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INTELLECTUAL CAPITAL AND ITS IMPACT ON FINANCIAL PROFITABILITY AND INVESTORS' CAPITAL GAIN ON SHARES

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ABSTRACT

The research attempts to investigate the influence of efficiency of value added by the major components of a firm's resource base (physical capital, human capital, and structural capital) towards financial profitability (indicated by return on asset and return on equity) and also investors' capital gain on shares. Value Added Intellectual Coefficient™ (VAIC™) introduced is used as proxy of firm's effectiveness in managing its intellectual capital. Data were drawn from 22 banking firms and 10 samples of publicly traded banking and insurance firms respectively during 2005-2007. The linear multiple regression analysis suggests that the association between the efficiency of value added by a firm's major resource bases and (1) return on asset, (2) return on equity, and (3) capital gain, are generally limited and insignificant. This is mainly due to the unique characteristics of banking companies compared to other sectors. In contrast, for insurance sector confidently shows there is a significant association between efficiency of VAIC™ toward financial profitability and investors' capital gain. This show that the power of intellectual capital is valuable information for related parties in decision making and policy creation process especially in considering the growing significant role of banking and insurance companies in developing Indonesia economies.

Key words: *physical capital, human capital, structural capital, profitability, capital gain.*

INTELLECTUAL CAPITAL, KEMAMPULABAAN, DAN *CAPITAL GAIN ON SHARE* PENANAM MODAL

ABSTRAK

Tujuan penelitian ini adalah untuk mengetahui pengaruh efisiensi nilai tambah pada komponan utama sumber daya perusahaan (physical capital, human capital, dan structural capital) kemampualabaan, yang diindikasikan dalam return on asset (ROA) dan return on equity (ROE), serta capital gain pada saham para investor. Koefisien intelektual nilai tambah (VAIC™) digunakan sebagai efektifitas proxy perusahaan dalam mengelola intellectual capital. Data berasal dari 22 perusahaan perbankan dan 10 perusahaan asuransi selama 2005-2007. Analisis dengan regresi linier berganda menunjukkan bahwa hubungan antara efisiensi, nilai tambah, terhadap sumber daya utama perusahaan dengan (1) ROA, (2) ROE, dan (3) capital gain secara umum terbatas dan tidak signifikan. Ini dikarenakan temuan karakteristik unik pada perusahaan perbankan dibanding dengan sektor lain. Sebaliknya, ada hubungan signifikan antara efisiensi dan VAIC™ dengan kemampulabaan dan capital gain para investor. Ini menunjukkan kekuatan intellectual capital sebagai informasi yang sangat bermanfaat bagi pihak mana pun dalam membuat keputusan dan kebijakan khususnya peranan perusahaan perbankan dan asuransi dalam mengembangkan perekonomian Indonesia.

Kata Kunci: *modal fisik, modal manusia, modal structural, kemampulabaan, capital gain.*

INTRODUCTION

Over the past years, there have been major changes in the global economy with the substantial increases in the number of companies working in service, knowledge-based company, dot.coms (internet-based companies) and even virtual companies. Klein stated "We hear it echoed in the buzzwords of the day: Companies compete in a "knowledge economy," skilled functions are performed by "knowledge workers," and firms that improve with experience are "learning organization" (Klein, 1998). This condition leads to a new emerging concept in business world called a knowledge-based economy, which exercises a different paradigm in the way business should create method and procedures to create value.

Many studies addressed the needs for developing alternative economic theories about the information necessary for intelligent capital performance and perceptions of corporate performance. For companies which most of the asset are on intellectual capital the information provided in financial statement will be misleading. Conventional organization's book value only considers the organization's tangible assets, revenues, profits, and liabilities. However, an organization's market value indicates the organization's actual worth and not only the book value. The market value of an organization is defined as the replacement costs of the business, and it exhibits a hidden value.

Utilization of these intangible assets also determines whether relationships and business plans would be successful. The determinants of intellectual capital such as human capital and structural capital created in customers, process, databases, brands, and systems have been recognized as the factors that determine corporate well being. Extensive research also indicates the growing significant of intellectual. Pulic (2000a,b) identified that firms' market values have been created by not only capital employed (physical & financial) but also intellectual capital by investigating that there is significant relationship between the average value of AVIC and firms' market value. Mind, Shu, and Yuhchang (2005) found that firms' intellectual capital have a positive impact on market value and financial performance and identified the positive impact of R&D expenditure on profitability and firm value. The latest research by Huei-Jen Shiu (2006) suggests that firms could transfer its intangible assets such as intellectual capital, to high-value added products or insurances.

This issue creates a challenge for accounting as a dynamic field since it mainly obligated to transform the information of the whole condition of a firm into a "language" that can be understood by stakeholders as valuable consideration for them in decision making. Wall, Kirk and Martin (2004) states that: "If the role of the accountant is to record, measure and report the assets of the company, how can they fulfill this role if they ignore what is nowadays a company's most valuable assets, intellectual capital- the intangible assets of skill, knowledge and information?". Microsoft Corp is just one of the examples of a company with excess of market value compare to net asset value. In 1997, it had a market value of US $87 billion while its physical assets are only worth US &10 billion (Tapsell, 1998). The complete figure can be seen in Table 1.

