Human Capital (VAHU), and Structural Capital (STVA); towards value creation by developing the hypothesis Return on Assets as moderating as follows:

- H1: *Previous period return on assets proved to be able to strengthen/weaken the influence of capital employed values added to the value of business creation*
- H2: *Previous period return on assets has been proven to strengthen/weaken the influence of human capital's added value to the value of business creation*

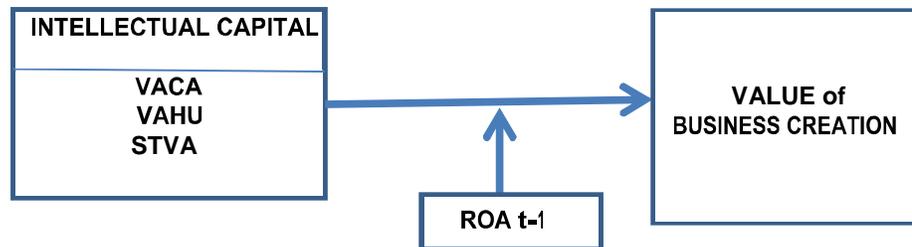
H3: *Previous period of return on assets has been proven to strengthen/weaken the influence of structural capital value added to the value of business creation*

## Research Method

Based on the background of the research problem which was later revealed in the construction of hypotheses, this study will use a population of companies in the manufacturing industry, with samples of manufacturing companies listed on the IDX for the period 2013 to 2015. The basis of this sampling takes into account the availability of published information as needed research (purposive sampling, Sekaran, 2013).

134 manufacturing companies that have been listed on the IDX since 2012, there are 72 companies that consistently have positive net income. Taking into account the data on Return on Assets that will be used is the Return on Assets of the previous period, the data collection on Return on Assets starts from 2012-2014. While data collection the intellectual capital component and value of business creation began in 2013-2015. Data is collected by downloading the Financial Report from the IDX website.

With the data collected, in accordance with the research objectives to be used in the previous period Return on Assets on intellectual capital; VACA, VAHU, STVA; towards the value of business creation, then the Surabaya framework is as follows:



The framework of the study using the following models:

$$\text{VALCREATE} = \alpha_0 + \alpha_1 \text{VACA} + \alpha_2 \text{VAHU} + \alpha_3 \text{STVA} + \alpha_4 \text{ROAt-1} + \alpha_5 \text{VACA} * \text{ROAt-1} + \alpha_6 \text{VAHU} * \text{ROAt-1} + \alpha_7 \text{STVA} * \text{ROAt-1} + \epsilon$$

Value of business creation is proxied by using VALCREATE which is measured by revenue growth, namely the ratio of changes in company sales in the year studied to the previous year divided by the previous year. This proxy is used to show if the increase in sales increases, it will signal the opportunity for the company to grow (Chen et al., 2005). For the measurement of the components of intellectual capital, this study follows the measurements built by Pulic (2000) (Ulum, 2007). Where, value added is measured by the amount of Operating profit, Employee costs, Depreciation and Amortization. Value added capital employed is proxied by VACA based on value added created by physical capital. It uses the ratio of value added to capital employed (available funds: equity, net income). Value added human capital is proxied by using VAHU, ratio of value added to human capital (Personnel expenses). Structural capital value added is proxied by STVA, the ratio of structural capital (value added minus human capital) to value added. While in previous studies (Chen et al. (2005); Huang, CJ and Liu, CJ (2005)) using Return on Assets in the same study period with other variables, this study uses ROAt-1 as a proxy of financial performance. previous period which is a moderating variable in this research model. ROAt-1 shows the company's ability to use all of its funds formed in assets used by operations in order to generate profits in the previous period (net income before tax previous period to the total asset previous period).

In order to investigate the Return on Assets as a moderator on the influence of intellectual capital

components on the value of business creation, this study uses moderated regression analysis of panel data in the test model. The data panel is a combination of cross section data and time series data, where the same cross section unit is measured at different times or data from several individuals who are observed in a certain period of time. Panel data is used by considering the diversity that occurs in cross section units and panel data can provide better resolution in dynamic change inference than cross section data. By using statistical software e-views 9, the research model is tested to find out which panel data model is most appropriate in testing hypotheses, whether common effects, or fixed effects, or random effects (Gujarati, 2012).

## Result and Discussion

Before testing the research model in order to test the hypotheses built, an analysis of the data used in this research is first carried out. Descriptive statistics from 72 companies in the manufacturing industry during the 3 years of research show that the average manufacturing industry has an average intellectual capital component below 100%. Although, there are some companies that have intellectual capital components above 100%. But when compared to the median that is not too far below the mean, this data indicates that many companies are below average. The VACA component shows that the average achievement of physical capital contributions can produce value added in manufacturing industry companies by 43.86%. The VAHU component shows that the average achievement of each Rupiah contribution invested in human capital can result in 75.18% of the company's added value. The STVA component shows the average contribution of structural capital that can produce value added for the company by 53.17%.

