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Intellectual Capital and Corporate Financial Performance of Selected Listed Companies in Indonesia

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***Abstract*:** The main focus of this research is to investigate the relationship between intellectual capital (IC) and corporate financial performance of selected listed companies in Indonesia. Unlike financial and physical assets, intangible assets are difficult to emulate, which makes them a powerful source of competitive advantage. The study uses data from consumer goods firms listed on the Jakarta Stock Exchange. Pulic's Value Added Intellectual Coefficient (VAIC) model is utilised as the efficiency measure of capital employed, both human and structural capital. The regression model explores the relationship between intellectual capital and its contribution to the financial performance of firms in both current and future years. The results reveal that intellectual capital does contribute to the financial performance, with the exception of revenue growth of consumer goods firms in Indonesia. Furthermore, findings suggest that future performance is also affected by the level of intellectual capital. Finally, evidence shows that capital of physical, financial and structural nature is the most significant underlying driver of corporate performance. Although insignificant, human capital has a positive and consistent role in revenue growth. This paper contributes to the understanding that in creating corporate value, Indonesian investors placed less weight on the potential of intellectual capital.

Keywords: Financial performance, intellectual capital
JEL classification: G10.

1. Introduction

Over the last decade, consideration of intellectual capital (IC) has gained in importance. IC has been increasingly viewed as a significant contributor to the process of value-creation and performance in corporations (Sullivan 2000).

In the new 'knowledge-based' economy that started to develop in the 1990s (Williams 2000), intellectual capital, rather than physical capital, emerged as a key factor in a firm's potential future performance and success. Unlike financial and physical assets, intangible assets are hard to emulate by competitors, which makes them a powerful source of competitive advantage.

Intellectual capital is generally considered to be a vital strategic asset (Mouritsen 1988). This qualification of intellectual capital as a strategic asset rests on a potential link between intellectual capital and firm performance. Empirical research findings vary among

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countries due to differences in economic, political, legal, social, and cultural factors (Firer and Williams 2003; Riahi-Belkaoui 2003; Chen *et al.* 2005; Shiu 2006; Zhang *et al*. 2006; Tan *et al*. 2007).

Research on intellectual capital and how it affects the profitability of Indonesian companies is significant because not only do these companies compete amongst themselves, but with foreign companies as well. Clearly, Indonesian organisations must have a strategy to compete and survive in such a dynamic international environment. One way for these Indonesian organisations to gain competitive advantage is to manage their intellectual capital.

This paper aims to determine whether the intellectual capital of Indonesian corporations relates to their financial performance. A sample of 36 companies from the consumer goods sector were selected from 340 publicly listed companies in the Jakarta Stock Exchange over the 2003- 2006 period. This sector is considered to be reliant on intangible assets such as their brand image and patents. Moreover, the sample companies were taken from one industry sector to obtain a homogenous sample. The Value Added Intellectual Coefficient (VAIC™) developed by Pulic (1998) was employed as an alternative measure of intellectual capital. The corporate performance of the companies was measured by four ratios: Return on Assets (ROA), Asset Turnover (ATO), Revenue Growth (RG), and Operating Cash Flow ratio (OCF).

This study contributes further to the development of literature and studies on intellectual capital by focusing on Indonesia, a developing country. Previous studies on intellectual capital have mostly focused on businesses in developed countries. The results may contribute to increased awareness on the importance and advantages of effective intellectual capital management within an organisation. Also, accounting regulators of the Indonesian business environment can make use of these findings to determine possible necessary changes to present policies that will support the development of a framework for continued measurement of the nation's intellectual capital. Findings could help investors to gain a better understanding of the changes taking place in Indonesian businesses. Finally, this study should provide a basis for further research regarding intellectual capital by local as well as international academics.

The rest of this paper is organised as follows. Section 2 introduces the literature review of the theoretical foundations on intellectual capital. Research methodology used in this study is outlined in Section 3. Section 4 presents the findings of the empirical analysis while Section 5 offers the conclusions on this study.

2. Literature Review

Intangible assets are those intangibles that would be recognised by financial standards and allowed to be recorded in a balance sheet (Starovic and Marr 2003). When intellectual property is defined as intangible assets, and includes patents, trademarks and copyrights, it can also be included in a traditional financial statement. Intellectual assets are a part of intellectual capital. They are "the codified knowledge and know-how of the firm's human capital", (Sullivan 2000).

