The Role of Corporate Intellectual Capital

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Abstract

The purpose of this study was to test empirically the relationship between measures of intellectual capital to firm performance. The research was done by taking a sample of 78 companies from the manufacturing companies listed on the Stock Exchange the period 2006-2008. Intellectual capital is measured by VAICTM developed by Pulic. While the size of the company's performance measured by ROE, EPS, ASR, ATO, PER, GR. The results of this study is that the Intellectual Capital (VAIC) proved to be significantly positive effect on the performance of the company, Intellectual Capital (VAIC) proved to be significantly positive effect on future company performance, average growth rate (ROGIC) did not show significant positive effect on depan. The company's performance of this research is expected to be additional information on business organization and performance assessment in the management of the company's intellectual capital to create value for companies that can provide a competitive advantage.

Keywords: Intellectual capital, performance, competitive, value.

Introduction

In the current business environment, a change has taken place in views on a wide range of resources that are strategic for companies. The change in question is from the dominance of tangible assets to that of intangible assets. If the companies in Indonesia are referring to the existing development, namely knowledge management, they will be able to compete using competitive advantage gained through creative innovations generated by their own intellectual capital.

According Nahapiet and Ghoshal, in Ilhayul Ulum (2009), Intellectual Capital (IC) refers to the knowledge and skills possessed by a social collectivity, such as organizations, intellectual or professional communities. In Indonesia, the phenomenon of IC began to grow, especially after the issuance of a statement of Financial Accounting Standards (FAS) No. 19 (revised in 2000) on intangible assets. Although it is not stated explicitly as an IC, more or less attention has been paid to it. According to FAS No. 19, intangible asset is identifiable non-monetary asset that is not physical in nature and owned to be used in generating or handing over goods and services, leased to others, or for administrative purposes (IAI, 2008).

Abidin (2000) noted that companies in Indonesia are likely to use conventional basis in building their businesses, and consequently their products remain low in technological content. In addition, these companies have yet to give more attention to human capital, structural capital, and customer capital. As a matter of fact, these were originally the very elements that build the companies' IC (Sawarjuwono and Kadir, 2003). Therefore, it is expected that companies appreciate the importance of intellectual capital on the basis of knowledge management. In this knowledge-based management system, the conventional capitals such as natural and financial resources as well as other physical assets become less important than those of knowledge- and technology-based ones.

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With science and technology at their disposal, companies can figure out how to use resources more efficiently and economically, which subsequently give them competitive advantage (Rupert in Joseph, 2009). This research aims: (1) to investigate the magnitude of intellectual capital effect on companies' financial performance; (2) to find out the magnitude of intellectual capital effect on future financial performance; and (3) to determine the effect of average growth of intellectual capital on future financial performance.

Theoretical Foundation and Hypothesis Development

Stakeholder theory

Stakeholder theory pays more attention to the stakeholders considered as powerful. It is this group of stakeholders that has become the primary consideration for companies to disclose and/or to not disclose certain information in the Financial Statements. The stakeholder theory holds that companies have both stakeholders and shareholders (Belkaoui, 2003). The former includes shareholders, employees, customers, suppliers, creditors, governments, and communities.

The primary objective of stakeholder theory is to help corporate managers understand the environment of their stakeholders and do more effective maintenance of the existing relationships in their corporate environment. However, the broader goals of stakeholder theory are to help corporate managers in enhancing the value of the impact of their activities, and in minimizing losses for all stakeholders. The core of stakeholder theory is, in fact, lies in what happens when corporate stakeholders develop their relationship. The growing consensus in the context of stakeholder theory is that accounting earnings is a measure of the return to shareholders, while the value added is a more accurate measure created by the stakeholders and then distributed to the same stakeholders (Meek and Gray in Lum, 2008). Value added, deemed to have higher accuracy, is being associated with the return which is considered as a measure by stakeholders. Therefore, both value added and return can explain the power of stakeholder theory in relation to the performance measurement of organizations.

Intangiable Assets

Paragraph 08 of FAS No. 19 (revised in 2000) defined intangible asset as identifiable non-monetary asset that is not physical in nature and owned to be used in generating or handing over goods and services, leased to others, or for administrative purposes. This definition is an adoption of the notions presented by IAS 38 on intangible assets, which is relatively similar to the proposed definition in the FRS 10 on goodwill and intangible assets. Both IAS 38 and FRS 10 stated that intangible assets must (1) be identifiable, (2) be non-financial/non-monetary assets, and (3) have no physical substances. On the contrary, APB 17 on intangible assets presented no clear definition of them.

