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The Influence of Intellectual Capital on The Firm's Value with The Financial Performance as Intervening Variable

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Abstract

The purpose of this study was to determine the effect of intellectual capital on the firm's value with company's financial performance (profitability) as an intervening variable. Intellectual capital was measured using Pulic's models. This research sample number 93 companies manufacturing sector listed in Indonesia Stock Exchange. The results showed that: (a) the intellectual capital has a positive effect on firm value; (b) intellectual capital has a positive impact on profitability; and (c) studies have shown that profitability serves as an intervening variable in a causal relationship between intellectual capital and firm value.

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Keywords: Intellectual capital, firm's value, profitability

1. Introduction

The success of the economic development in the past depends greatly on the use of the intangible asset (tangible assets): land, natural resources, equipment, etc. to be able to create added value to the well-being. However, in the present era of information economics, success of economic development will depend on the ability to apply knowledge. The Economics Institute of Washington, d.c., noted that the economic value of a country's productivity depends on the skill and knowledge of its workforce, the firm's ability in solving business problems, which in turn will drive the market firm's value (Paul J, Di Stefano et all in Akpinar, 2014). The firm should have a competitive advantage, if it wants to win the competition in the era of free competition. One of the firm's competitive advantages

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is intellectual capital. In the era of global competition, intelectual capital will be the main advantages of the company. Intellectual capital (IC) is part of the knowledge assets of firm, which is one of the intangible assets. Intellectual capital is a firm's resources that based knowledge.

Intellectual capital can create value added for the company. Intelectual capacity of the firms will increase investor confidence, so it can have an impact on the increase in value of the company. Past research has proved that the intellectual capital has positive effect on firm value as measured by the share price (Poraghajan 2013, Ming Chin Chen 2012. Feimianti 2014). in other studies, Intellectual capital (IC) can improve financial performance (profitability) companies. Past research has proven that IC positive effect on financial performance as measured by the profitability of the company; revenue growth, return on assets, and return on equity. (Baroroh, 2013; Afroze 2011; R.Deep. 2014, Poraghajan 2013).

Conclusions of previous studies showed consistent results, namely: there is a causal relationship between intellectual capital and the firm's value, as well as the intellectual capital with profitability. Based on these findings, it is possible that the profitabality could be an intervening variable in a causal relationship between intellectual capital with the value of the company. When the study was done, not much research to test the profitability (financial performance) as an intervening variable in the relationship between intellectual capital with the firm's value. The purpose of this study was to examine whether financial performance (profitability) can act as an intervening variable in a causal relationship between intellectual capital and firm's value

2. Conceptual Framework

2.1. Intellectual Capital

Intellectual capital is a firm's intangible asset, it can be either knowledge, information, experience owned by human resources and firm's organization (Stewart, T. 1997). Intellectual capital of firm is a collection and synergized of the knowledge, experience, invention, innovation, market share, and communities that may affect the firm. (Akpinar 2014). Intellectual capital can also be defined as the difference between the market value of the firm and the replacement asset of the firm. The firm's market value is equal to the book value plus firm's intellectual capital.

Experts in the field of intellectual capital divide intellectual capitals into three dimensions : (1) human capital, (2) structural capital, and (3) external (customer) capital. Human capital is the intangible assets owned by the firm in the form of intellectual ability, creativity and innovation that are owned by its employees. On the industry based on knowledge, human capital is a major factor because this resource is the dominant cost in the process of production. Structural capital encompasses the firm's ability to reach out to the market, or hardware, software, and others supporting the firm. They are the infrastructure supporting the performance of employees, structural capital is a link of human capital becomes intellectual capital (Sveiby, et al. 1998). Structural capital consists of capital innovations, innovation of organizations to create new products and services and capital process, namely engineering, systems, processes, and equipment owned by the firm (Van Buren, Mark e. 1999). Customer capital is the ability of the organization relationship with the other party to maintain the sustainability of the firm, also known as relationship capital. Relationship capital is the firm's ability to maintain good relations with internal and external firm: employees, customers, consumers, suppliers, creditors, Governments and other parties. Customer capital is the knowledge of marketing, and how to maintain relationships with customers (Bontis et al. 2000).

Pulic (1998) tried to develop a model of intellectual capital measurement with a coefficient intellectual ability that reflects the firm's ability to use physical capital efficiently (value added capital employed), intellectual skills of human resources (human capital), and structural capital (STVA) that describe the infrastructure capabilities and relationship of firm. Pulic named this coefficien as intelecctual value added coefficient (VAIC) that describe the firm's intellectual capability as a whole. Earlier researchers (Kamath 2008, Clarke et al., 2010) assumed VAIC is summation of VACA,VAHU and STVA. VACA encompasses the efficiency that Structural capital and Human Capital fail to capture. IC can not create value for the company independently, so it must be combined with other intelectual capital owned and used by the company (physical and financial) (CE).