Brooking (1996) describes intellectual capital (IC) as the "combined intangible assets which enable the company to function." In other words, an enterprise is the sum of its tangible assets and its intellectual capital.

The range of views and the number of terms used to define and describe intellectual capital are broad and ambiguous. Due to the close ties between intellectual capital, the industry and specific companies, IC implemented by one company might be different from other companies (Abdolmohammadi 2005). Similarly, Sullivan (2000) states that a wide range of interests and perspectives on the subject of IC cause a diversity of opinions on the definition.

The elements of intellectual capital (IC) developed by Bucklew and Edvinsson (1999) have been expanded upon by Brinker (1997) and Stewart (1997), who stated that intellectual capital is the sum of human capital, structural capital and customer capital.

1. *Human Capital*: the employee's capabilities to satisfy customers through innovation, problem solution and creativity. Human capital embraces the changes of a learning, competitive, creative and innovative environment.
2. *Structural Capital*: The infrastructure of human capital, that is capable of fulfilling the requirements of the market, for example, information technology system, company reputation, and databases.
3. *Customer Capital or Relationship Capital*: The relationships of a company with its business partners, inclusive of all parties that have business interests with it. It is the interaction between human, structural and customer capital that helps determine the true value of a company's overall intellectual capital.

Pulic (1998; 2000a; 2000b) developed the Value Added Intellectual Coefficient (VAIC) to measure the IC of companies. His model uses the concept of Skandia models that the market value of a company is made up of capital operation and intellectual capital. The evaluation of performance includes evaluation of the efficiency of capital employed and evaluation of the efficiency of intellectual capital. VAIC is used to measure the value added by both the efficiency of capital employed (CEE) and intellectual capital (ICE); VAIC = CEE + ICE.

According to the models of Skandia[†], intellectual capital is divided into two main parts: human capital and structural capital, thus the intellectual capital efficiency coefficient is the sum of the human capital efficiency (HCE) and structural capital efficiency coefficient (SCE), thus, VAIC = CEE + HCE + SCE.

The use of VAIC from Pulic's model as a measure of a firm's intellectual capital, is widely used because of its simplicity (Pulic 1998; 2000a; 2000b). It uses publicly available data (historical financial statements) and allows the comparison between companies and countries (Firer and Williams 2003). VAIC does not generate an amount for intellectual capital; however, it shows how well a company converts its intellectual capital into value added. The higher the VAIC indicator, the better the management utilises the company's potential.

[†] Skandia is a multinational insurance and financial services company in Sweden. The company has a division called Assurance and Financial Services. This division focuses on developing and applying a systematic approach to hidden values and even has a director of intellectual capital to build an "intelligent organisation". The AFS definition of intellectual capital is the knowledge, skills and technologies used to create a competitive edge for Skandia. However, a more managerial definition of intellectual capital is the sum of structural capital and human capital (Bucklew and Edvinsson 1999).

3. Methodology

The data used in this research is taken from the annual reports of Consumer Goods companies listed on the Jakarta Stock Exchange during 2003-2006. The consumer goods sector is considered to be reliant on intangible assets such as brand image and patents. Moreover, the sample companies were taken from one industry sector to obtain a homogenous sample. They represent about 3% of all publicly listed companies on the Jakarta Stock Exchange.

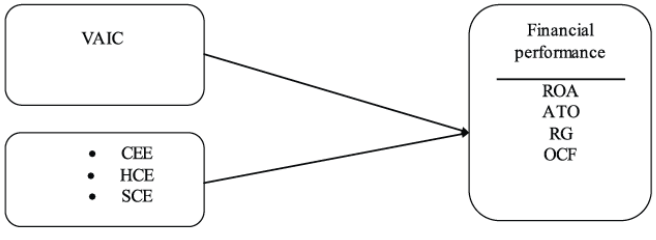
The aim of the paper is to show whether intellectual capital has an influence on the performance of companies in Indonesia. The author's main research questions are as follows:

1. Does the intellectual capital of companies influence their current financial performance?
2. Does the intellectual capital of companies influence their future financial performance?
3. Do any of the components of VAIC (CEE, HCE, or SCE) have a greater positive influence on the financial performance of the companies?

The independent variables of capital employed efficiency (CEE), human capital efficiency (HCE), and structural capital efficiency (SCE) are components of the value added intellectual coefficient (VAIC), which is a measure of the company's IC in this research. The VAIC will be tested for correlations with the return on assets (ROA), asset turnover (ATO), revenue growth (RG) and operating cash flow ratio (OCF).

