

# The Effect of Intellectual Capital on Firm's Value using Ownership Structure as Moderating Variable on Company Listed in Indonesia Stock Exchange period 2008-2015

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**Abstract**— This research aims to examine the effect of intellectual capital on firm's value using ownership structure as moderating variable. The intellectual capital was measured using a model of Value Added Intellectual Coefficient (VAIC<sup>tm</sup>) while the value of the company was measured using Tobin's Q. The proxy of ownership structure as a moderating variable is the percentage of managerial ownership and institutional ownership. Population of this research is the listed companies in Indonesia Stock Exchange with research period from 2008 to 2015. The data analysis used multiple regression equation with path analysis to test residual moderating variables. The result of this research indicates that intellectual capital has a positive effect on firm value while managerial ownership is moderating variable in this research. From this research, it is found that institutional ownership does not work as moderating variable.

**Keywords**— *Intellectual capital, VAIC<sup>tm</sup>, Firm Value, Managerial Ownership, Institutional Ownership*

## I. INTRODUCTION

Rapid development in science and technology in this era of globalization has intensified competition in the business world. Thus, to maintain the existence in the business world, companies must adapt by changing its strategy, from labor based strategy to knowledge based strategy. The adaption makes companies increasingly emphasized the importance of knowledge assets as a form of intangible assets, one of which is intellectual capital. *International Federation of Accountant (IFAC)* estimates that 50%-90% of firm's value depends on management of intellectual capital, rather than determined by the management of fixed assets (Widjanarko, 2006). According to Bontis *et al* (2000), Intellectual capital can be identified as a set of intangible assets (skills, competencies and resources) that drives firm's value. According Randa & Ariyanto (2012), intellectual capital effect on firm's value were also influenced by the presence of a majority shareholder control over the action of management in company, including the management of intellectual capital. Shareholder control is one of the core principal of corporate governance, namely ownership structure (Jensen & Meckling, 1976). There are two types of ownership structure, i.e. managerial ownership and institutional ownership. Research by Chen *et al* (2005), Bemby *et al* (2015) and Putra (2012) proves that intellectual capital has positive effect on firm's value. But, research by Solikhah (2010) cannot prove that intellectual capital has positive effect on firm's value. Inconsistencies results of research on intellectual capital effect on firm's value can be explained through a contingency approach. This approach allows other variables to act as a moderating factor (Ahadiat, 2008). Therefore, the writer will include ownership structures as a moderating variable on the study of intellectual capital effect on firm's value. Because Indonesia acknowledges intangible assets through PSAK no. 19 revised 2010, the writer will use

listed companies in Indonesian Stock Exchange as the subject of this research.

## II. LITERATURE REVIEW

### A. Resources Based Theory (RBT)

*Resources Based Theory* is a theory about company's resources, also how the company manages and utilizes its resources (Barney, 1991). *Resources Based Theory* and *Resources Based View* provide an important framework to explain and predicting the foundation of the company's competitive advantage and company's performance (Barney *et al*, 2011). *Resources Based Theory* always evolving over time. At this globalization era, companies begin to left the industrial and have entered the knowledge based economy, in the same way as the machine substituted human and animal work force a few centuries ago (Pulic, 1998). According to Barney (1991) *Resources Based Theory* is an approach that will enhance the company's ability to compete and improve its financial performance, control and utilize assets which are considered as an important resources. Resources can be said to be important if it meets three criteria, which are 1) these resources enable to help company get business opportunities, 2) these resources are difficult to be imitated or acquired in the market, and 3) these resources can be used for the benefit of the company itself. In conjunction with this research, *Resources Based Theory* explains the company will achieve a competitive advantage by managing its resources. One of the resources that are essential to the company is intellectual capital. Intellectual capital related to technology, knowledge, and organizational structure that able to give company an added value to compete.