Research Problems and Objectives

As a response to this issue, the research problem is whether Intellectual capitals have impacts on financial profitability as well as in the investor's capital gain on shares. This study observed banking and insurance companies in Indonesia, which have been listed on Indonesia stock market during year 2005 until 2007. Banking and insurance companies can be categorized as intellectual-based industries in which innovation for product and services, knowledge and flexibility are crucial aspects in determining business success. Beside, both sectors also contribute to a growing significant role in Indonesia economies especially banking companies with growing concern for small and medium enterprise trough micro lending.

Table 1
Market Value and Assets (in Billions of Dollars)

Company	Market Value	Revenue	Profit	Net Assets	Hidden Value
General electric	169	79	7.3	31	138 (82%)
Coca-cola	148	19	3.5	6	142 (96%)
Exxon	125	119	7.5	43	82 (66%)
Microsoft	119	9	2.2	7	112 (94%)
Intel	113	21	5.2	17	96 (85%)

Source: Roos, Johan, Goran Roos, Nicola C. Dragonetti & Leif Edvinsson 1997:2).

Table 2
The Components of Intellectual Capital

Human Capital	Customer Capital	Organizational Capital
Knowledge	Customer relationship	Information
Skills (e.g. problem solving)	Customer retention	R & D
Competences	Customer satisfaction	Patents
Expertise	Favorable contracts	Copyrights
Motivation	Reputation	Trademarks
Innovation	Brand image	Licenses
Entrepreneurial Spirit	Sales channels	Processes
Leadership Qualities	Distribution channels	BPR
Adaptability	Supplier relationship	Manual of SOPs
Intellectual Agility	Business collaboration	Best Practices
Values	Franchising Agreements	Databases
Employee Satisfaction	Market Intelligence	IT systems
Employee Turnover		Networking systems
Vocational qualifications		MIS
Education		Management philosophy
Training		Corporate culture

Source: Dzinkowski (2000).

The research attempts; firstly, to examine the explanatory power of intellectual capital in determining firm's profitability (as primary concern of management) and capital gain on shares (as one of primary concern of investors beside dividend). Researchers would try to examine the intellectual capital would have any impact on the financial profitability and investor's capital gain on shares; secondly, to enhance the study about intellectual capital as important consideration for related parties such as management, investors, policy makers, stakeholders, and also scholars.

THEORETICAL FRAMEWORK AND HYPOTHESIS

The Concept of Intellectual was introduced by Stewart (1998) as the following: a) Intellectual Capital is the sum of everything everybody in a company knows that gives it a competitive edge; b) Intellectual Capital is intellectual material- knowledge, information, intellectual property, experience – that can be put together to create wealth. Intellectual capital can also be called as intangible resources. Longman's Dictionary of Contemporary English describes the term intangible as "which is hidden or not material, but known to be real" but also as "which by its nature cannot be known by the sense, tough it can be felt," and "which is difficult to understand" (p.582).

Many experts had published their own opinions regarding the components of intellectual capital. Edvinson and Malone (1997) divide intellectual capital into 2 components; human capital and structural capital. Ross

and Ross (1997) categorize intellectual capital into three aspects; human capital, organizational (structural) capital, and relational capital. On the other hand, value assessment scheme developed by Skandia Intellectual capital (the first insurance company in the world, which has already implemented intellectual capital) divides intellectual capital into human capital component such as competence, intellectual attitude and behavior, structural capital such as internal structure, renewal capability, and external structure. Overall, intellectual capital can be generally classified into three components: human capital, structural capital, and relational capital. The components of each capital are depicted in Table 2.

Human Capital

Sangkakala (2006) pointed out that human capital is a reflection of education, knowledge, intuition, and skill. Human capital transforms to be one of the key successes for a company since it provides a competitive advantage in the future (Malhotra, 2001). Human capital is a source of innovation and improvement (Brinker, 2000) which contains competence, skill and knowledge, and relate with value of personal knowledge and important commitment toward companies' goals.

Structural Capital

Edvinson and Malone (1997) define Intellectual Capital as the ability of the company to share and distribute knowledge, which can be in form of hardware, software, database, organizational structure, patent, and trademark. According to Stewart (1997), distribution of knowledge needs structural capital such as information system, database, computer network, and good management, laboratory, market and competitor intelligent, marketing channel, management focus, which all works together to transform employees knowledge to be company's asset. In addition, Stewart (1997) states that management of structural capital is so crucial since they may accelerate information sharing process, emerging knowledge, shortening distance and period, and also in motivating people to become more productive.

VAIC™ as Proxy for Measuring Intellectual Capital

Even though intellectual capital is recognized as a major corporate asset capable of generating sustainable competitive advantages and superior financial performance (Barney: 1991), it is still difficult to find an appropriate measure of intellectual capital. Intellectual capital cannot be straightly formulated; man works in a management system, in where it is impossible for manager to measure intellectual productivity (for example workers' knowledge) in business. According to Pulic (2000), there are two fundamental problems regarding this issue: (1) Most of organization still argue that intellectual capital are less significant resources since they are intangible, compare to physical and financial capital and (2) There are inconsistency between the newest measurement model of IC calculation and the accounting standards that are widely adopted.

