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THE IMPACT OF VALUE ADDED OF INTELLECTUAL CAPITAL TO FIRMS' PROFITABILITY AND PRODUCTIVITY

Sany
Business Accounting Program, Faculty of Economics
Petra Christian University
sany@petra.ac.id

Saarce Elsye Hatane
Business Accounting Program, Faculty of Economics
Petra Christian University

ABSTRACT

The changes in business environment which lead by globalization have force the companies to enhance their competitiveness. Previous researches have found that intellectual capital (IC), as one of intangible assets, enable the companies to have value added for profit creation. This research will examine the value added of intellectual capital to firms' profitability, Asset Turnover ratio (ATO) and employee productivity. The object of this research is banking companies listed in Indonesian Stock Exchange (IDX) over the period of 2007 to 2011. The banking firm is a unique industry since, as a service industry this sector has high dependency on the intellectuality of its human resources. Using regression analysis, this study has found that value added intellectual capital (VAIC (TM)) is important in developing firm's profitability and employee productivity. The insignificant influence of intellectual capital is found its relationship to assets turnover. Capital employed efficieny, as the variable of VAIC, is the most consistent variable in influencing profitability, employee productivity and assets turnover.

Field of Research: *intangible asset, value added intellectual capital, profitability, employee productivity, and assets turnover.*

1. Introduction

In today business environment company's assets not only the tangible assets, but also intangible assets. Changes in business environment caused by globalization challenges organization to improve the competitive advantage in global competition. We see the changes from industrial economy to knowledge economy. Pulic (1998) stated that in industrial economy the wealth is created by quantity (employees, materials, machines), while in knowledge industry, creativity creates the value.

Microsoft's share price rose to $70 in 1995 while it's book value was $7. For a $1 share book value, there was $9 additional market value which was not recorded in Microsoft balance sheet. Other example of value creation of intellectual capital is in consulting industry. McKinsey sells the transfer of knowledge of its consulting team, which is intellectual capital, surprisingly clients are eager to pay at rate up to $500.000 per consultant (Sveiby, 1997; Bontis, 1998). Nike, a "shoemaker that makes no shoes", represents knowledge intensive organization. Nike relies its works on knowledge-based activities, namely research and development, design, marketing, and distribution. (Steward, 1997; Bontis, 1998).

Research on IC has significantly developed after Pulic (1998) found VAIC as a tool to

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measure the efficiency of IC. Study of impact of IC to profitability has been very interesting by many researchers. Using the VAIC, IC is examined in relationship to firm financial performance, including ROA (Firer and Williams, 2003; Chen et al., 2005; Shiu, 2006; Ting and Lean, 2009; Clarke et al., 2011; Ranjani, et al., 2011; Mondal and Gosh, 2012; Banimahd et al., 2012; Rahman and Ahmed, 2012; Joshi et al., 2013), ROE (Chen et al., 2005; Tan et al., 2007; Clarke et al., 2011; Ranjani, et al., 2011; Mondal and Gosh, 2012; Rahman and Ahmed, 2012), firm market value (Firer and Williams, 2003; Chen et al., 2005), EPS (Tan et al., 2007; Kuryanto and Syafruddin, 2008), Revenue Growth (Chen et al., 2005; Clarke et al., 2011, Rahman and Ahmed, 2012), Employee Productivity (Chen et al., 2005; Clarke et al., 2011), Asset Turnover Ratio (Firer and Williams, 2003; Mondal and Gosh, 2012), stock return (Kuryanto and Syafruddin, 2008; Djamil et al., 2013) and sales force performance (Putri, 2012).

In Germany, Bollen, Vergauwen and Schnieders (2005) examined IC and found that components in IC have relationship with firm performance in pharmaceutical industry. Firer and Williams (2003) researched on banking, electrical, informaton technology and services companies examined the relationship of VAIC impact on corporate performance (profitability, productivity and market value). Using data of 75 listed companies in South Africa, Firer and Williams found no association between efficiency of VAIC to profitability and market value. Only VA of human resources is significantly negative associated with productivity.

Chen et al. (2005) found that IC has impact to market value and financial performance of listed companies in Taiwan Stock Exchange (TSE). The research found that the efficiency of VAIC has positive impact to market value, financial performance. Tan et al. (2007) found that IC has positive and significant impact on Return On Equity (ROE), earning per share (EPS) and annual stock return (ASR) in companies in Singapore. While Ting and Lean (2009) examined financial institutions data in Malaysia found that Value added intellectual coefficient (VAIC^{TM}) has positive impact to financial performance which is proxied with Return on Asset (ROA).