### B. Intellectual Capital

Intellectual capital can be identified as a set of intangible assets (skills, competencies and resources) that drives firm's value (Bontis *et al.*, 2000). Bontis *et al.* (2000) added that intellectual capital was hard to understand at first, but when the company is exploiting intellectual capital already, it's able to give the company a new resources to compete and win. Edvinsson & Malone (1997) defines intellectual capital as accumulated output of the process of creation of three components, namely human resources, organizational resources and relational resources which is related to science and technology that can provide added value to the company in the form of competitive advantage. In addition, Brooking (1996) understand intellectual capital as accumulation of intangible wealth and able to run the company every day. Based on the definition above, it can be concluded that intellectual capital is company's resources in the form of intangible assets if it optimized then company can execute its strategy effectively, get a competitive advantage and then increasing the firm's value. To measure the intellectual capital, the most used model is the *Value Added Intellectual Coefficient (VAIC<sup>TM</sup>)* by Pulic (1998). VAIC<sup>TM</sup> does not take

measurement directly on intellectual capital, but the measuring based on how efficient the value added gained from intellectual capital management. Main components of VAIC<sup>TM</sup> include physical capital, human capital and structural capital (Pulic, 2000). In general, VAIC<sup>TM</sup> explain how much value is created from every rupiah invested in company's resources (Pulic, 2008).

### C. Firm's Value

Firm's value in this study is measured by Tobin's Q. Tobin's Q was developed by James Tobin of Yale University. Tobin's Q measurement is widely used in the financial research, especially in the corporate finance research. Tobin's Q assessed by comparing the market value to book value of company (Chung & Pruitt, 1994). However, despite its influence over many important aspect of corporate finance research, according to Chung and Pruitt (1994) only several managers use Tobin's Q in real-world decision analysis. The reason why managers do not use Tobin's Q often is because the availability of timely and accurate q data is severely limited when compared with known sources of other important financial variables, such as beta.

### 1. Agency Theory

Agency theory explain that the agency relationship arises when person or group (Principal) employ another person (Agent) to provide a service and then delegate decision making authority to the agent (Jensen & Meckling, 1976). This analogy is used to explain shareholder (Principal) and manager (agent). According to Jensen & Meckling (1976), one type of agency conflict that often occurs is conflict between shareholders and managers. The manager was given the job to run the company so managers can increase firm's value with maximizing the company resources. Agency problem will arise when both parties cannot find the best way for both of them. Managers tend to use company's profit to make investment that will improve company performance, meanwhile the shareholders want their capital gains or dividend from the company's profit. The conflict between two parties can be resolved by using a mechanism, but it will created cost of agency. There are several ways to reduce cost of agency (Jensen & Meckling, 1976), which is by implementing managerial ownership or institutional ownership.

### D. Managerial Ownership

The ownership structure can be said managerial ownership if there is manager, director or commissioner in the company shareholders. According to agency theory, cost of agency arise due to conflict of interests between managers and shareholders. This problem can be avoided by giving the manager a share of the company. Because the manager owns a share, the manager will have the same goal like the other shareholders and it will motivates the manager to improve the company performance, thus increasing the firm's value so managerial investor will achieve capital gains or dividends (Purwanto, 2011).

### E. Institutional Ownership

Institution or organization as a shareholder believed to be able to detect distortion in the company (Jensen dan Meckling, 1976). In general, institutions are investing in large scale of money, so they would control the performance of the company in order to gain a profit. According to Purwanto (2011), institutional investor prefer policies that can improve firm's value in the long term. Example of policies that can increase firm's value is management of intellectual capital. Moreover, Purwanto (2011) states that the optimal management of

intellectual capital will provide a sustainable competitive advantage for the company. With the aim to gain a sustainable competitive advantage, then institutional investor will manage to optimize the intellectual capital.

## III. RESEARCH METHODS

Intellectual capital will be measured by VAIC<sup>tm</sup> meanwhile firm's value was measured by Tobin's Q. This research's population is the listed companies on Indonesia Stock Exchange with research period from 2008 to 2015, after applying the purposive sampling method, 30 companies are selected as research sample so total number of observation needed is  $30 \times 8 = 240$  companies. The writer will use Eviews 9.0 to test the effect of intellectual capital on firm's value and use SPSS 24 to test the moderating variable in this research.