However, beyond some limitations in measuring IC, there were already about 20 methods developed for measuring IC from many experts. Some of the examples include Skandia Navigator model, market to book value, Tobins' Q, calculated intangible value, market capitalization method, balanced score card, and Real Option Based approach as the newest one. Among those methods, VAIC™ is a tool that has been used widely in many academic research publications (e.g. Firer and Williams, 2003) and business sectors (e.g. Pulic, 1998, 2000a, b).

Several major reasons underscore the use of VAIC™ in many researches. First, VAIC provides a standardized and consistent basis of measure (Pulic and Borneman, 1999). Alternatives intellectual capital measures are limited in that they involve unique financial and nonfinancial indicators that cannot be readily combined into a single comprehensive measure (Ross, Ross, Dragonetti, and Edvinsson, 1997). Second,

all data used in VAIC calculation is based on audited information; therefore calculation can be considered objective and verifiable (Pulic, 1998, 2000). Third, VAIC enhances cognitive understanding and enables ease of calculation by various internal and external stakeholders (Schneider, 1999). Beside those reasons, this research decide to use VAIC™ as proxy to measure IC since this method is considered as the most appropriate tools in evaluating the significant of IC for Indonesian companies.

In a later research, Firer and William (2003) define VAIC™ as a composite sum of three separate indicators:
Capital employed efficiency (CEE): indicator of the VA efficiency of capital employed.
Human capital efficiency (HCE): indicator of the VA efficiency of human capital.
Structural capital efficiency (SCE): indicator of the VA efficiency of structural capital.
The formula of calculating Value Added Intellectual Coefficient is:

$$VAIC™ = CEE + HCE + SCE. \quad (1)$$

Hypotheses and Analytical Model

Based on the background and theoretical review as have been previously explained, there are four hypotheses have been formulated and will be tested in the research as below:

H_1 : Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), and Structural Capital Efficiency (SCE) have positive and significant influence (both partially and simultaneously) toward financial profitability of banking companies for year 2005-2007

H_2 : Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), and Structural Capital Efficiency (SCE) have positive and significant influence (both partial and simultaneously) toward financial profitability of insurance companies for year 2005-2007

H_3 : Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), and Structural Capital Efficiency (SCE) have positive and significant influence (both partial and simultaneously) toward capital gain on shares of banking companies for year 2005-2007

H_4 : Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), and Structural Capital Efficiency (SCE) have positive and significant influence (both partial and simultaneously) toward capital gain on shares of insurance companies for year 2005-2007

The data are analyzed by using multiple regression method and the model are formulated as below:

$$Y_1 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon, \quad (2)$$

$$Y_2 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon, \quad (3)$$

$$Y_3 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon, \quad (4)$$

where: (a) Y_1 represents ROA; (b) Y_2 represents ROE; (c) Y_3 represents CAP (d) α represents Constant ; (e) β_1, β_2, β_3 regression coefficient for each Independent variables; (f) X_1 indicates variable CEE ; (g) X_2 indicates variable HCE; (h) X_3 indicates Variable SCE (Independent); and (i) ε indicates standard error

RESEARCH METHOD

Research Approach and Variables

Quantitative analysis was used and data analysis was performed by using SPSS. Dependent variables are: profitability ratio which is indicated by Return on Asset (ROA) and Return on Equity (ROE). Independent variables are: Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), and Structural Capital Efficiency (SCE).

Operational Definition

Operation definition and the method to measure each of dependent and independent variables are stated below:

a. Return on Asset (ROA)

$$ROA = \frac{NetIncomeaftertax}{TotalAsset} \quad (5)$$

b. Return on Equity (ROE)

$$ROE=\frac{NetIncomeaftertax}{TotalEquity} \quad (6)$$

c. Capital Gain (CAP)

$$Ri_t=\frac{Pt-P(t-1)}{P(t-1)}, \quad (7)$$

where: (*a*) R_{it} = realized return which considers only capital gain (excludes dividend); (*b*)* P_t = stock price for period t; (c) *P_{t-1} = stock price for period t-1

d. Value Added Intellectual Coefficient (VAIC™)

VAIC contains of three elements: Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), and Structural Capital Efficiency (SCE). The first step in calculating CEE, HCE, and SCE, this calculation is to determine total value added (VA) by using this formula:

$$VA_i = I_i + DP_i + D_i + T_i + M_i + R_i + WS_i \quad (8)$$

Where: (a) VA_i = Value added; (b) I_i = Interest expense; (c) Dp_i = Depreciation expense; (d) D_i = Dividends; (e) T_i= Corporate taxes; (f) M_i= Equity of minority shareholders in net income of subsidiaries; (g) R_i = profit retained; (h) WS_i = Wages and salaries.*

*Note: Stock price data used in this research were closing monthly stock price data for 12 months period from Indonesian Capital market Directory (ICMD).