Clarke et al. (2011) used data from Australian publicly listed companies examined the relationship between VAIC components and financial performance (ROA, ROE, Revenue Growth) and employee productivity (EP). Their study showed that previous year human capital employed and and structural capital employed components has positive significant impact to firm performance.

Kamath (2008) tested 25 Indian top pharmaceutical firms on VAIC to firm performance. The performance was measured by ROA, Assets turnover ratio (ATO), and Market to book value (MB). Mondal and Gosh (2012) study the relationship of IC on firm profitability and productivity performance in 65 Indian banking companies. The result suggests that the human capital has relationship with ROA, ROE, and ATO.

Rehman et al (2012) investigated data of banking companies in Pakistan on the relationship of IC to corporate performance (ROA, ROE, EPS). The result showed VAIC has positive and significant impact on ROE. Fathi et al. (2013) found that value added of structural capital has positive significant with financial performance (ROE, ROA, and Gowth Revenue). The study examined 49 Iranian listed companies data also indicated that value added efficiency of capital employed and human capital have significant positive impact on ROE and ROA.

Mavridis (2004) used VAIC to measure Japanese bank intellectual performance for several bank group and compared the performance among them. Goh (2005) study the efficiency of intellectual capital (VAIC) of Malaysian domestic and foreign banks. The result indicates that human capital has the most effect to value creation of the banks. Mention and Bontis (2012) surveyed banks in Luxembourg and Belgium. The questionairs sent to bank executive and top level management reveal that HC has positive and significant effect on performance. This study result confirmed with the research by Kamath (2008) on 25 India pharmaceutical industry, in which HC is the component that has major impact on profitability and productivity.

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In Indonesia, Iswati and Anshori (2007) examined data from 10 insurance companies listed IDX and found a positive and significant relationship between IC and profitability. In banking industry, Ulum (2008), Artinah (2011), Rachmawati (2012) found that IC has significant impact to firm performance. Razafindrambinina and Anggreni (2011) examined the relationship of IC to financial performance of consumer good firms listed on Jakarta Stock Exchange (JSX) over the period of 2003 - 2006. Their study on 36 companies data showed that VAIC has positive and significant correlation to ROA, Assets Turnover (ATO), Revenue Growth and Operating Cash Flow. Ifada and Hapsari (2012) concluded that IC has positive and significant impact to performance of (ROE, EPS and MBV). On the other hand, using data from manufacturing, property, service and trading companies listed in IDX 2003 – 2005, Kuryanto and Syafruddin (2008) indicated that IC has no impact to profitability.

Financial sector in Indonesia Stock Exchange (IDX) includes banking industry, insurance and other financial institutions. The industries in this sector are unique, use intensive knowledge compared to physical assets in manufacturing business (Alipour, 2012). The object of this research is banking industry as the customer service played important role which relys on human capital intellectual, and overall in banking sector the employees are more homogeneous in “intelectual” compared to other sector (Kamath, 2007). Further, there are reliable published data available makes banking industry is ideal for IC research (Mavridis, 2004).

The purpose of this research study is to conduct an empirical examination of intellectual capital impact on firm performance. Since the value added of IC derived from Capital Employed, Human Capiral and Structural Capital, this research try to examine what IC component has dominated the relationship. The firm performance is measured by profitability, asset turnover and employee productivity.

2. Intellectual Capital

*Intellectual capital (*IC) is an intangible asset of an organization. The nature of intangible assets means IC is invisible due to non physical form of the assets. Other intangible assets include trade name, copyright, patent and goodwill can be measured in monetary units therefore are reported in financial statements. In contrast, the monetary measurement of IC is debatable and the valuation method of is IC not yet accepted, contributed value added of IC not reported in financial statements.

There is no standard definition of IC widely accepted yet. The terminologies of IC and intangible assets are used interchangeably in literature as the IC researches encompass multidisciplines, namely accounting, strategic management, human resource management (Starovic and Marr, 2003). Larry Prusak, a principal at Ernst & Young's Center for Business Innovation in Boston, defines intellectual capital is "intellectual material that has been formalized, captured, and leveraged to produce a higher-valued asset” (Stewart, 1994). Stewart defines intellectual capital as “the intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth” (Stewart, 1997).

According to Rastogi (2000) IC terminology refers to company’s ability to face the challenges simulteanously through effective solutions. Alipour defines IC as group of *knowledge assets* owned or controlled by organisation which significantly impact value creation mechanisme for the organisation stakeholder (Alipour, 2012 pg. 54). Pires and Alves described IC to include knowledge, competences, experience and employees skills (human resources); the research and development activities, routines, procedures, the organization's systems and databases and intellectual property rights (activities and organizational resources); and resources related to external relations with customers, suppliers and partners in research and development (relational resources) (2011, pg 3).