Intellectual capital plays a very important and strategic role in organizations. Intellectual Capital (IC), according to Nahapiet and Ghoshal in Ilhayul Ulum (2009), refers to the knowledge and skills possessed by social collectivities, such as organizations, intellectual or professional communities. Intellectual Capital is a valuable resource and represents an ability to act knowledgeably. They use this definition by considering its closeness to the concept of Human Capital, one of the intellectual elements referred to by Fitz-Enz (2000) as a catalyst that activates other inactive intangible components. Obviously, this definition does not seem to adequately explain empirically the extent to which the meaning of intellectual capital has covered both components - knowledge and knowing capability.

Intellectual Capital Components

Bontis *et al*. (2000) stated that, in general, researchers identified three main IC constructs which include Human Capital (HC), Structural Capital (SC), and Customer Capital (CC). According to Bontis et al. (2000), HC simply signifies an individual knowledge stock of an organization represented by its employees. It is further mentioned that SC includes all non-human storehouses of knowledge in organizations. Included in this are databases, organizational charts, process manuals, strategies, routines and everything that makes the company's value greater than its material value. Whereas, the main term of CC embodies the knowledge inherent in marketing channels and customer relationship developed by an organization through the course of its business enterprise (Bontis et al., 2000).

Intellectual capital measurement methods are grouped into two categories: monetary and non-monetary measurements (Tan *et al*., 2007). Hartono (2001) outlined some of the benefits of using non-monetary measurement to measure intangible assets of companies. These advantages are as follows:

a. Non-monetary measurement would easily shows the elements that develop companies' intellectual capital, while monetary measurement would not.
b. The influence of internal development on the formation of intellectual capital cannot be measured using monetary attributes.
c. Capitalizing cost into asset will lead to the manipulation of earnings.

Disclosure of Intellectual Capital

Mouritsen *et al*. (2001) stated that IC disclosure in a financial statement is a way to illustrate that the financial statement described the activities of a credible, integrated, as well as the "true and fair" company. Mouritsen *et al*. (2001) refer to IC reports, many of which are based on textual analysis of the financial statements. Very few companies are making IC reports separately. This is because when IC disclosure is conducted in different way, it will likely to lead to a cohesive report, and therefore providing a credible disclosure on the activities of the company is not necessary. Further, Mouritsen *et al*. maintained that IC disclosure is communicated to both internal and external stakeholders by combining reports in the form of numbers, visualizations and narratives aimed at creating values.

Vallue Added Intelectual Coefficient (VAIC^{TM})

Value added intellectual coefficient (VAIC^{TM}) method is developed by Pulic in 1997, designed to present information about Value Creation Efficiency of tangible and intangible assets owned by companies. (VAIC^{TM}) is an instrument for measuring the performance of companies' Intellectual Capital. This approach is a relatively easy and very possible thing to do, because it is constructed from accounts in the company financial statements (profit and loss statement).

Intellectual Capital and its Relationship with Corporate Achievement

Conservatism practices in accounting emphasized that the company's investment in Intellectual Capital presented in the financial statements is generated from an increase in the difference between the market value and book value. Thus, if the market is efficient, the investor will provide higher value to companies with larger IC (Balkaoui, 2003; Firer and Williams, 2003). In addition, if the IC is indeed a scalable resource that increases competitive advantages, it will contribute to the company's financial performance (Harrison and Sullivan, 2000; Chen *et al*., 2005; Abdolmohammadi, 2005).

Based on the above description, the following hypotheses were formulated:

  H_1: There is a positive effect of IC (VAIC^{TM}) on corporate financial achievement.
  H_2: There is a positive effect of IC (VAIC^{TM}) on corporate future financial achievement.
  H_3: There is a positive effect of IC ROGIC on corporate future financial achievement.

Research Methodology

Sample Selection

The research population comprised 148 manufacturing companies listed in IDX over the period of 2006-2008. The sample comprised 80 manufacturing companies listed in IDX consecutively over the period of 2006-2008. The sampling criteria are as follows: the companies to be analyzed are those enlisted in IDX and have a positive return consecutively from 2006 to 2008.