### A. Variables and Operational Definitions

#### 1) Intellectual Capital

Performance of intellectual capital was measured by VAIC<sup>tm</sup> method, which he value added is created by three components: human capital, physical capital and structural capital. Stages for calculate VAIC<sup>tm</sup> are:

1. Calculate *Value Added (VA)*, *Human Capital (HC)*, *structural capital (SC)* and *capital employed (CE)*. **HC** obtained from labor expenses, meanwhile **SC** obtained from EBITDA + Depreciation + Amortization. **CE** obtained from total asset – current liabilities and *Value Added (VA)* obtain from  $SC + HC$ .
2. Calculate *Capital employed efficiency (CEE)*, *human capital efficiency (HCE)* and *structural capital efficiency (SCE)* companies. **CEE** obtained from  $VA/CE$ . **HCE** =  $VA/HC$  and **SCE** =  $SC/VA$ .
3. Calculate VAIC<sup>TM</sup>. Formula of VAIC<sup>TM</sup> is **VAIC** = **CEE** + **SCE** + **HCE**

#### 2) Firm's Value

Firm's value in this study is measured by Tobin's Q. In this measurement, the firm's value obtained from annual reports. Formula of Tobin's Q is:

$$Q = \frac{EMV + \text{Book Value Total Liabilities}}{\text{Book Value Total Asset}}$$

where Equity market value = stock price at the end of year x outstanding shares.

#### 3) Ownership Structure

Moderating variables are variables that have an effect whether it strengthens or weakens the effect of the independent variable on the dependent variable (Effendi & Setiawan, 2014). Moderating variables in this research is the managerial ownership and institutional ownership. To calculate each of ownership, then the formula is:

$$\text{Managerial Ownership} = \frac{\text{Stock owned by managers or directors}}{100\%}$$

and

$$\text{Institutional Ownership} = \frac{\text{Stock owned by institution}}{100\%}$$

### B. Research's Regression Models

This research is conducts with Bemby et al (2015) research as the reference. The writer used multiple regression to test the effect of intellectual capital on firm's value. While, the

moderating variables testing are using multiple regression using residual forms. The following regression model is:

$$Q_{it} = a + b_1 VAIC_{it} + b_2 MO_{it} + b_3 IO_{it} + e_{it} \quad (1)$$

$$MO = a + b VAIC^{tm} + e \quad (2)$$

$$|e| = a + b Q \quad (3)$$

$$IO = a + b_1 VAIC^{tm} + e \quad (4)$$

$$|e_1| = a + b_1 Q \quad (5)$$

Note:

$Q$  = Firm's Value

$VAIC$  = Intellectual capital

$MO$  = Managerial Ownership

$IO$  = Institutional Ownership

$i$  = Company

$t$  = Year

Equation (1) is used to test the effect of intellectual capital on firm's value, while equation (3) and (5) is used to test the moderating variables. In equation (3) and (5) if the result is significant and negative (lack of fit occurs), it can be concluded that the managerial and institutional ownership variables are moderating variables between the effect of intellectual capital on firm's value.

### C. Hypothesis

*Resource Based Theory* explains companies that manage and exploit intellectual capital is able to gain a competitive advantage (Barney, 1991). The competitive advantage will be responded positively by the investors and it will increase the firm's value (Randa & Ariyanto, 2012). This has been proven by Bemby et al (2015) research which states intellectual capital has a significant and positive effect on firm's value. Based on literature reviews and previous research, then the hypothesis research is:

H1: Intellectual capital has a significant and positive effect on firm's value

H2: Ownership structure moderating the effect of intellectual capital on firm's value

H2a: Managerial ownership moderating the effect of intellectual capital on firm's value

H2b: Institutional ownership moderating the effect of intellectual capital on firm's value

## IV. RESULT

### A. Descriptive Analysis

Testing the descriptive statistics of the variable Tobin's Q,  $VAIC^{tm}$ , Managerial Ownership and Institutional Ownership in 30 companies listed in Indonesia Stock Exchange during the 2008-2015 periods. Based on the results of corporate data obtained, the average value of the Tobin's Q is 1.908298 and the standard deviation is 2.544517 with range of values from 0.334709 to 17.93550. The lowest value of the company is owned by Ciputra Development in 2008 and the highest value of the company is owned by Unilever in 2014. Intellectual capital ( $VAIC^{tm}$ ) variable has an average value of 4.127409 and standard deviation of 1.720844 with range of values from 1.6830 to 10.5990. The lowest value of the company is owned by Bank Victoria in 2015 and the highest value of the company is owned by Unilever in 2011.