e. Capital Employed Efficiency (CEE)

$$CEE_i = \frac{VAi}{CEi} \quad (9)$$

Where: (a) CEE_i = Capital employed efficiency coefficient; (b) VA_i = Value added; and (c) CE_i = Book value of the net asset for firm i.

f. Human Capital Efficiency (HCE)

HCE can be calculated by using the following formula:

$$HCE_i = \frac{VAi}{HCi} \quad (10)$$

Where: (a) HC_i = Human capital efficiency coefficient; (b) VA_i= Value added; (c) HC_i = total salary and wage cost.*

g. Structural Capital Efficiency (SCE)

$$SCE_i = \frac{SCi}{VAi} \quad (11)$$

Where: (a) SC_i= Structural capital ; (b) VA_i = total value added. SC can be calculated by using the following formula:

$$SC_i = VA_i - HC_i \quad (12)$$

*Note: Actually, human capital includes more than just salary and wages expense such as initial cost, cost of training, bonus, scholarship, etc. However, since audited financial statement does not provide detail information regarding other cost related with investment on human then the only investment on human capital considered in this research is wages and salaries expense.

Population and Sample

The population includes all banking and insurance companies listed on Indonesian stock exchange (IDX). There are total of 23, 27, and 28 respectively banking companies listed on IDX during year 2005 until 2007. Meanwhile, the total number of population for insurance sector is the same during 2005 until 2007, which are 11 companies. Sample was chosen by *purposive sampling method* with two criteria: (a) Company has listed on IDX start from year 2005 until the end of year 2007; (b) Company had issued audited financial statement during the observation periods. According to both criteria, there are total of 22 banking and 10 insurance companies that are observed as sample in this research. List of each companies are shown in Table 3.

Technique of Analysis

Data analysis was conducted in sequential steps as below:

1. Calculate the value of each variables (CEE, HCE, SCE, ROA, ROE, and CAP) for each companies during year 2005-2007
2. Perform classic linear regression assumption testing (includes normality, multicolin-

Table 3
List of Research Subject (Banking Sector)

No	Code	Key	Company
1	4.1.1	BABP	Bank Bumiputera Tbk
2	4.1.2	BBCA	Bank Central Asia Tbk
3	4.1.3	BBIA	Bank Buana Indonesia Tbk
4	4.1.4	BBNI	Bank Negara Indonesia Tbk
5	4.1.5.	BBNP	Bank Nusantara Parahyangan Tbk
6	4.1.6	BBRI	Bank Rakyat Indonesia Tbk
7	4.1.7	BCIC	Bank CIC International Tbk
8	4.1.8	BDMN	Bank Danamon Tbk
9	4.1.9	BEKS	Bank Eksekutif International Tbk
10	4.1.10	BKSW	Bank Kesawan Tbk
11	4.1.11	BMRI	Bank Mandiri (Persero) Tbk
12	4.1.12	BNGA	Bank Niaga Tbk
13	4.1.13	BNII	Bank International Ind. Tbk
14	4.1.14	BNLI	Bank Permata Tbk
15	4.1.15	BSWD	Bank Swadesi Tbk
16	4.1.16	BVIC	Bank Victoria International Tbk
17	4.1.17	INPC	Bank Artha Graha International Tbk
18	4.1.18	LPBN	Bank Lippo Tbk
19	4.1.19	MAYA	Bank Mayapada Tbk
20	4.1.20	MEGA	Bank Mega Tbk
21	4.1.21	NISP	Bank NISP Tbk
22	4.1.22	PNBN	Bank Pan Indonesia Tbk

Source: www.idx.co.id.

earity, heterokedasticity, and autocorrelation) to confidentially prove that the regression model has fulfilled BLUE (*Best Linear Unbiased Estimator)* assumption

3. Perform multiple linear regression analysis for the three equation model

4. Calculate coefficient of determination (R^2) to measure variance of dependent variables that can be explained by independent variables.

5. Perform t-test to prove whether CEE (X_1), HCE (X_2), and SCE (X_3), partially has significance influence toward ROA (Y_1), ROE (Y_2), and CAP (Y_3). The steps are as below:

a. Formulate the hypotheses:

H_0: $\beta_1 = \beta_2 = \beta_3 = 0$: CEE, HCE, and SCE partially do not have significant influence toward each dependent variable (ROA, ROE, and CAP)

Ha: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$: CEE, HCE, and SCE partially have significant influence toward each dependent variable (ROA, ROE, and CAP)

b. Using SPPS calculation, conclusion will be made by comparing p-value and significant level (α) 5% with below criteria:

P-value < α, rejected Ho and accepted Ha, it can be concluded that CEE, HCE and SCE partially has significant influence toward each dependent variable (ROA, ROE, and CAP)

P-value ≥ α, fail to reject Ho and rejected Ha, it can be concluded that CEE, HCE, and SCE partially does not has significant influence toward each dependent variable (ROA, ROE, and CAP)

c. Perform F-test to prove whether CEE, HCE, and SCE simultaneously have significance influence toward ROA, ROE, and CAP. The step are as below:

- Formulate the hypotheses:

H_0: $\beta_1 = \beta_2 = \beta_3 = 0$ means variable CEE, HCE, and SCE simultaneously do not have significant influence toward each dependent variable (ROA, ROE, and CAP)

Ha: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ means variable CEE,

Table 4
List of Research Subject (Insurance Sector)

No	Key	Company
1	ABDA	Asuransi Bina Dana Arta Tbk
2	AHAP	Asuransi Harta Aman Pratama Tbk
3	ASBI	Asuransi Bintang Tbk
4	ASDM	Asuransi Dayin Mitra Tbk
5	LPGI	Lippo General Insurance Tbk
6	MREI	Maskapai Reasuransi Indonesia Tbk
7	PNIN	Panin Insurance Tbk
8	PNLF	Panin Life Tbk
9	ASRM	Asuransi Ramayana Tbk
10	ASJT	Asuransi Jasa Tania Tbk

Source: www.idx.co.id.

HCE, and SCE simultaneously have significant influence toward each dependent variable (ROA, ROE, and CAP)'

- Conclusions resulted by comparing between p-value and α 5% with below criteria:

(a) P-value < α: rejected Ho and accepted Ha, it can be concluded that CEE, HCE, and SCE simultaneously have significant influence toward each dependent variables (ROA, ROE, and CAP).

(b) P-value ≥ α; fail to reject Ho and rejected Ha, it can be concluded that CEE, HCE and SCE simultaneously do not have significant influence toward each dependent variables (ROA, ROE, and CAP)

DATA ANALYSIS AND DISCUSSION

Since there are two sectors to be investigated in this research, the technique of analysis and the elaboration is divided into two sections. This separation was made since both sectors have unique features that will eventually lead to a bias in result interpretation if both are united into single computation. The value of each variable had been calculated and the complete results are provided on attachments. Table 3 and 4 show companies used as research subjects.

The next analysis is to conduct classic assumption testing for each regression model. The results of both sectors are depicted in Table 5. From Table 5, it was clearly shown that all regression model has fulfilled BLUE assumption and are qualified for further statistical testing (t-Test and F-test) to test the influence of all independent variables toward each dependent variable (partial and simultaneously).

The Result for Banking Sector

This details the impact of CEE, HCE and SCE toward ROA and the Impact of CEE, HCE, and SCE toward ROE, in which both are described by means t-test and F-test results of the two impacts.

As based on the t-test results as shown in Table 6, it can be described as the following. It is as $Y_1 = 0.002 + 0.035\ X_1 + 0.0000034\ X_2 + 0.006\ X_3 + \varepsilon$. It was found that CEE has positive yet insignificant influence toward ROA (sig value of 0.77 is greater than 5%). The result does not comply with hypothesis that assumed that efficiency in capital employed drives company's profitability. The analysis shows that HCE has positive yet insignificant influence toward ROA (sig value 0.963 compare to 0.05).

SCE as the third component of VAIC shows positive yet insignificant influence toward ROA. It has coefficient value (β_3) of 0.006 and significant value of 0.517. The logic reason behind this evidence may come from the nature of structural capital itself. Structural capital which contains of best

Table 5
The Result of Classic Assumption Testing (Banking and Insurance Sector)

Classic Assumption	Banking Sector			Insurance Sector		
	Eq 1	Eq 2	Eq 3	Eq 1	Eq 2	Eq 3
Normality*	√	√	√	√	√	√
Multicollinearity**	1.596; 1.338; 1.227	1.615; 1.347; 1.238;	1.596; 1.338; 1.227;	1.589; 1.526; 1.686;	1.589; 1.526; 1.686;	1.589; 1.526; 1.686;
Heterokedasticity***	√√	√√	√√	√√	√√	√√
Autocorrelation****	2.167	2.005	1.883	1.731	1.704	1.107

Eq represents regression model for each dependent variable (ROA, ROE, and CAP)
* is tested by drawing Normal P-P plot of regression standardize residual
** is measured by Variance Inflation Factor (VIF) value for each independent variable (CEE, HCE, and SCE)
*** is tested by drawing Scatterplot
**** is measured by Durbin Watson (DW) value
√ indicates normally distribution data (plotted along the diagonal line)
√√ indicates homokedasticity (data is plotted randomly along X and Y axist (below and upper zero point) and do not showing any tendency toward particular shape or line

practice, good customer and employees relationship management, good supplier management, etc do not have direct impact toward firms' profitability (indicated by ROA) since in practice, it has to be combined with physical and financial capital. In other words, it can be concluded that investment in structural capital will not yield optimum return if not being supported with appropriate and optimum physical and financial asset.

Theoretically, it was assumed that the more effective firm in managing their human capital, customer capital, as well as organizational capital, the more value added they will earn. However, there are several logic reasons underline this inconsistency. The first factor is profitability ratio applied in this research: Return on Asset (ROA) and Return on Equity (ROE). From conventional balance sheet, it was shown the amount of total asset, liability, and owners' equity owned by company for particular date. In this regard, the component of each will act as the indicator of several ratio applied widely by investors. However, in this case, banking sector has much more unique composition of asset compare to another sector.