If the IC is managed properly, it will bring benefits to organization. IBM has generated

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$824 million income from intellectual properties in 2013. The amount contributed by licensing and selling, and transfering the developed patents, trade hsecrets, and technological know-how (IBM, 2013 pg. 88). Kamukama (2013) proved that in intellectual capital enhance competitive advantage for microfinance companies in Uganda.

Albeit IC is an asset of an organization and has many benefits to organizations, the traditional accounting system fails to record it. One reason is, IC is not controlled by the organization, while accounting principle required the assets to be controlled. For instance, organization unable to prevent other organization to utilize the benefit of employee training hence it is uncontrolable. Second, there is no market and no comparation for IC, including the R&D, process, and the human assets. It implies that it is difficult to quantify and value the IC. (Lev, 2011 p.18).

IC has advantages over phycial assets. Physical, human and financial assets are limited and scarce in nature, using of the assets has cost impact. In contrast, Baruch Lev stated that intangible asset is “non-rival assets”, the asset can be used simultaneously by others. American Online’s airline reservation system is illustration an IC, which can be used by many people at the same time (Lev, 2001). Knowledge as an organization asset does not comply scarcity. As commonly accepted demand supply law implied, the more supplies when the demand is constant then the price of a product will be decreased. This is not true for knowledge, when the more knowledge is supplied, the value will be higher (Bontis, 1999).

Baruch Lev (2001) stated that IC can be created, and is created through *Innovation*, ie R & D Merck, *unique organizational design*, example CISCO internet based installation and product maintenance system. Other ways is through *human resources*, for example Xerox system is designed so that employees can share information.

It is common that IC is devided to three components, they are:

- **Human capital (HC).** HC includes expertise, experience, productivity, knowledge of firm’s employee (Pulic, 1998). Being an asset to, but not owned by the organization, human capital played an important role. Losing an employee contributes loss of corporate memory, however, other consider an employee departure is good as it will force firm to consider perspective from new employees (Bontis, 2000). Goh (2005) study shows that HC contributes more than 80 per cent to value created in Malaysian domestic bank. The same also implied from study of Joshi et al. (2010), suggests that Australian owned banks have relatively higher HC efficiency than other VAIC components. Mondal and Gosh (2012) study on 65 Indian banks data also reveal that HC is a major component in enhancing the returns of banks.
- **Customer capital.** Customer capital also known as relational capital. Customer capital is knowledge embedded in customers, suppliers, the government or related industry associations. It includes knowledge of marketing channels, customer relationships, market orientation and customer orientation which are very crucial for organization to be business leader. Khalique et al. (2013) study on Malaysian Islamic Banks, found that customer capital is the dominant component that has impact to organizational performance. However, Mention and Bontis (2012) reveal that relational capital has not significant impact to business performance of Luxemborg and Belgium banks.
- **Structural capital.** Structural capital is defined as the knowledge that stays within the firm. It comprises organizational routines, procedures, systems, cultures and databases (Bontis, 1998). A strong definition by Roos et al. (1997, p. 42) defined structural capital is ”what remains in the company when employees go home for the night”. According to Bontis (1998) intellectual capital will not be maximized if organization has poor systems and procedures to tracks its activities. Mention and Bontis (2012) surveys on Luxemborg and Belgium banks found that structural capital has not significant impact to bank performance.

Pulic developed VAIC™ (value added intellectual coefficient) method to measure the

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efficency of value added of tangible and intangible assets used by a firm in its operation. Furthermore, the value of IC can be destroyed when the VAIC is decreasing, or when the efficiency is below the average of environment (industry) (Pulic, 2004). VAIC is calculated by summing: the capital employed efficiency (CEE), human capital efficiency (HCE), and the structural capital efficiency (SCE) (Pulic, 2004). Alternatively Value Added Human Capital (VAHU) and Structucal Capital Value Added (STVA) are used to represent HCE and SCE respectively, while Value Added Capital coefficient (VACA) has the same meaning with CEE.

Several steps are needed to calculate VAIC (Pulic, 1998; Pulic 2004), they are:

- Value Added (VA) – difference between Output and Input. Output is net revenue, while Input is all costs spent to generate the revenue except human capital costs, as human capital is considered adding value entity:

$$VA = OUT - IN \quad (1)$$

- Capital Employed Efficiency (CEE) measure the effeciency of Capital Employed (CE), where (CE) – book value of firm net assets

$$CE = \text{physical capital} + \text{financial assets}$$
$$CE = \text{Total assets} - \text{intangible assets} \quad (2)$$
$$CEE = VA / CE \quad (3)$$

CE represents tangible resources while HC represents intangible resource (Chen et al., 2005).