Meanwhile, with Return on Assets achieved in the previous period showing an average of 63.95% indicates that the company is relatively able to generate profits from its asset operations. That's why the previous period Return on Assets in this study was used as a moderating variable. VALCREATE as the dependent variable shows that the average sales growth rate of manufacturing industry companies for 3 years is only 15.72%. This value is relatively small when compared to the company's business to increase its value added from human capital investment.

Table 1. Descriptive Statistics

	VACA	VAHU	STVA	ROAMINI	VALCREATE
Mean	0.438553	0.751823	0.531686	0.639472	0.157180
Median	0.392715	0.648540	0.528140	0.609270	0.126355
Maximum	1.302000	3.431150	0.588220	1.384860	1.295100
Minimum	0.252670	0.413350	0.500030	0.504120	0.000590
Std. Dev.	0.162714	0.346457	0.018863	0.129940	0.160619
Skewness	2.094228	3.372115	0.890364	2.108649	3.679646
Kurtosis	8.920083	22.18472	3.323109	9.114431	23.61525
Observations	216	216	216	216	216
Cross sections	72	72	72	72	72

In testing hypotheses by using moderated regression panel data analysis, to obtain dynamic change inference, the model is first tested by using the common effects model and the fixed effects model. Then the Chow Test is performed. The results show that a better temporary model is the fixed effects model. After that, the model was tested using random effects and tested which one was better, whether using a fixed effects model or a random effect model using the Hausman Test. The results show that the fixed effect model is still better (Appendix).

Based on these results, this study uses panel data with the fixed effects model to test hypotheses. By considering getting an unbiased model, testing heteroscedasticity, autocorrelation and multicollinearity is done. As a result, the research model has a significant F test result with R- square of 47.73%, which means that the tested variable contributes to the value of business creation of 47.73%. There is no heteroskedastisitias problem (white-heteroscedasticity treatment has been done), there is no

autocorrelation problem (see durbin-watson at the output in the Appendix).

The results of testing the research model empirically prove that only VACA and VACA interaction with ROA in the previous period provides significant statistical results at alpha 10%. This indicates that the contribution of physical capital has a significant positive effect on the value of business creation. The test results give 2.48 points on the VACA coefficient, which means that every increase in physical capital to value added contribution will encourage an increase of 2.48 value of business creation. These results show that all material and corporate financial assets in the manufacturing industry provide a significant role in increasing sales growth. The larger the company invests in physical capital, the greater value creation will be (Ulum, 2007; Cabrita and Vaz, 2005; Pulic, 2000; and Sveiby, 1997). Because with the expansion of physical capital that is increasingly developing, the greater the opportunity for companies to be able to generate more income. The policy to increase physical capital usually begins with a long-term feasibility study. Thus, it is not surprising that companies have planned to expand, the company has projected revenue revenues in the future, which of course has taken into account the company's growth.

Furthermore, the hypothesis testing regarding ROA in the previous period which moderated the influence of intellectual capital components on the value of business creation shows that only the results of the interaction between VACA and ROA in the previous period gave significant results. Meanwhile, the interaction of VAHU with the previous period of ROA and the interaction of STVA with ROA in the previous period did not provide statistically significant results.

The test results show that the influence of human capital contribution on the company's value added (VAHU) to the value of business creation is insignificant. Likewise, the ROA of the previous period proved unable to strengthen/weaken the influence of human capital contributions on the company's value added (VAHU) to the value of business creation. The results of the VAHU component are the same as the results of the STVA component. The structural capital contribution to the company's value added (STVA) has no significant effect on the value of business creation. ROA in the previous period also proved to be unable to strengthen/weaken the influence of structural capital contributions on corporate value added (STVA) to the value of business creation.

While the results of testing the interaction of VACA with ROA in the previous period, prove that the previous period ROA proved to be significantly (at alpha 10%) can weaken the influence of physical capital contribution on the company's value added (VACA) to the value of business creation. This result is shown from the VACA interaction coefficient value with the previous period ROA is negative. Even though VACA testing of the value of business creation results in a significant positive influence. The results of this test are contrary to Chen et al. (2005) and Huang and Liu (2005) which show the better intellectual capital, the higher the ROA. However, because it is a reference to using different lag times.

The company's efforts to increase physical capital to increase revenue growth proved to be weakened by the company's ability to generate profits from the use of company assets in the previous period. This condition is expected to achieve ROA in the previous period which has not been able to encourage physical capital contributions to increase revenue. The amount of profit generated may not be used to develop physical capital, but for other activities, such as dividend distribution or the development of relatively large human capital or investments in large intangible portions. So, the amount of profit actually decreases the physical capital's ability to value creation. For example, companies have employees who have been trained with advanced technology, but the availability of high-tech infrastructure is not evenly distributed or even in discourse.

## Conclusion

This study succeeded in proving that in the manufacturing industry the previous period Return on Assets weakened the positive influence of one component of intellectual capital, namely capital employed value added, to the value of business creation. This study has the limitations shown in the R-squared which is

only 47%. These results have implications for further research to add control variables in order to increase the R-squared value. In addition, it is necessary to consider using a more appropriate moderating variable.

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