Statistical test on variables descriptive of Managerial ownership (MO) have an average value of 0.057548 and standard deviation of 0.108190 with range of values from 0.0001 to 0.6510. The highest value of the company is owned

by Bank Capital Indonesia in 2008. While descriptive test result have an average value of 0.566373 and standard deviation 0.230686 with arrange of values from 0.0057 to 0.9947. The lowest value of the company is owned by Bank Capital Indonesia in 2008 and the highest value of the company is owned by Bank Danamon in 2008.

### B. Multiple Regression Analysis

Based on the result of BLUE test, heteroscedacity detected in model (1). To overcome heteroscedacity problem, the model specified by using *Generalized Least Square* (GLS) so the panel data for model (1) is *Fixed Effect Model* with GLS.

Table 1: Regression Test Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VAIC	0.208952	0.027384	7.630401	0.0000
MO	-0.478097	0.241086	1.983101	0.0487
IO	-0.159453	0.175481	0.908665	0.3646
C	1.163692	0.153705	7.570956	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0.77823	Mean dependent var	3.624513	
Adjusted R-squared	0.743947	S.D. dependent var	1.888935	
F-statistic	22.69997	Durbin-Watson stat	1.876635	
Prob (F-stat)	0.00000			

Source : Analysis Program with Eviews 9, 2016

Based on table 1, multiple regression equation of the model (1) are as follows:

$$Q_{it} = 1.163692 + 0.208952 VAIC_{it} - 0.478097 MO_{it} - 0.159453 IO_{it} + e_{it}$$

#### 1) Simultaneous Significance Testing (F-test)

F Statistics test was conducted to test the significance of jointly whether the variables of intellectual capital, managerial ownership and institutional ownership effect on firm's value in 2008-2015 with a significance level of 5% ( $\alpha = 5\%$ ). Based on table 1, test results obtained by the F Statistic of 22.6999 with the Prob (F-Stat) of 0.000. This means with level of significance 5%, it can be concluded that intellectual capital, managerial ownership and institution ownership jointly have a significant effect on firm's value.

#### 2) Test Coefficient of Determination (Adjusted $R^2$ )

Test results on the coefficient of determination companies listed in Indonesia Stock Exchange in 2008-2015 showed that the adjusted coefficient of determination ( $R^2$ ) of the 30 companies is 0.7439 or 74.39%. This suggests that the effect of intellectual capital variable, managerial ownership and institutional ownership has a contribution of 74.39% to the value of companies listed in Indonesia Stock Exchange, while the remaining 15.61% are influenced by factors outside this research.

#### 3) Partial Significance Testing (T-test)

The aim of this statistic test is to determine whether each of the independent variables (intellectual capital, managerial ownership, and institutional ownership) is partially have a significant effect on firm's value with a significance level of 5% ( $\alpha = 5\%$ ), while the effect direction (Positive/Negative) can

be seen through the value of T-Statistic. Based on table 1, the test results of VAIC<sup>tm</sup> effect on firm's value has amounted to 7.6304 and Prob (T-Stat) value of 0.0000, which is smaller than significance level (0.05). It can be concluded that the intellectual capital has a significant and positive effect on firm's value. This means that H1 is accepted.

The effect of managerial ownership to firm's value at T-statistic of -1.9831 and Prob (T-Stat) of 0.0487 so it can be concluded that managerial ownership has a significant and negative effect on firm value partially. The effect of institutional ownership on firm's value at T-statistic of -0.9086 and Prob (T-Stat) of 0.3646 so it can be concluded that institutional ownership has negative but not significant effect on firm's value.