Independent Variable

Independent variables in this study are intellectual capital and Rate of Growth of IC (ROGIC).
    A. Intellectual capital will be measured using three different proxies, namely:

    1) Value Added Capital Coefficient (VACA)
        Value Added capital Employed (VACA) is an indicator for the VA that was created by a single unit of physical capital. Value Added (VA) is calculated as the difference between output and input (Pulic).

$$VA = OUT - IN$$

Output (OUT)   : total sales and other revenue
Input (IN)   : expense and others expense
Value Added (VA)   : differences between output an input

This ratio shows the contribution made by each unit of CE to the value added in organizations.

$$VACA = VA/CE$$

VACA : *Value Added Capital Employed* : VA to CE ratio.
VA   : *Value Added*
CE   : *Capital Employed* : available fund (equity and net income)

2) Human Capital Coefficient (VAHU)

VAHU shows how much VA can be generated with the funds spent on labor. This ratio shows the contribution made by every single dollar invested in HC to Value Added in organizations.

$$VAHU = VA/HC$$

VAHU   : *Value Added Human Capital* : VA to HC ratio.
VA   : *Value added*
HC   : *Human Capital* : Salary

3) Structural Capital Coefficient (STVA)

This ratio measures the number of SC needed to produce 1 rupiah from VA and is an indication of how the SC succeed in the creation of value.

$$STVA = SC/VA$$

STVA   : *Structural Capital Value Added*: SC to VA ratio
 SC   : *Structural Capital*: VA – HC
VA   : *value added*

VAIC^{TM} indicates organizations intellectual ability which could also be considered as BPI ((*Business Performance Indicator*). VAIC^{TM} is the summation of 3 previous components: VACA, VAHU, and STVA.

$$VAIC^{TM} = VACA + VAHU + STVA$$

B. In addition to VAIC^{TM}, another independent variable is Rate of Growth of IC (ROGIC) which is the difference between the value of IC in year $_1$ and year $_{t-1}$.

$$ROGIC = VAIC^{TM}_t - VAIC^{TM}_{t-1}$$

Dependent Variable

The dependent variable in this research is the company's financial performance. The company's financial performance is described using 5 proxies:

1) *Return on Equity* (ROE)

Return on Equity (ROE) or often referred to as Rate of Return on Net Worth is intended to measure absolute returns that will bring success for companies that resulted in the high stock prices and make easier for them to attract new funds. This ratio indicates the strength of profits of the book value of shareholders' investments and is used when comparing two or more companies in an industry on a continual basis (Van Home in Beny, 2008).

$$ROE = \frac{\textbf{Net Income}}{\textbf{Equity}}$$

2) *Earnings per share* (EPS)

Earning per share (EPS) is the amount of income earned in one period for each of the shares outstanding. One indicator of a successful enterprise is the size of its EPS. In general, investors will expect the benefits of investment in the form of earnings per shares, for EPS describes the amount of earnings accruing to common stocks.

$$EPS = \frac{\textbf{Stokeholder Profit}}{\textbf{Total Shareholders' Funds}}$$

3) *Price Earning Ratio* (PER)

PER illustrates the market appreciation of the company's ability to generate profits (Darmadji and Fakhruddin, 2006 in Bram Hadianto, 2008).

$$PER = \frac{Stock\ Price}{Earnings\ per\ Share}$$

4) *Annual stock return* (ASR)

Annual Stock Return (ASR) measures the change in prices of shares, including dividends. Total return of the stocks comes from two sources, i.e. dividends and cash distributions and capital gains (Siegel, 2002 in Hong Kong, 2007).

$$ASR = \frac{(Stock\ Price\ (year\ x+1)-Stock\ Price\ on\ year\ x)+Dividen}{Stock\ Price\ on\ year\ x}$$

5) ATO

ATO is the ratio of total revenue to book value of total assets (Firer and William, 2003).

$$ATO = \frac{Total\ Income}{Total\ Asset}$$

6) GR

GR measures changes in company's income. Increased revenue is usually represents a signal for companies to grow and develop (Chen *et al*., 2000).

$$GR = \{(\ Income\ year\text{-}_t \div Income\ year\text{-}_{t\text{-}1}) - 1\}x\ 100\%$$

Method of Data Analysis

Data analysis was performed using Partial Least Square (PLS) method. The selection of PLS method is based on the consideration that there are two latent variables in this study (IC and company's performance) formed by formative indicators.

Result and Discussion
Descriptive Statistics

The table below shows the descriptive statistics for the dependent variable VAIC   and the components that form it: VACA, VAHU, STVA for the period of 2006-2008 (Table 1).

Table 1 shows that the ratio of VACA from 2006 to 2008 was likely to increase as identified from an average of 2,81; 4.10; and 4.062,. These results show that the service companies were capable of providing value added, which continue to increase so that the number of inputs is much larger compared to the output.
 Similarly, the ratio of VAHU has increased continuously from 2006 to 2008. This indicated that the value added obtained by the companies remained far higher than their costs of hiring their employees. In the meantime, STVA tend to decrease, which shows that the contribution of capital structure to the shaping of value added tend to decrease. This is because the value added generated by companies is much greater than the capital structure. An increase in value added was due more to sales and other income increased steadily, along with the real business of the company that increasingly improved.