1. ROA indicates how profitable a company is relative to its total assets. Intellectual capital is presumed to positively affect earnings, hence, if this assumption is true, ROA will increase as IC increases. This ratio is calculated by dividing the net income (less preference dividends) divided by the book value of total assets as reported in the 2003-2006 annual reports. It has been used in several studies (Chen *et al*. 2005; Firer and Williams, 2003; Shiu 2006) to represent corporate performance in testing its relationship with intellectual capital. The formula used by Chen *et al*. (2005) is used to eliminate the tax effect for the calculation of ROA where

$$\text{ROA} = \text{Pre-tax income/total assets} \quad (1)$$



CEE - Capital Employed Efficiency; HCE - Human Capital Efficiency; SCE - Structural Capital Efficiency; ROA – Return on Assets; ATO - Asset turnover, RG - Revenue Growth; OCF - Operating Cash Flow ratio.

Figure 1. *Research framework*

2. ATO denotes the productivity level of a company. It measures a firm's efficiency at using its assets in generating sales or revenue. This variable was also used by Firer and Williams (2003) and Shiu (2006) as a proxy measure of productivity (P) where

$$P = ATO = \text{sales revenue/book value of total assets} \quad (2)$$

3. RG measures the changes in a company's revenue, in this case, from year to year. Increases in revenue signal the company's opportunities for growth. Growth in revenue is measured by dividing a firm's revenue from the latest financial report by the previous year's revenue. This variable was used by Chen *et al*. (2005) as a proxy measure of profitability and the researcher chooses to use the same variable,

$$GR = [(\text{revenue}_{t} / \text{revenue}_{t-1})-1] \times 100\% \quad (3)$$

4. OCF is the net cash generated from operations. It is produced by taking net income, adding back the amount of depreciation, and making adjustments to reflect changes in the working capital accounts, that is, receivables, payables, inventories and other current accounts, on the balance sheet. Operating cash flow is debatably a better measure of a business' profits than earnings because a company can show positive net income on the income statement and still not be able to pay its liabilities. OCF is defined as:

$$OCF = \text{total operating cash flow/total assets} \quad (4)$$

These variables will be tested for any correlation with independent variables such as human capital efficiency (HCE), capital employed efficiency (CEE) and structural capital efficiency (SCE).

(i) CEE indicates the value added (VA) efficiency of capital employed for a firm:
CEE = VA/CE

(ii) HCE shows the value added efficiency of human capital for a firm:
HCE = VA/HC

(iii) SCE specifies the value added efficiency of structural capital for a firm:
SCE = SC/VA

According to Pulic (2004), the three components of a firm's resources are capital employed (CE), human capital (HC), and structural capital (SC). They are calculated as follows:

CE = total assets – current liabilities; HC = total labour costs

$$SC = VA - HC \quad (5)$$

Value added is calculated as the difference between output and input. The basic definition is as follows:

$$VA = OUT - IN \quad (6)$$

Outputs (OUT) represent the revenue from sales of all products and services. Inputs (IN) include all the expenses incurred in earning the revenue except labour expense because it is considered as the value of human capital. Hence, labour expense is excluded from IN.

VA represents the value added for the company. Value added can be calculated from the company accounts as follows:

$$VA = OP + EC + D + A \quad (7)$$

where

OP = operating profit; EC = employee costs; D = depreciation, and A= amortisation.

The results of the calculation of components are then used to compute the value added intellectual coefficient (VAIC) and its three components.

$$VAIC = HCE + CEE + SCE \quad (8)$$

This paper uses the following regression model to examine the related hypothesis:

$$Y_i = \beta_0 + \beta_1 CEE + \beta_2 HCE + \beta_3 SCE + \epsilon_i \quad (9)$$

where Y_i is the dependent variable and ϵ_i is the random error term.

The dependent variables ROA, ATO, RG and OCF were tested consecutively using the regression model. In order to test whether the elements of VAIC influence corporate performance measures in the following year, lagged independent variables from two periods were regressed on the four dependent variables.

Using Pulic's VAIC model as a measure for corporate intellectual ability, this paper addresses the first four research propositions concerning the relationship between IC and contemporaneous corporate performance:

H1-a: Intellectual capital positively affects return on assets contemporaneously.
H1-b: Intellectual capital positively affects asset turnover contemporaneously.
H1-c: Intellectual capital positively affects revenue growth contemporaneously.
H1-d: Intellectual capital positively affects the operating cash flow ratio contemporaneously.