2.2. The firm's financial performance and Firm's value

Good financial performance is crucial for firms to be able to keep maintaining the existence of the firms listed as a viable investment for the firm. Sofyan (2004) states that profitability depicts the firm's ability to gain profit through all capability, and existing resources such as sales activities, cash, capital, number of employees, number of branches, and so on. In this study, the measure of financial performance that will be u sed is profitability composed of ratios of Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM).

Firm's value is the perception of investors against the firm, which is often connected with the market performance of the firm or the price of the firm's stock. Market performance is a measure of the performance of the company which combines investment returns and risks of the company, so that the performance of the market is more comprehensive than other performance measures. In this study, the measurement of market performance will use the price-to-book value (PBV). (Smith, 1996, Nuryaman 2012).

2.3. Relationship between Intellectual capital and the firm's value

Good management of intellectual resources can increase the market firm's value. If the three intellectual resources of the self-employed: capital, human capital and structural capital can be utilized optimally, it will create a superior Intellectual capital in the firm. Intellectual capital will facilitate the firm excels in meeting the interests of all stakeholders, including investors. The investors in the capital market will show appreciation for the superiority of Intellectual capital of the firm with a growing demand for stocks of these firms, and will have an impact on the rise in the firm's value. Past research has proved that the intellectual capital has positive effect on firm value as measured by the share price : value added intellectual capital (VAIC) associates positively with the firm's value measured by market to book value (Poraghajan,2013); the employed capital and human capital have positive relationship with the firm's value (Ming,C.C.2012); and intellectual capital encourages high Price to higher earnings ratio (Femianti, 2014). In contrast to the results of the study, Badingatus (2010), by using sample data of 116 firms in Indonesia capital market period 2006-2008, indicating that intellectual capital and firm's value are not responded by the investors, and intellectual capital is not proved to affect stock prices. Ha_1 : Intellectual Capital positively effects on firm's value

2.4. Relationship between Intellectual Capital and the financial performance

Intellectual capital will affect the performance of finance of firms. Firms that have human capital with capability, competence, high commitment will increase the productivity and efficiency of either individually or collectively, so that this would enhance the ability of the firm in generating the profit for the firm. Structural capital reflects the capabilities of the system, structure, strategy, and culture of the firm in meeting market demand and achieve the objectives of the organization. If the firm has a good capital structure, it will certainly facilitate the achievement of the Organization's targets included the profitability of the firm. Past research has proven that IC positive effect on financial performance as measured by the profitability of the firm: return on assets, and return on equity, earnings per share (Afroze 2011). The same thing is shown by the results of research of Poraghajan (2013) using firm data in the Tehran stock market, that all intellectual capital variables are positively correlated with ROA. R. Deep (2014) research results showed that the only value added capital employed (VACA) that significantly affect the profitabily of the firm. Ha_2 : Intellectual capital positively effects on profitability

2.5. Financial performance as an intervening variable in relation between the value of firm and the intellectual capital.

Currently, the period of the knowledge-based Company, intellectual capital becomes crucial capital needed by enterprises as the source of competitive advantage. The firm which employs high competent and committed employees (human capital) can show its productivity. The commitment and competencies (human capital) needs to be supported by good corporate infrastructure (structural capital), as well as a good relationship ability anyway (the employed capital). The combination of these three components will be able to increase productivity and good financial performance. Good financial performance will certainly be interesting for investors to invest in the firm, which in turn will drive the increasing share prices and the firm's value.

Ghasempour.et al (2013) investigates the relationship between profitability ratios and return firm stock, with the sample firm listed in Theran Stock Excange period 2000-2008. The results of his research proves that the return on assets ratio has a positive relationship with the abnormal return of firm stock.

Increasing intellectual capital is the strategy to increase the firm's value, through the creation of good financial performance of the firm. Investors will give the higher value to the firms that are able to show a good financial performance, and the performance of finance can be enhanced through intellectual based resource (intellectual capital). Thus, the performance of finance can act as an intervening variable in the relationship between intellectual capital and firm's value. Ha_3: Profitability positivly effect on firm's value. Ha_4: Profitability mediates the influence of intellectual capital on the firm's value

3. Methods

3.1. Operationalization of the study variables

Intellectual Capital

Intellectual capital (IC) will be measured by using a model of Value added intelectual coefficient (VAIC) which developed by Pulic (1999). These variables include: Value added capital employed (VACA); Value added human capital (VAHU); structural capital value added (STVA); and value added intelectual coefficient (VAIC). Stages of Intellectual Capital calculation using the model VAICTM by Pulic (1999) is as following :