The following table illustrates the descriptive statistics of dependent variable measurements (the company's financial performance), namely: ROE, EPS, PER, ATO, GR and ASR for the period of 2006 to 2008. (Table 2). In general, during the period of 2006-2008, the financial performance of manufacturing companies in Indonesia increased from year to year, especially when measured with EPS and ATO, whereas other ratio tends to fluctuate; it decreased at one period and increased at another, or the other way around.

A positive and consistent ROE from year to year indicated that these service companies have been able to generate net income from the management of the whole capital. It is also supported by a consistently positive ATO ratio, which suggests that the management has had a good performance in managing assets to generate larger amounts of revenue. Likewise, the same hold true for positive growth ratio, which shows that the company has the opportunity to grow increasingly high, and therefore increasing a company's fund means improving its performance.

Based on the test results, first part of PLS dealt with the influence of IC (VAIC) on corporate financial achievement, either for current year financial performance (H_1) or future financial performance (H_2). The second part discussed the effect of average growth of IC (rate of growth of IC - ROGIC) on the corporate future financial performance (H3).

1) Intellectual Capital and its Effect on Companies' Achievement.

The first hypothesis proposed in this research is that IC (VAIC) affects the corporate financial performance. In this context, the IC test is based on the corporate financial performance in the same year. The test results revealed that t-count for VAIC to performance is greater than 1.645. This means that its loading was significant ($p < 0.05$ [*1-tailed*]) and that IC (VAIC) has significant effect on the corporate financial performance for three years of observation (2006-2008), and therefore H_1 is accepted. That being said, Intellectual Capital is obviously influenced the Current Corporate Performance.

The Intellectual Capital employed in this study is the VACA. VACA is a value added generated by physical capital. The company's ability to generate value added from managing the available funds such as capital and profits showed that it has been effective in managing all physical funds, and thereby its revenue is much greater than its expenses. This will certainly improves corporate achievements.

2) The Effect of Intellectual Capital on Corporate Future Achievements

The second hypothesis proposed in this research is that IC (VAIC) affects the corporate future financial performance. This means that IC is used as a tool to predict corporate financial achievement in the future. In this context, IC is tested against corporate financial achievement with a 1 year lag. The testing proved that the value of *t-statistics path* between VAIC and corporate achievements is greater than 1.645 and thereby significant (p < 0.05) (1-tailed). This indicated the significant effect of IC (VAIC) on corporate future financial performance, and H_2 is therefore accepted. Thus, Intellectual Capital does affect Corporate Future Achievements.

The second hypothesis in this research indicated also that VAHU as a measure of Intellectual Capital proved to have significant effect on corporate future achievement. This is because the Intellectual Capital or Human Capital is the lifeblood of corporation. This is where innovation and improvement originated, although both are components that are difficult to quantify. Human Capital can also be the source of very useful knowledge, skills, and competencies in an organization or company. It reflects the collective ability of companies to produce the best solution based on the knowledge that belongs to their people. Human Capital will improve if companies are capable of using the knowledge of their employees.

3) Intellectual Capital in Average and its Effect on Corporate Future Achievements

The third hypothesis proposed in this study is that the average growth of IC (ROGIC) did not affect the company's future financial performance. The test results provide evidence that *t-statistics* is less than 1.645, which means not significant, ($p < 0.05$) (*1-tailed*). This indicates that there is no effect of ROGIC on corporate future financial performance, and H_3 is therefore rejected.

This means that manufacturing companies in Indonesia have not been optimally managed and develop their intellectual capital to win the competition (*competitive advantage*). IC is not yet a theme of interest to be developed to create value for companies. The companies remained focused more on short-term interests, such as improving the financial return.

Conclusion and Suggestion

Conclusion

The following conclusions are drawn from what has been discussed in previous sections. Intellectual Capital (VAIC) has a significant positive effect on company's achievement. VAIC in this research is formed only by the indicator of VACA. This means that the company's Intellectual Capital affects its performance improvement due to the factors such as physical funds, equity, and profits. Thus, the greater the Intellectual Capital, the higher the performance of the company, and the first hypothesis in this study was therefore supported. Intellectual Capital (VAIC) proved to have a significant positive effect on the companies' future performance. VAIC in this research is formed only by the indicator of VAHU.