The statistical validation test for H1 is contemporaneous, that is company's performance correlated with same year data of IC. Firer and Williams (2003), state that contemporaneous correlation indicates the relevance of the information to investors. However, since the information has already been assessed, its value will be minimal to investors. Therefore, a multi-period predictive test is needed to test whether IC can be used to gain unexpected returns.

H2 is created to test for the projecting capability of IC. Logically, an investment made today is more likely to generate returns in the future than now. If IC is a major driver of corporate value, the IC that exists today should influence future earnings. Therefore, the following hypotheses are proposed to examine the relationship between IC and future corporate performance indicators:

H2-a: There is a positive relationship between intellectual capital in one year and return on assets in the following years.
H2-b: There is a positive relationship between intellectual capital in one year and asset turnover in the following years.

Table 1. Descriptive statistics

	N	Minimum	Maximum	Mean	Std. deviation
CEE	144	-14.20	5.63	.3009	1.96487
HCE	144	-8.53	33.57	2.7569	4.97873
SCE	144	.00	.97	.4552	.28735
VAIC	144	-20.72	34.64	3.5130	5.86887
ROA	144	-.39	1.26	.1266	.23717
ATO	144	.26	2.60	1.1720	.51686
RG	144	-.49	2.00	.1453	.29879
OCF	144	-.63	.43	.0803	.14623

Notes: CEE = Capital Employed Efficiency; HCE = Human Capital Efficiency; SCE = Structural Capital Efficiency; VAIC = Value Added Intellectual Coefficient; ROA = Return on Asset; ATO = Asset Turnover, RG = Revenue Growth; OCF = Operating Cash Flow

H2-c: There is a positive relationship between intellectual capital in one year and revenue growth in the following years.

H2-d: There is a positive relationship between intellectual capital in one year and operating cash flow ratio in the following years.

4. Findings

Table 1 presents the minimum and maximum values, the means, and standard deviations of the dependent and independent variables.

The means of CEE, HCE, and SCE suggest that during the study period, the sample firms were generally more effective in generating value from their human resources assets than from physical and structural assets. The means of the financial performances indicated by ROA, ATO, RG and OCF are normally distributed.

Table 2 shows the correlations between variables in this study. Spearman's Rank Correlation Coefficients and their parametric counterparts, Pearson Correlation Coefficients, were employed to determine bivariate relationships among the variables. Figures without brackets are the results of Spearman's evaluation, while the others within brackets are those of Pearson's. It can be seen that the results of the Spearman's correlation test show that intellectual capital has a significant positive correlation with corporate financial performance.

VAIC is positively and significantly correlated to HCE and SCE. It is worth noting that HCE and SCE will not be regressed against VAIC. VAIC is also positively and significantly correlated to ROA, ATO, RG and OCF, suggesting that intellectual capital is reflected in the financial performance of the firms under study. HCE and SCE are significant and positively correlated to all the independent variables. CEE is positively correlated to ROA, ATO, OCF and RG, but is not statistically significant with the latter. CEE is the most highly correlated to ROA, suggesting that capital plays a major role in return on assets. Human capital (HCE) is the most highly correlated to OCF, meaning that human capital positively influences the firm's operating cash flow.

Table 2. Correlation matrix

	CEE	HCE	SCE	VAIC	ROA	ATO	RG	OCF
CE	1	.319**	.310**	.532**	.598**	.609**	.195	.305**
		(.191)	(.153)	(.504**)	(.140)	.330**	(.228)	(.070)
HCE	.319**	1	.998**	.887**	.557**	.256*	.374**	.583**
	(.191*)		(.631**)	(.943**)	(.131)	(.036)	(.124)	(.271*)
SCE	.310**	.998**	1	.880**	.565**	.256*	.367**	.578**
	(.153)	(.631**)		(.636**)	(.329**)	(.274*)	(.208)	(.540**)
VAIC	.532**	.887**	.880**	1	.505**	.341**	.317**	.475**
	(.504**)	(.943**)	(.636**)		(.174)	(.155)	(.191)	(.280*)
ROA	.598**	.557**	.565**	.505**	1	.497**	.232*	.562**
	(.140)	(.131)	(.329**)	(.174)		(.417**)	(.008)	(.135)
ATO	.609**	.256*	.256*	.341**	.497**	1	.141	.299*
	.330**	(.036)	(.274*)	(.155)	(.417**)		(.139)	(.383**)
RG	.195	.374**	.367**	.317**	.232*	.141	1	.410**
	(.228)	(.124)	(.208)	(.191)	(.008)	(.139)		(.173)
OCF	.305**	.583**	.578**	.475**	.562**	.299*	.410**	1
	(.070)	(.271*)	(.540**)	(.280*)	(.135)	(.383**)	(.173)	