1. Calculating the Value Added (VA). VA = OUT – IN. OUT = Output: total sales and other revenue ; IN = Input: sales expenses and other costs (not including personnel expenses). VA also can be calculated as follows: VA= OP + EC + D + A. OP =Operating profit (operating profit); EC = Employee costs (personnel expenses) ;D= Depreciation (depreciation);A=amortization.
2. Calculate the Value Added Capital Employed (VACA). VACA is a measure of VA produced by a unit of physical capital. The resulting contribution ratio of each unit CE for the VA. VACA = VA / CE. VACA = Value Added Capital Employed: VA ratio of CE; VA = Value Added; CE = Capital employed; available funds (derived from net income, and equity).
3. Calculate the Value Added Human Capital (VAHU). This ratio is an indicator of the value added generated from each dollar invested in HCThis ratio shows the contribution made by each dollar invested in HC against VA organization. VAHU=VA/HC. VAHU = Value Added Human Capital: The ratio of VA to HC. VA = Value Added; HU = Human Capital: personnel expenses.
4. Calculate Structural Capital Value Added (STVA). Ratio indicates the number of SC that companies use to obtain one dollar of VA. STVA= SC/VA. STVA = Structural Capital Value Added: The ratio of the SC to the VA ;SC=Structural Capital: VA reduced HC(VA-HC); VA= ValueAdded.
5. Calculate Value added intellectual coefficient (VAIC). VAIC identify an organization's intellectual abilities which can be regarded as a BPI (Business Performance indicators). VAIC is the sum of the previous three components,namely:VACA, VAHU and STVA. VAIC = VACA + VAHU + STVA.

Firm's Value and Financial Performance

The Firm's value variable will be measured using the price-to-book value (price value / book value). PBV= (clossing price x Total stocks)/Total assets. Financial performance will be measured by profitability; Return on total assets (ROA), return on total equity (ROE), and net profit margin (NPM) (nuryaman, 2014.)

3.2. Population and Sample

This study uses a sample of public companies manufacturing sector, registered during the period of the year 2012 on the Indonesian Stock Exchange. Based on data from the Indonesia Stock Exchange (BEI), the data acquired company's financial statements as much as ninety-three (93) as a research sample.

3.3. Analysis Model

Once the data is collected, then analyzed the data. Data processing and data analysis in this study uses multiple regression model.

4. Results and Discussion

4.1 The Relation between Intelectual Capital and Firm's Value

Table 1. Summary of the result on intellectual capital regression with a price-to-book value, Return on asset, return on equity, and Net profit margin

Variable	PBV		ROA		ROE		NPM	
	B	Sig	B	Sig	B	Sig	B	Sig
VACA	.026	.002	-.004	.982	.016	.086	-.027	.909
VAHU	-.978	.511	-10.490	.769	-.592	.726	-13.310	.762
STVA	15.528	.000	20.401	.762	19.078	.000	46.663	.574
VAIC	.829	.000	0.261	0.236	1.336	0.000	0.076	0.731

Dependen variable PBV; ROA;ROE; and NPM

Notes: VACA = value added employed capital ; VAHU = value added human capital; STVA = Structural capital value added; VAIC= value added coefficient of intellectual capital.

Table 1 shows that the coefficients of the regression value added capital employed (VACA-PBV), structural capital value added (STVA-PBV), value added coefficient of intellectual capital (VAIC-PBV) variable with significan level: 0.026 (0.002), 15.528(0.000), and 0.829 (0.000). The regression coefficient on the results of data processing shows the direction in accordance with the theory, the coefficient is positive. The first hypothesis (Ha_1) is acceptable (at sig.level 0.05). Research shows that intellectual capital (VACA, STVA, VAIC) has an influence on the price book value (PBV).

If pay attention to the above test results, STVA get the most attention from investors who demonstrated the highest coefficent value with the lowest level of significance. It show that intelectual capital related to business processes, organizational capability, technology, culture, and relationship or networking, these is more attractive to investors than the aspect of human capital (VAHU). Maybe investors think that the structural capital is the outcome of creativity HR (human capital), so that they pay more attention to the impact and results of the company's human resources. These test results show that the intellectual capital the company has been a concern of investors, so that the increase in capital intelectual respond this positively by investors with increasing price to book value (PBV).

4.2 The Relation between Intelectual Capital and Financial Performance

Table 1 shows that the regression coefficient variable value added capital employed (VACA-ROA), value added human capital (VAHU-ROA), structural capital value added (STVA-ROA), and value added coefficient intellectual capital (VAIC-ROA) with significant level: -0.004 (0.938), -10.490 (0.982), 20.401 (0.762) and 0.261(0.236). Noticing the level of significance, the hypothesis stating that intellectual capital (VACA, VAHU, STVA, and VAIC) positively effects return on assets (ROA) is not acceptable on the level of significance of 0.05. It indicating that the Intelectual capital does not have a significant relationship with ROA.