Evidence indicated by Bank Rakyat Indonesia Tbk as one of the biggest bank in Indonesia. By using its balance sheet data as reference, it was shown that there are some accounts are found only on banking company such as *"Giro Wajib Minimum"*. Bank of Indonesia had made regulation for each private bank to make placement in BI as precautionary action if somehow the bank has occurred liquidity problem. For Bank Rakyat Indonesia Tbk as of December 31 2007, it was shown that the amount of this account is quite significant: Rp. 31,047,872,000,000. This amount is categorized as non-operable asset means that bank cannot use this money for being redistributed to society and invested on other securities. From the data, it was found that the amount of this asset is quite high in almost all observed companies. This condition lead to less opportunity of bank to earn more net income as not the entire asset cannot be utilized.

The second component of value added intellectual coefficient is Human Capital Efficiency (HCE). It measures the effectiveness of management in managing the firm's human capital trough training, incentive, bonus, promotion, etc., which is proposed to earn a maximum value added for the company. The logic explanation is when the staff has a good leadership capacity, good innova-

Table 6
Statistical Result (Banking Sector)

Variables	ROA (Y_1)			ROE (Y_2)			CAP (Y_3)		
	B	E	Sig	B	E	Sig	B	E	Sig
Constant	0.002	0.009	0.777	0.033	0.087	0.710	0.057	0.047	0.228
CEE (X_1)	0.035	0.019	0.068	0.230	0.192	0.237	-0.051	0.103	0.625
HCE (X_2)	3.40E-06	0.000	0.963	-5.2E-05	0.001	0.944	-6.9E-05	0.000	0.862
SCE (X_3)	0.006	0.009	0.517	0.060	0.090	0.508	-0.033	0.049	0.494
[a]R			0.266			0.170			0.105
[b]R^2			0.071			0.029			0.011
[c]Adjusted R^2			0.026			-0.20			-0.037
F-sig			0.205**			0.621**			0.876**

** insignificant at 0.05 significant level (α)
- ε represents standard error
[a] R represents coefficient of correlation
[b]R^2 represents coefficient of determination (CoD)
[c]Adjusted R^2 value is used as indicator of CoD since there are more than two independent variable in this research

a. Predictor: (Constant):
return on asset (ROA);
return on equity (ROE);
capital gain (CAP)
b. Dependent variables :
capital employed efficiency (CEE);
human capital efficiency (HCE);
and structural capital efficiency (SCE)

tion and creativity, flexible and high response to changing on environment and customers' preference, then the firm will have better competitiveness position in the market. This condition will lead to an increase on firm's traditional performance measure such as profitability, liquidity, or productivity.

Based on the result of the F-test as shown in Table 6, it was found that significant value of F-test equals to 0.205, which is greater than α of 0.05, means that CEE, HCE, and SCE simultaneously do not have significance influence toward ROA

It is concluded that all independent variables have no partial and/or simultaneously significant influence toward ROA of banking companies. The most logic explanation of this condition will be the same as the elaboration of non-operable asset in CEE section. Since ROA is fully determined by the total amount of asset invested (only physical and financial asset), then the quality of each component asset will fully determined the ability of the firm in creating net income. Banking sector has some unique characteristics that influenced the result of this research. The most influencing condition may be the high proportion of non-operable asset toward total asset. Banking sector also has a unique composition of asset compare to another sector. In banking sector, the proportion of non-operable asset is quite high due to government policy. Bank of Indonesia had issued regulation for each bank to make placement in BI in form of *"Giro Wajib Minimum* as precautionary action if somehow the bank has occurred liquidity problem. From the analysis, it was found that the amount of this asset is quite high in almost all observed companies. This condition lead to less opportunity of bank to earn more net income as not the entire asset can be utilized to redistribute to third party.

The Impact of CEE, HCE, and SCE toward ROE

Based on t-test result, it is as such $Y_2 = 0.033 + 0.230\ X_1 + -0.000052\ X_2 + 0.060\ X_3 + \varepsilon$. From regression analysis, it was found that CEE and SCE have positive yet insignificant influence toward ROE. On the contrary, HCE is proved as having negative yet still insignificant influence toward ROE.

The first point is the same as the previous statement regarding non-operable asset. Since ROE is calculated by dividing total equity with net income, then the number of

non- operable asset will fully influence the amount of ROE. Capital employed efficiency does not guarantee a higher ROE since it includes operable and non-operable asset.

Furthermore, HCE has negative beta coefficient indicates that increasing investment on human capital will drive decreasing value of ROE. The logic reason underlines this condition is the total investment in human capital trough training, incentive, development program, is unable to force achievement of optimum net income. Another possible factor may come from the nature of VAIC itself. Approximating an organization' labor expenses to its intellectual capital would appear to undervalue intellectual capital. A company could be using its labor resources very inefficiently, but this could be masked by a more use of other inputs leading to similar ratio. This probably may eventually lead to bias in explaining the direct linkage between efficiency in human capital and Return on Equity (ROE) in this research.