Notes:* and ** indicates significance at 5% and 1% levels respectively.
CEE = Capital Employed Efficiency; HCE = Human Capital Efficiency; SCE = Structural Capital Efficiency; VAIC = Value Added Intellectual Coefficient; ROA = Return on Assets; ATO = Asset Turnover, RG = Revenue Growth; OCF = Operating Cash Flow

Table 3 describes the results of hypothesis 1-a. The model shows an adjusted R-squared of 0.09, which means that it is able to explain only 9 per cent of the variability of return on assets in the same period. This figure is adequate considering it is a cross-sectional analysis. The *F*-statistic of 3.345 is significant at less than a 5 per cent level. Of the three independent variables in the model, only SCE is positively significant, suggesting that only the efficiency of the structural capital in consumer goods firms contributes to the growth of ROA.

Table 4 presents the results of hypothesis 1-b. The results show an adjusted R-squared of 0.171, indicating that the model has been able to explain 17.1 per cent of the variability of asset turnover in the same period. Two out of the three independent variables in the model, CEE and SCE are significant. The findings suggest that intellectual capital does have a significant and positive relationship with asset turnover. The lack of significance of HCE may reflect that equal opportunity is not a priority for Indonesian companies (Hutchings and Michailova 2004); it may be of greater interest to consider the equal opportunity policy and practice in respect of a number of specific 'diversity' factors in Indonesia.

Table 5 displays the results of hypothesis 1-c. The result indicates a low adjusted R-squared (0.043), which means that the independent variables are poor explanatory factors of variations in the dependent variable. The weak relationship with revenue growth may be due to the feature of the variable. Revenue growth compares revenues between two years, whereas the other three performance indicators are measures of efficiency. Therefore, even

Table 3. Regression results for H1-a. Dependent variable ROA

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	-.010	-.187	.852
CEE	.013	.921	.360
HCE	-.007	-.981	.360
SCE	.333	2.761*	.007
F-Stat. (*p*-value)	3.345 (.024)		
R^2	.129		
Adjusted R^2	.090		

Notes: * indicates significance at 5% level.
ROA= β_0 + β_1CEE+ β_2HCE + β_3SCE + ε, ROA = Return on Assets, CEE = Capital Employed Efficiency, HCE = Human Capital Efficiency, SCE = Structural Capital Efficiency.

Table 4. Regression results for H1-b. Dependent variable ATO

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	0.898	8.217*	.000
CEE	.085	2.921*	.005
HCE	-.029	-1.981	.052
SCE	.721	2.875*	.005
F-Stat. (*p*-value)	5.884 (.001)		
R^2	0.206		
Adjusted R^2	0.171		

Notes: * indicates significance at 5% level.
ATO= β_0 + β_1CEE+ β_2HCE + β_3SCE + ε, ATO = Asset Turnover, CEE = Capital Employed Efficiency, HCE = Human Capital Efficiency, SCE = Structural Capital Efficiency.

Table 5. Regression results for H1-c. Dependent variable RG

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	.045	.658	.513
CEE	.031	1.731	.088
HCE	-.003	-.297	.767
SCE	.213	1.366	.176
F-Stat. (*p*-value)	2.068 (.113)		
R^2	0.084		
Adjusted R^2	0.043		

Notes: RG= β_0 + β_1CEE+ β_2HCE + β_3SCE + ε, RG = Revenue Growth, CEE = Capital Employed Efficiency, HCE = Human Capital Efficiency, SCE = Structural Capital Efficiency.

Table 6. Regression results for H1-d. Dependent variable OCF

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	-.052	-1.800	.076
CEE	.000	-.018	.986
HCE	-.003	-.876	.384
SCE	.312	4.678*	.000
F-Stat. (*p*-value)	9.683 (.000)		
R^2	0.299		
Adjusted R^2	0.268		

Notes: * indicates significance at 5% level.
OCF= β_0 + β_1CEE+ β_2HCE + β_3SCE + ε, OCF = Operating Cash Flow Ratio, CEE = Capital Employed Efficiency, HCE = Human Capital Efficiency, SCE = Structural Capital Efficiency.

though capital employed efficiency is significant at the 10% level, it does not substantially explain the revenue growth of firms in the consumer goods sector.