The table 1 shows that the coefficients of value added capital employed (VACA-ROE), structural capital value added (STVA-ROE) variable with significance level: 0.016(0.086), 19.078(0.000).The coefficient on the results of data processing shows the direction in accordance with the theory. Noticing the level of significance, then the hypothesis stating that intellectual capital (VACA and STVA)) positively effects on return on equity (ROE) is acceptable (at sig.level 0.10). The table 1 appears that VAIC has a significant relationship with the return on equity, at the 0.05 significance level. It can be concluded that the effect on profitability VAIC proxied by return on equity (ROE). It indicating that the Intelectual capital have a significant relationship with ROE.

Table 1 shows that the value of the regression coefficient VACA, VAHU, STVA, with significant levels each: -0.027 (0.909), -13.310 (0.762), 46.663 (0.574), and0.076(0.731). Noticing the level of significance, the hypothesis stating that the VACA, VAHU, STVA, and VAIC positively effects net profit margin (NPM) is not acceptable on the level of significance of 0.05. It indicating that the Intelectual capital does not have a significant relationship with NPM

4.3 Financial Performance as an Intervening Variable in the relationship intellectual capital with Firm Value

Based on the above test results, the subsequent analysis to test the profitability with the proxy return on equity (ROE) as an intervening variable in the relationship intelectual capital (VACA, VAHU, STVA) with the value of the company by proxy price to book value (PBV).

Table.2. Coefficients of intellectual capital, Return on equity - Price to book value

Model	VAR	B	Sig	Model	VAR	B	Sig
1	VACA	.026	.002	3	VAIC	11.088	.000
	VAHU	-.978	.511				
	STVA	15.528	.000				
2	VACA	.018	.010	4	VAIC	4.827	.020
	VAHU	-.681	.580		ROE	.416	.000
	STVA	5.943	.033				
	ROE	.502	.000				

Dependen variable= Price to book value (PBV)

Notes: VACA = value added employed capital ; VAHU = value added human capital; STVA = Structural capital value added; VAIC = Value added intellectual capital; and ROE = return on equity

Based on table 2, model 2 above it appears that the coefficient variable of ROE-PBV (0.502) is marked positive (at sig.level 0.000), and the hypothesis could be supported. The conclusion is that the Profitabilyty with proxy by ROE has effect on the PBV, and the hypothesis is accepted. Further discussion, as shown in model 2 that when the ROE included in the model the influence of independent variables to PBV, the coefficient VACA and STVA (in model 2) decreased compared to the previous (model 1). These findings indicate that profitability (ROE) can act as an intervening variable in causality intellectual capital and firm's value (PBV).

Based on table 2, model 4 above-VAIC as the independen variable, it appears that the coefficient of ROE-PBV=0.416 (at sig.level 0.000), it could be concluded that there is a positive relationship between the profitability (ROE) and price to book value (PBV), and hyphitesis could be supported. The conclusion is that the Profitabilyty with proxy by ROE has effect on the PBV. The next discussion, when ROE included in the model of the relationship between VAIC with PBV, it appears coefficient VAIC (model 4) decreased from the previous model (model 3). These findings can be concluded that the ROE is an intervening variable in the relationship of intellectual capital (VAIC) and enterprise value (PBV), and the hypothesis is accepted.

This study obtained several findings: (a) intellectual capital (VACA, STVA, VAIC) impact positively on the value of the company; (b) intellectual capital (VACA, STVA, VAIC) has a positive correlation with financial performance (ROE); and (c) financial performance, profitability (ROE) can become variable intervening in the relationship between intellectual capital (VACA, STVA, VAIC) and firm value (PBV).

5. Conclusions

It has been recognized by investors that intellectual capital is a company asset that can make corporate excellence in global competition, as an intangible asset that can increase the competitive advantage of the company. This is evidenced by the results of this experiment that intelectual capital positively influence the firm's value. This shows that the market (investors) gives a higher value to the company that has a greater intelectual capital.

Likewise, the individually dimensions of intelectual capital, especially the value added capital employed (VACA) and structural capital value added (STVA) variable has the greatest influence on firm value. This result indicates that investors are more interested in the structural capital compared to human capital, perhaps because investors think of structural capital is the outcome of human capital, Further research is needed

This study proves that good intellectual capital can increase the profitability of the company. This conclusion is based on the results of testing that Intellectual capital has positive effect on profitability (financial performance) which measured by return on equity (ROE). This shows that companies that have a greater intelectual capital will result in a higher financial performance.

Financial performance proxied by return on Equity (ROE) proved to act as intervening variables on intelectual capital relationship with the firm's value. This shows that the greater the Intellectual capital can improve financial performance (ROE) companies are increasingly high, then th e implications of it is the rising value of the company (stock price).

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