That being said, the future performance was heavily affected by the capabilities of Human Capital in creating value for a company. This means that the larger the Intellectual Capital, the higher the performance of the company in the future. Thus the second hypothesis in this study was supported.

The average growth rate (ROGIC) does not affect significantly the company's future performance. That means that the growth rate of a company has not been able to contribute to the corporate performance in the future. This is due to the fact that a company with growth prospect will not necessarily generate achievement or reasonable added value if it was not counterbalanced by a large capital investment in it.

Suggestions

The future researches could use more representative samples and longer period in order to produce more valid conclusions. In addition, the measurement of indicators can be replaced with other proxy to measure the variable of market-based Intellectual Capital such as market value to book value ratio (MB) and Economic Value Added (EVA) which is the value-added of companies. The reason for this is based on the fact that structural analysis showed that there were only 1 out of 3 indicators which significantly proved to form the Intellectual Capital.

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Appendix
Tabel 1: Descriptive Statistic VAIC™ 2006-2008

	2006		2007		2008	
	Mean	SD	Mean	SD	Mean	SD
VACA	2.814	2.428	4.101	5.082	4.059	4.575
VAHU	0.107	0.264	0.121	0.287	0.139	0.362
STVA	0.957	0.079	0.742	1.625	0.773	1.530
VAIC	3.878	2.473	4.963	5.375	4.971	4.816

Tabel 2: Descriptive Statistic Financial Performance 2006-2008

		N	Mean	Std. Deviation
ROE	2006.00	78	.1458	.18722
	2007.00	78	.2112	.72371
	2008.00	78	.1638	.17402
EPS	2006.00	78	133.2171	372.14861
	2007.00	78	183.5987	496.14930
	2008.00	78	335.2512	1459.01715
PER	2006.00	78	21327.9963	82431.59286
	2007.00	78	28292.2185	119181.10539
	2008.00	78	9374.1936	36555.81133
ATO	2006.00	78	11466.7078	71446.44684
	2007.00	78	33308.1411	197191.46382
	2008.00	78	36817.5388	222201.74638
GR	2006.00	78	.0000	.00000
	2007.00	78	.0000	.00000
	2008.00	78	.0000	.00000
	Total	234	.0000	.00000
ASR	2006.00	77	3.4131	13.65490
	2007.00	77	6.2505	32.93297
	2008.00	78	1.0247	.05763

Tabel 3: Outer Weights Test Model 1

	original sample estimate	mean of subsamples	Standard deviation	T-Statistic
VAIC				
STVA	-0.030	-0.025	0.328	0.090
VACA	1.000	0.789	0.426	2.347*
VAHU	0.059	0.123	0.305	0.192
KP				
ASR	0.288	0.295	0.468	0.615
ATO	-0.150	-0.137	0.139	1.077
EPS	0.025	0.025	0.436	0.057
GR	-0.165	-0.135	0.165	1.002
PER	0.150	0.127	0.160	1.932*
ROE	0.812	0.580	0.361	2.247*

Keterangan: * signifikan pada $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$ (*1-tailed*)

Tabel 4: Outer Weights Hyphotesis 2 dan 3 Testing

	original sample estimate	mean of subsamples	Standard deviation	T-Statistic
VAIC				
STVA	-0.027	0.170	0.457	0.058
VACA	0.288	0.175	0.513	0.560
VAHU	0.966	0.392	0.580	1.665*
ROGIC				
R STVA	-0.122	0.157	0.539	0.227
R VACA	0.236	0.260	0.548	0.431
R VAHU	0.965	0.217	0.553	1.745*
KP+1				
ASR+1	-0.103	0.174	0.578	0.178
ATO+1	-0.110	-0.029	0.342	0.323
EPS+1	0.173	0.248	0.518	0.335
GR+1	-0.203	-0.032	0.290	0.701
PER+1	0.028	0.101	0.409	0.069
ROE+1	0.926	0.225	0.502	1.843*

* : Sig. Level 5%

Tabel 5: Nilai *Inner Weights*

	original sample estimate	mean of subsamples	Standard deviation	T-Statistic
IC -> KP	0.571	0.385	0.280	2.038*
IC -> KPt+1	0.608	0.450	0.277	2.191*
ROGIC -> KPt+1	0.302	0.108	0.194	1.557

* sig. p < 0.10; ** p < 0.05; *** p< 0.01 (*1-tailed*)

Tabel 6: Hasil R Square

Model	R Square
IC → KP	0,326
IC dan ROGIC →KP t+1	0,469