Table 6 exhibits the results of hypothesis 1-d. The adjusted R-squared in the table implies that 26.8 per cent of the variance in the OCF ratio has been significantly explained by the three independent variables. The F value of 9.683 is significant at the 0.000 level. From the three independent variables, only SCE is significantly and positively related to the OCF as the dependent variable. That means that structural capital efficiency positively influences operating cash flow.

Tables 7 to 10 show the results of hypothesis 2-a through 2-d. Panels A and B of Table 7 present the results of regression between intellectual capital and the return on assets in the following year and in the two years thereafter. Panels A and B with adjusted R-squared of 0.287 and 0.466, respectively, show that the elements of VAIC from one and two years earlier significantly explain the variations of return on assets. The statistics of the independent variable's coefficients signify that SCE is the most influential variable in both periods and CEE significantly affects ROA in the lagged two years result.

Panels A and B of Table 8 display the results of regression between intellectual capital and asset turnover in one year and in the two years thereafter. In both panels A and B of Table 8, the adjusted R-squared decreases from 0.259 to 0.127 which indicates that the model explains more about the variability in asset turnover (ATO) in one lagged year compared to two lagged years. CEE and SCE have positive and greater influences on asset turnover but their contributions have more weight in lagged one-year. That means the changes in SCE and CEE will have more impact on return on assets a year later.

Panels A and B of Table 9 exhibit the results of regression between intellectual capital and revenue growth in one year and in the following years. In both panels A and B of Table 9, the adjusted R-squared decreases from 0.199 to 0.083 which indicates that the model explains more about the variability in revenue growth (RG) in lagged one year compared to lagged two years.

Table 7. Regression results for H2-a. Dependent variable ROA

PANEL A: Lagged one year

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	-.101	-1.852	.073
CEE	.003	.268	.791
HCE	-.014	-1.447	.158
SCE	.489	3.750*	.001
F-Stat. (*p*-value)	5.695 (.003)		
R^2	0.348		
Adjusted R^2	0.287		

Notes: indicates significance at 5% level.
ROA = $\beta_0 + \beta_1$CEE+ β_2HCE + β_3SCE + ε, ROA = Return on Assets in 2006, CEE = Capital Employed Efficiency in 2005, HCE = Human Capital Efficiency in 2005, SCE = Structural Capital Efficiency in 2005.

PANEL B: Lagged two years

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	-.124	-2.811*	.008
CEE	.060	2.426*	.021
HCE	-.009	-1.793	.082
SCE	.500	5.106*	.000
F-Stat. (*p*-value)	11.185 (.000)		
R^2	0.512		
Adjusted R^2	0.466		

Notes: * indicates significance at 5% level.
ROA = $\beta_0 + \beta_1$CEE+ β_2HCE + β_3SCE + ε, ROA= Return on Assets in 2006, CEE = Capital Employed Efficiency in 2004, HCE = Human Capital Efficiency in 2004, SCE = Structural Capital Efficiency in 2004.

In panel A, only CEE has a significant influence on asset turnover in lagged one year. The coefficients of CEE declined from panel A to panel B, suggesting that physical and financial assets have a short-term role in revenue growth. On the other hand, in panel B, none of the variables are significant, meaning that they do not influence asset turnover in lagged two years. Although insignificant, human capital (HCE) is a variable that has a positive and consistent role in revenue growth.

Panels A and B of Table 10 present the results of regression between intellectual capital and operating cash flow in one year and in the following years. Panel A of Table 10 shows that the explained variance is 21.2 and only SCE significantly affects operating cash flow in the lagged one year regression.

In Panel B, the adjusted R-squared has increased substantially from 0.212 with lagged one year to 0.369 with lagged two years. This increase could be attributed to the fact that

Table 8. Regression results for H2-b. Dependent variable ATO

PANEL A: Lagged one year

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	.781	4.640	.000
CEE	.083	2.521*	.017
HCE	-.053	-1.789	.083
SCE	1.112	2.771*	.009
F-Stat. (*p*-value)	5.088 (.005)		
R^2	0.323		
Adjusted R^2	0.259		

Notes: * indicates significance at 5% level.
ATO = $\beta_0 + \beta_1$CEE+ β_2HCE + β_3SCE + ε, ATO = Asset Turnover in 2006, CEE = Capital Employed Efficiency in 2005, HCE = Human Capital Efficiency in 2005, SCE = Structural Capital Efficiency in 2005.