From the analysis based on the F-test result, it was found that sig-value equals to 0.621, which is greater than 5%. It means that CEE, HCE and SCE simultaneously do not have significant influence toward ROE. Similar to the previous explanation, the proportion of non-operable asset still has major explaining power in this case. Since ROE is calculated by dividing total equity with net income, then the number of non-operable asset will fully influence the amount of ROE. Capital employed efficiency does not guarantee a higher ROE since it is include operable and non-operable asset.

The Impact of CEE, HCE, and SCE, toward CAP

As based on the t-test and F-test results, the analysis showed that all dependent variables partial and simultaneously have statistically insignificant influence toward capital gain (CAP). As being explained previously that high proportion of non-operable asset from total asset could make the interpretation of financial capability become misleading. While theoretically, it is also stated that capital gain has close linkage with profitability since firms with higher profitability have tendency to get higher stock price.

The second reason may come from the nature of most of investors in Indonesia who are mostly categorized as risk averse. Based on characteristics and function of banks, these companies can be categorized as risky sector. Default on credit payment, a number of moral hazard cases, or even financial risk (especially liquidity risk) are some important consideration which make investors become more aware for not evaluating the performance merely on profitability aspect. Although Bank of Indonesia had issued regulation related with risk management by determining particular percentage of capital adequacy ratio (CAR) and placement in BI (as precautionary action) for banking companies in Indonesia, the result indicates that somehow, investors are still gain pessimistic in this risky sector. These risks give more explanation power regarding the investment decision made by investors. Another factor may come from systematic risk which cannot be controlled by management such as fluctuation on economy (instability of rupiahs, fluctuation on interest rate, etc.), social, and political condition.

The Result of Hypotheses Testing for Insurance Sector

The Impact of CEE, HCE, and SCE toward Return on Asset (ROA)

As based on the t-test results as shown in Table 7, it is such as $Y_1 = -0.007 + 0.065\ X_1 + 0.000X_2 + 0.03\ X_3 + \varepsilon$. From the findings, it was found that SCE is the only variable with significant influence toward ROA. In contrast, CEE and HCE have higher significance level, which shows that both variables do not have significance influence toward ROA. Yet, from t-test, it was found that CEE has the biggest beta coefficient among all with value of 0.065.

This research is not consistent with previous research by Harniek (2009) which in-

Table 7
Statistical Result (Insurance Sector)

Variables	ROA (Y_1)			ROE (Y_2)			CAP (Y_3)		
	B	E	Sig	B	ε	Sig	B	E	Sig
Constant	-0.007	0.014	0.614	-0.022	0.033	0.503	0.532	0.169	0.004
CEE (X_1)	0.065	0.049	0.198	0.132	0.115	0.260	-0.373	0.590	0.533
HCE (X_2)	0.000	0.000	0.227	0.000	0.000	0.471	0.004	0.003	0.226
SCE (X_3)	0.030	0.012	0.017	0.068	0.068	0.018	-0.497	0.139	0.001
[a]R			0.682			0.649			0.685
[b]R^2			0.466			0.421			0.469
[c]Adjusted R^2			0.404			0.354			0.408
F-sig			0.001*			0.002*			0.001*

*significant at 0.05 significant level (α)
- ε represents standard error
[a] R represents coefficient of correlation
[b]R^2 represents coefficient of determination (CoD)
[c]Adjusted R^2 value is used as indicator of CoD since there are more than two independent variable in this research

a. Predictor: (Constant):
return on asset (ROA);
return on equity (ROE);
capital gain (CAP)
b. Dependent variables :
capital employed efficiency (CEE);
human capital efficiency (HCE);
and structural capital efficiency (SCE)

vestigate the impact of intellectual capital toward market value and financial performance of financial service companies listed on Indonesia Stock Exchange for year 2005-2007. In this study, Harniek (2009) found that all component of value added intellectual coefficient have significant influence toward ROA for either partially or simultaneously. The explanation of this inconsistency can be stated based on the model of data analysis in this research. Harniek (2009) used all financial service companies (which include bank, financial institution, securities companies, investment fund/mutual fund, and insurance).

Such companies are used together as research subject during three years observation period. The result can be different since there is unique characteristic of each sector. In this research both sector are analyzed separately which eventually end up with the conclusion as being stated previously. However, there is similarity between this research with Harniek (2009) and Chen, et al, (2005). Based on simultaneous testing found that CEE, HCE, and SCE together has significant influence toward ROA. This means that if the companies able to manage their physical and financial capital, human capital, and structural capital effectively and efficiently, they will be able to gain higher ROA that indicates better profitability.

The Result of F-test

Sig-value of F-test equals to 0.001, which indicates that if management has the capability to manage those three components of VAIC (CEE, HCE, and SCE) together, then the impact toward return on asset will be significantly affected.