Table 2 will explain how much the sample of research experienced an increase/decrease in the firm's value if the intellectual capital value increases/decreases.

Table 2 Effect of Intellectual Capital on Firm's Value Data

	Positive	Negative	Random
Company's Code	AKRA	BACA	BDMN
	ASRM	TIRA	MAYA
	BVIC	WEHA	MDRN
	CTRA		PNBN
	JKON		PYFA
	LPKR		RUIS
	MCOR		TINS
	MICE		ULTJ
	MNCN		UNVR
	MTDL		
	PTBA		
	SDPC		
	SMRA		
	SMSM		
	TCID		
	TOTL		
UNTR			
WIKA			
<b>Total</b>	<b>18</b>	<b>3</b>	<b>9</b>

Source : Analysis Program with Eviews 9, 2016

Based on table 2, the companies shown in the positive column have been influencing intellectual capital on firm's value that tend to be unidirectional frequently for 8 years. Meanwhile, the companies shown in the negative column have been influencing intellectual capital on firm's value that tend to be bidirectional frequently for 8 years and the companies shown in the random column is the companies that does not indicate a trend either in unidirectional or bidirectional, or in other words does not have a pattern.

Based on table 2, The total of 18 companies in positive means if the intellectual capital increases then the firm's value tend to increase too, and vice versa. Otherwise, there are 9 companies with a random direction and only 3 companies that have an opposite direction of intellectual capital's effect on firm's value. Opposite direction means if the value of intellectual capital increases, then the firm's value tends to decrease, and vice versa. According to Uniaryny (2012), the reason why there are only 3 companies that have a negative effect is because the

companies are lack of funds for human resources, so the value added created also too small.

**C. Path Analysis with Residual Form**

This section analyzes the effect of ownership structure as moderating variable on the relationship between intellectual and firm's value. Ownership structure consists of managerial ownership and institutional ownership.

Table 3 Managerial Ownership Residual Test

Model	Unstand ardzied B	Coeffici ents Std. Error	Standar dized Coeffici ents Beta	t	Sig.	
1	(constant)	0.079	0.006	12.661	0.000	
		-0.005	0.002	-0.157	-2.450	0.015

Source : Analysis Program with SPSS 24, 2016

The test results for the moderating variable residual managerial ownership obtained results that  $|e| = 0.079 - 0.005 Q$ . Based on table 3, it is known that the regression model has a significant result. This is proved by the significance probability value to Tobin's Q of 0.015, which is smaller than level of significance (0.05) while t have a negative value (-2.450). Therefore, it can be interpreted that managerial ownership does working as moderating variable on this research. This means that H2a is accepted.

Table 4 Institutional Ownership Residual Test

Model	Unstand ardzied B	Coeffici ents Std. Error	Standar dized Coeffici ents Beta	t	Sig.	
2	(constant)	0.188	0.011	17.632	0.000	
		0.000	0.003	-0.008	-0.123	0.902

Source : Analysis Program with SPSS 24, 2016

The test results for the moderating variable residual institutional ownership obtained results that  $|e| = 0.188 - 0.000 Q$ . Based on table 4, it is known that the regression model has a nonsignificant result. This is proved by the significance probability value to Tobin's Q of 0.902, which is bigger than level of significance (0.05) while t-value has a negative value (-0.123). Therefore, it can be interpreted that institutional ownership does not work as moderating variable on this research so that H2b is rejected.

**V. DISCUSSION OF RESULT**

**A. Hypothesis 1**

Based on table 1, it proved that intellectual capital has a significant and positive effect on firm's value. These results are consistent with the results of Chen et al (2005) and Bemby et al (2015). Companies that managed their intellectual resources to the maximum will be able to create greater added value so as to enhance firm's value (Bemby et al, 2015). Bemby et al (2015) also states the companies that able to manage its assets efficiently will have a high growth potential with the value of Tobin's Q is more than 1.