PANEL B: Lagged two years

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	.771	4.533	.000
CEE	.103	1.077	.289
HCE	-.028	-1.468	.152
SCE	1.010	2.672*	.012
F-Stat. (*p*-value)	2.704 (.062)		
R^2	0.202		
Adjusted R^2	0.127		

Notes: * indicates significance at 5% level.
ATO = $\beta_0 + \beta_1$CEE+ β_2HCE + β_3SCE + ε, ATO = Asset Turnover in 2006, CEE = Capital Employed Efficiency in 2004, HCE = Human Capital Efficiency in 2004, SCE = Structural Capital Efficiency in 2004.

the effect of operating cash flow will take about two years to emerge. In both panels, SCE is significant, meaning that it is the most influential contributor to the change in operating cash flow.

In brief, the positive relationship between intellectual capital in one year and the return on assets, asset turnover, revenue growth, and operating cash flow in the following years suggest that intellectual capital does have a significant relationship with future financial performance. This indicates that companies will reap benefits in the future from intellectual capital invested today. Also, the relationship between intellectual capital invested today and future performance is more significant than that between intellectual capital and current performance. This means that it takes time to yield results from the efficiency of intellectual capital.

Table 9. Regression results for H2-c. Dependent variable RG

PANEL A: Lagged one year

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	.032	.341	.735
CEE	.041	2.214*	.034
HCE	.019	1.165	.253
SCE	.011	.047	.963
F-Stat. (*p*-value)	3.895 (.018)		
R^2	0.267		
Adjusted R^2	0.199		

Notes: * indicates significance at 5% level
$RG = \beta_0 + \beta_1 CEE + \beta_2 HCE + \beta_3 SCE + \varepsilon$, RG = Revenue Growth in 2006, CEE = Capital Employed Efficiency in 2005, HCE = Human Capital Efficiency in 2005, SCE = Structural Capital Efficiency in 2005.

PANEL B: Lagged two years

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	-.025	-.265	.793
CEE	.007	.135	.893
HCE	.013	1.242	.223
SCE	.204	.978	.335
F-Stat. (*p*-value)	2.060 (.125)		
R^2	0.162		
Adjusted R^2	0.083		

Notes: $RG = \beta_0 + \beta_1 CEE + \beta_2 HCE + \beta_3 SCE + \varepsilon$, RG = Revenue Growth in 2006, CEE = Capital Employed Efficiency in 2004, HCE = Human Capital Efficiency in 2004, SCE = Structural Capital Efficiency in 2004.

Tan *et al*. (2007) in their study using public listed companies on the Singapore Stock Exchange found that companies enjoy higher performance when actively fostering and raising their IC. The results of the regression analysis show that CEE and SCE have a more positive influence on the financial performance of the sample companies, both in the same period and in the following years. This indicates that physical capital (included in CEE) remains a significant fundamental resource for corporate performance in Indonesian public listed companies, especially in the consumer goods industry sector. Moreover, this implies that structural capital is also a major driver of performance in the consumer goods sector. Stewart (1997) states that structural capital comprises patents, plans and trademarks. The empirical findings suggest that these brands, patents and trademarks and other intangible assets invested in the company have contributed to the improvement of the companies'

Table 10. Summary of regression results for H2-d. Dependent variable OCF

PANEL A: Lagged one year

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	-.084	-1.577	.125
CEE	-.001	-.106	.916
HCE	-.014	-1.496	.144
SCE	.426	3.347*	.002
F-Stat. (*p*-value)	4.142 (.014)		
R^2	0.280		
Adjusted R^2	.212		

Notes: * indicates significance at 5% level.
OCF = $\beta_0 + \beta_1$CEE+ β_2HCE + β_3SCE + ε, OCF = Operating Cash Flow Ratio in 2006, CEE = Capital Employed Efficiency in 2005, HCE = Human Capital Efficiency in 2005, SCE = Structural Capital Efficiency in 2005.