The Impact of Intellectual Capital toward Return on Equity

As the result of t-test is as such as $Y_2 = -0.022 + 0.132\ X1 + 0.000\ X_2 + 0.068\ X_3 + \varepsilon$. From the equation, it was found that CEE, and HCE have higher significant value than sig-level which indicates that both components do not have significant influence toward ROE. While on the contrary, SCE has lower significant value, which indicates that partially, efficiency on managing structural capital has significant impact toward ROE. This result is inconsistent with Chen, et al (2005) who found that all components of intellectual capital have significant influence toward ROE. This inconsistency may be caused by different condition of economy

between Indonesia and Taiwan. Beside, sample companies on this research are different by nature with Chen. Chen use all listed companies on Taiwan Stock Market, which mostly comes from electronic companies, as in Taiwan, this sector, plays most significant contribution in economy.

The Result of F-test

From simultaneous testing, it was found that all variables (CEE, HCE, and SCE) together have significant influence toward ROE, which is proved by lower significant value (0.002). Coefficient of determination (R^2) shows that 42,1 % change in ROE is influenced by change on value added resulted from investment on intellectual capital. The result is complying with previous hypothesis, which assume that efficiency in IC significantly affects ROE.

The impact of CEE, HCE, and SCE toward Investors' Capital Gain

As based on the t-test result, it is as such $Y_3 = 0.532 + -0.373\ X_1 + 0.004\ X_2 + -0.497\ X_3 + \varepsilon$. From the findings of regression analysis, it was found that CEE and SCE have negative influence toward CAP. In contrast, HCE has positive value of 0.04 yet insignificant influences toward CAP. The only variable with significant value less than 5% is structural capital efficiency with value of 0.001. This findings imply that the market in Indonesia places a significant emphasize on return from structural capital. Consequently, firms that provide an indication that physical assets have been utilized effectively in generating returns are likely to be more highly valued that will eventually lead to an increase on the stock price.

The findings indirectly also provide the evidence that in Indonesia, insurance business seems like having more emphasized on investing on structural capital such as technology (customer or employees database), best procedures and performance standard rather than making investment on human capital. This fact is shown on the proportion of cost that the companies spent on structural capital compare to human capital. Although cost may not be the only evidence of this reasoning, it can be used as a meaningful reference to indicate the preference of company in deciding its investment decision.

F-test results are as the following**.** F-value indicates significant influence of intellectual capital toward capital gain earned by investors during year 2005-2007. This condition supports the previous hypothesis. Efficiency in managing physical and financial capital, human capital, and structural capital will result on optimum value added to investors. This value added will be distributed trough payment of dividends, stocks, tax, payments to minority shareholders, etc. Since the main objective of most of stakeholders had been fulfilled, investors will gain more confident on investing on the stocks. However, as adjusted R-square value of 40, 8% indicates that there are still 59,2% of another variable out of this research which influence variability on investors' capital gain. Yet, this study has a major contribution of widening the explanatory power of intellectual capital on this knowledge based-business.

CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATION

For banking sector, the empirical findings fail to find any strong association between the efficiency of value added by the profitability ratio and investors' capital gain of banking companies. At best, there is only a moderately positive correlation between the efficiency of value added by a firm's capital employed efficiency toward ROE. From t-test analysis, it was proved that not all independent variables have significant influence toward each dependent variable. The findings of F-test also indicate similar result. The unique characteristics of banking sector compare to others are the major explaining power of this evidence as being explained on previous section.

For insurance sector, the empirical findings suggest that there is strong association between the efficiency of value added of

intellectual capital by the profitability ratio and investors' capital gain on insurance companies during year 2005-2007. The result of F-test shows that all component of VAIC has significant influence toward all dependent variables (ROA, ROE, and CAP). This evidence is a meaningful consideration for insurance companies in Indonesia to provide more attention in empowering the IC component effectively.

Findings of this study are expected to encourage policy makers to adjust or intensify initiatives or efforts for greater acceptance and understanding of the concept of intellectual capital. As Indonesia continues efforts to join the international community (indicates with the signing of some regional charter such as ASEAN economic community 2015) and plan to increase its level of economic development beyond that of emerging economies, a continued apathetic view toward intellectual capital amongst Indonesia business community may have negative consequence.

Here are some suggestions for further research on intellectual capital as the following. First, future research may apply different measurement method. As being explained before that VAIC is well known for its simplicity. However, this method also has some limitations that may be covered in other method. There are some other measurement tools for intellectual capital such us Tobin's q, Baruch Lev method, Balanced Scorecard, value added approach, etc (refer to Wall, Kirk, and Martin, 2004). It is also suggested the use other tool of measurement such as using individual price index for calculating capital gain, and using individual stock index instead of stock price in calculating CAP.

Second, future research may use longer observation period to derive a more clear findings regarding the significant of intellectual capital in influencing companies' profitability and capital gained by investors.

Third, future research should pay more attention on the unique characteristics of each sector to reduce bias in result and generalization once sampling selection procedures is conducted. Future research may continue to investigate the influence of intellectual capital toward banking sector by using different indicator since this study found no significant influence of those three components of VAIC toward profitability ratio. One important consideration is the using of special feature of profitability ratio for banking companies (such as Net Interest Margin, Operating Ratio, Fee based Income ratio, etc) for further research.

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