Investor will give a positive response to the company that managed intellectual capital efficiently. The responses are represented by the stock prices rising. The results of this study prove that if the value of intellectual capital increases, then investor will give a positive response where this would lead to an escalation of the firm's value. It also shows that intellectual

capital is a part of the asset management strategy that can enhance firm's value.

## B. Hypothesis 2

### 1) Hypothesis 2A

Based on table 3, it can be concluded that hypothesis 2A is accepted. Test result with a residual path analysis in this research prove that managerial ownership variable is moderating the effect of intellectual capital on firm's value. In this research, the moderating effect gives a negative effect, it means managerial ownership weakens the effect of intellectual capital on firm's value.

These results are consistent with the results of Suranta & Masrud (2003), Sudarma (2004) and Bemby et al (2015) which proved that the greater the level of managerial ownership will decrease the firm's value. However, the results of this research as opposed to agency theory. Agency theory states that increased managerial ownership position can align managers with shareholders and motivate managers to increase shareholder wealth by increasing firm's value. This theory is supported by Wahyudi & Hartini (2006) research. Wahyudi & Hartini (2006) proved that managerial ownership has a significant and positive effect on firm's value. The difference in results of this research with agency theory and also Wahyudi & Hartini (2006) research can be analyzed further. Wahyudi & Hartini (2006) research conducted in 2002 and 2003, while this study has a recent period which is from 2008 to 2015. Bemby et al (2015) stated that managerial ownership is not aggressive anymore in managing the company so the firm's value also decreased.

Besides, managerial investor doing an opportunistic action to control the company. Indicator of opportunistic action arises from the findings of the annual report of companies show that most companies put managerial position (directors and commissioner) to those who have a family or special relationship (Bemby et al, 2015). This is done so managerial investor can run the company according to his/her will, although the portion of its ownership is small. Based on the Bemby et al (2015) statement, it can be concluded that the majority of managerial ownership is owned by parties who each have a special relationship.

Therefore, the weakening influence of managerial ownership in moderating the effect of intellectual capital on firm's value is due to tendency of those who have this special relationship in managing and utilizing its power as a shareholder to determine and control company's assets (including intellectual capital) for personal benefit (Bemby et al, 2015). This leads to performance in the management of intellectual capital becomes inefficient resulting in lower competing advantage, thus responded negatively by the market and decrease the firm's value.

Based on the research and explanations above, it can be concluded that an increase in managerial ownership will only give a negative influence in the management of intellectual capital to enhance firm's value.

### 2) Hypothesis 2B

Based on table 4, it can be concluded that hypothesis 2B is rejected. Test result with a residual path analysis in this research prove that institutional ownership variable is not moderating the effect of intellectual capital on firm's value. Also, the results of partial test of institutional ownership on

firm's value are not significant but negative. These results are consistent with the results of Bemby et al (2015). The negative effects generated by institutional ownership is due to the finding that the proportion of institutional ownership in company in Indonesia much larger than any proportion of shareholder, so institutional investor tend to ignore the rest of shareholder (Bemby et al, 2015). It responded negatively by the market.

However, because the test results proved that the residual institutional ownership variable is not a moderating variable and also the results of partial test is not significant, the contribution given by the influence of institutional ownership is relatively small and not so significant. This is because either the presence or absence of institutional investor, managerial investor already run the opportunistic action first, as explained in Hypothesis 2A, so decision making by institutional investor would be useless (Bemby et al, 2015).

## CONCLUSIONS AND FUTURE RESEARCH

Several conclusions from the results of this research are as follows:

1. Intellectual Capital has a significant and positive effect on firm's value in Indonesia.
2. The ownership structure does moderate intellectual capital on firm's value as follows:
  - 2A. Managerial ownership is a moderating variable that weakened the effect of intellectual capital on firm's value in Indonesia.
  - 2B. Institutional ownership does not work as a moderating variable in this research.

### Suggestion

1. Subsequent research should use another intellectual capital measurement, such as CIV or The Baruch Lev Method so subsequent research can make the comparison of intellectual capital value.
2. Subsequent research should include family ownership and foreign ownership into ownership structure as moderating variable in research about intellectual capital effect on firm's value.

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