PANEL B: Lagged two years

Independent variable	Coefficient	*t*-statistic	*p*-value
Constant	-.105	-2.350*	.025
CEE	.036	1.422	.165
HCE	-.010	-1.974	.057
SCE	.453	4.584*	.000
F-Stat. (*p*-value)	7.832 (.000)		
R^2	0.423		
Adjusted R^2	0.369		

Notes: * indicates significance at 5% level.
OCF = $\beta_0 + \beta_1$CEE+ β_2HCE + β_3SCE + ε, OCF = Operating Cash Flow Ratio in 2006, CEE = Capital Employed Efficiency in 2004, HCE = Human Capital Efficiency in 2004, SCE = Structural Capital Efficiency in 2004.

performance. HCE, on the other hand, is negatively associated in most of the models. This indicates that human resources are not really capable of increasing performance. Treacy and Wiersema (1995) argue that even though IC is very important for company success, higher market value and profitability could be realised through other sources such as financial or physical assets.

5. Conclusion

Intellectual capital is believed to play an important role in increasing the performance of a company. Throughout this research, the components of the Value Added Intellectual Capital (VAIC) coefficient were used to measure the efficiency of IC. This study investigated these components' relationships with financial performance in Indonesian consumer goods

companies. Based on the calculations, analyses and findings discussed in previous chapters, three main conclusions can be made.

First, intellectual capital positively affects the current financial performance of companies in the consumer goods sector, although revenue growth is not significantly influenced. Second, the study provides empirical evidence that companies with greater intellectual capital yield greater profitability, productivity and growth in the following years. However, intellectual capital seems to have a significant effect on revenue growth on the lagged one year results but not on the lagged two years results. Findings revealed that physical and financial assets have a short-term role in revenue growth. Third, capital employed efficiency (CEE) and structural capital efficiency (SCE) are the most influential variables in the improvement of a firm's future performance, and human capital efficiency (HCE) does not have any role in a firm's profitability and productivity.

Better results are obtained if the efficiency of intellectual capital is analysed with the ROA, ATO and OCF, which are measures of efficiency (profitability and productivity) of a company. Based on the empirical findings, it is time for Indonesia to give more importance to intellectual capital as a way of creating value to increase its potential competitive advantage. The lack of a significant role for human capital could be a sign that the time has come to give more attention to IC.

Our results have inherent limitations. The present study draws on data from a single nation and from firms within one business sector only; it is recognised that other measures of profitability or market valuation can be used to analyse the importance of intellectual capital. Additional research should be conducted using data from alternative domestic settings and/or companies from various business sectors.

Whilst providing various insights that should be of interest to scholars, shareholders, institutional investigations, policymakers and other relevant stakeholders, the findings from the present study indicate the possibility of extending the future investigation using several approaches.

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Appendix 1. List of companies

No	Code	Company Name
1	ADES	Ades Waters Indonesia Tbk.
2	AISA	Tiga Pilar Sejahtera Food Tbk.
3	AQUA	Aqua Golden Mississippi Tbk.
4	BATI	BAT Indonesia TBk.
5	CEKA	Cahaya Kalbar Tbk.
6	DAVO	Davomas Abadi Tbk.
7	DLTA	Delta Djakarta
8	DVLA	Darya Varia Laboratoria Tbk.
9	GGRM	Gudang Garam Tbk.
10	HMSP	HM Sampoerna TBk.
11	INAF	Indofarma Tbk.
12	INDF	Indofood Sukses Makmur Tbk.
13	KAEF	Kimia Farma Tbk.
14	KDSI	Kedawung Setia Industrial Tbk.
15	KICI	Kedaung Indah Can Tbk.
16	KLBF	Kalbe Farma Tbk.
17	LMPI	Langgeng Makmur Plastic I Tbk.
18	MERK	Merck Tbk.
19	MLBI	Multi Bintang Indonesia
20	MRAT	Mustika Ratu Tbk.
21	MYOR	Mayora Indah Tbk.
22	PSDN	Prasidha Aneka Niaga Tbk.
23	PYFA	Pyridam Farma Tbk.
24	RMBA	Bentoel International Inv. Tbk.
25	SCPI	Schering Plough Indonesia Tbk.
26	SHDA	Sari Husada Tbk.
27	SKLT	Sekar Laut Tbk.
28	SMAR	Sinar Mas Agro Resources and Technology
29	SQBI	Bristol-Myers Squibb Indonesia
30	STTP	Siantar TOP TBk.
31	SUBA	Suba Indah Tbk.
32	TBLA	Tunas Baru Lampung Tbk.
33	TCID	Mandom Indonesia Tbk.
34	TSPC	Tempo Scan Pacific Tbk.
35	ULTJ	Ultra Jaya Milk Tbk.
36	UNVR	Unilever Indonesia Tbk.