- Human Capital Efficiency (HCE). In VAIC model, HC is defined as salary and wages in a period (Pulic, 1998). Beside showing the firm size, high HC reflects higher employee skills that would add more value compared to employees with lower salary and wages. HCE shows the efficiency of HC usage in creating VA. If the human capital cost is low while VA is high than the firm uses its HC efficiently.

$$HCE = VA / HC \quad (4)$$

- Structural Capital Efficiency (SCE). Structural capital (SC) includes strategy, organisation network, patent, brand name. Internal structural capital is developed internally, consists of policy ang process, work environment, innovation created by research and development. SC is measured using Pulic (1998):

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

HC and SC are in reverse proportion, increasing HC will decrease SC. SCE is measured (Pulic, 1998):

$$SCE = SC / VA \quad (6)$$

- Intellectual Capital Efficiency (ICE) is calculated :

$$ICE = HCE + SCE \quad (7)$$

- VAIC – value added efficiency of tangible and intangible assets:

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

3. Firm's Profitability and Productivity

3.1 Return on Assets (ROA)

ROA is a profitability ratio that measure firm ability to create profit using its assets. The greater ROA, a company is more efficient in using its physical and intangible assets (*intellectual capital*). This ratio is commonly used by management to measure firm financial performance. This research uses ROA ratio adopted from Block et al. (2010), which is calculated by:

$$ROA = \text{Net income} / \text{Total Assets} \quad (9)$$

3.2 Assets Turnover Ratio (ATO)

Asset Turnover Ratio (ATO) is common productivity measurement in banks which is computed by dividing total revenues by total assets.

$$ATO = \text{Total revenue} / \text{Total Assets} \quad (10)$$

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3.3 Employee Productivity (EP)

Employee productivity (EP) is a tool measure net value added per employee which represents employee productivity (Chen et al., 2005). Higher EP represents higher productivity of employee, hence has contribute positively to profitability. This research uses EP adopted from Clarke et al. (2011):

EP = profit before tax / number of employees (11)

4. Intellectual Capital on Firm's Profitability and Productivity

4.1 Intellectual Capital and ROA

Studies prove that VAIC has positive relationship to profitability (Artinah, 2011). More specific, other researchers found that VAIC has positive and significant relationship to ROA: VAIC (Chen et al., 2005; Shiu, 2006; Ting and Lean, 2009; Razafindrambinina and Anggreni; 2011; Rachmawati, 2012; Banimahd et al., 2012; Fathi et al., 2013). SCE shows positive relationship to ROA (Firer and Williams, 2003; Chen et al., 2005; Clarke et al., 2011; Rehman et al., 2012; Fathi et al., 2013). Other components also prove to have positive relationship with ROA are HCE (Chen et al., 2005; Shiu, 2006; Ting and Lean, 2009; Clarke et al., 2011; Rehman et al., 2012; Fathi et al., 2013) and CEE (Chen et al., 2005; Shiu, 2006; Ting and Lean, 2009; Clarke et al., 2011; Fathi et al., 2013; Joshi et al., 2013).

However, VAIC is proved do not have significant relationship with ROA (Firer and Williams, 2003, Clarke et al., 2011). VAIC components indicated not related to ROA are SCE (Chen et al., 2005; Shiu, 2006; Ting and Lean, 2009; Clarke et al., 2011, Mondal and Gosh, 2012; Joshi et al., 2013), CEE (Rehman et al., 2012) and HCE (Joshi et al., 2013).

In addition, CEE is the major contributor explaining ROA (Shiu, 2006; Ting and Lean, 2009; Clarke et al., 2011; Joshi et al., 2013). Of the three components of VAIC, CEE is found to have the most significant related to firm financial performance (Chen et al., 2005)

4.2 Intellectual Capital and ATO

Previous study proved that VAIC has positive and significant relationship to ATO (Razafindrambinina and Anggreni, 2011; Banimahd et al., 2012). In the other hand, VAIC components found not significantly related to ATO are SCE (Firer and Williams, 2003) and CEE (Firer and Williams, 2003). Independently from other VAIC component, HCE is proved to have negative significant in relationship with ATO (Firer and Williams, 2003). SC is found to have the least power explaining profitability (ATO) in bank compared to other components (Mondal and Gosh, 2012).

4.3 Intellectual Capital and Employee Productivity

Previous research found that VAIC has positive relationship to EP (Chen et al., 2005; Clarke et al., 2011). Further, VAIC components that has positive relationship to EP are HCE (Chen et al., 2005; Clarke et al., 2011), and CEE (Chen et al., 2005; Clarke et al., 2011). In the other hand, some research found that SCE not significantly related to ATO (Chen et al., 2005; Clarke et al., 2011).

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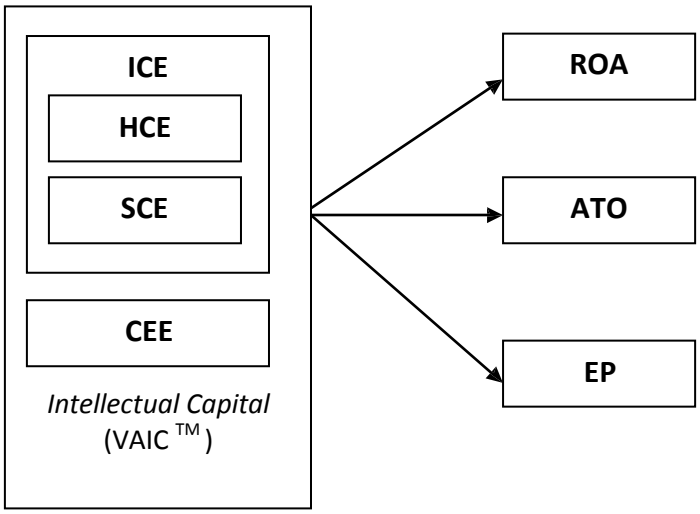
5. Theoritical Framework

Inline with the purpose of this research that is to examine the impact of efficiency of VAIC to profitability, Asset Turn Over and empolyee productivity, the research framework is presented in Figure 1.

Figure 1: Theoritical Framework



Hypothesis:
H1a: There is a positive and significant influence from HCE on ROA
H1b: There is a positive and significant influence from HCE on ATO
H1c: There is a positive and significant influence from HCE on EP
H2a: There is a positive and significant influence from SCE on ROA
H2b: There is a positive and significant influence from SCE on ATO
H2c: There is a significant influence from SCE on EP
H3a: There is a significant influence from CEE on ROA
H3b: There is a significant influence from CEE on ATO
H3c: There is a significant influence from CEE on EP
H4a: There is a significant influence from ICE on ROA
H4b: There is a significant influence from ICE on ATO
H4c: There is a significant influence from ICE on EP
H5a: There is a significant influence from VAIC on ROA
H5b: There is a significant influence from VAIC on ATO
H5c: There is a significant influence from VAIC on EP

6. Research Methodology

6.1 Sample and Data Collection Method

This paper is a quantitative research that uses secondary data. The data used is financial reporting of banking companies listed in Indonesia Stock Exchange (IDX) in year 2007-2011. The purposive sampling method is used in this study with the criterions: the company is continuously listed in IDX from 2007 to 2011, and must have positive net income in the periods. Hence, from 147 financial reports, only 110 reports from 22 banking companies which meet the criterions.

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6.2 Instrumentations

In order to test the hypothesis, this paper employed multiple regression analysis. The regression coefficient will be significant if its t-stat is greater than 1.96 and the p-value is lower than 0.05 for confidence interval 5% or lower than 0.1 for confidence interval 10%. The multicollinearity test for the residual of each model can be measured by the value of *Variance Inflation Factor* (VIF) which is less than 10. The auticorelation test for the residual value of each model is measured by the *Durbin-Watson* (DW) value. The statistical value of DW is in the range $d_u < DW < 4 - d_u$. Model that has one regression will use range $1.69 < DW < 2.31$. Model that has two regressions will have range $1.72 < DW < 2.28$. Model that has three regressions will have range $1,74 < DW < 2,26$.

The model can be described in these equations:

$ROA = \alpha + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE$ ...(1)
$ATO = \alpha + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE$ ....(2)
$EP = \alpha + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE$ .....(3)

$ROA = \alpha + \beta_1 ICE + \beta_2 CEE$...(4)
$ATO = \alpha + \beta_1 ICE + \beta_2 CEE$ ...(5)
$EP = \alpha + \beta_1 ICE + \beta_2 CEE$ .....(6)

$ROA = \alpha + \beta_1 VAIC$ ...(7)
$ATO = \alpha + \beta_1 VAIC$ ....(8)
$EP = \alpha + \beta_1 VAIC$ .....(9)

7. Findings and Discussion

7.1 Statistic Analysis

This study firstly reveals the correlation between variables.

Table 1. Spearman's rho Correlation

Independent variables	Dependent variables	ROA	EP	ATO
HCE	Correlation Coefficient	0.618	0.662	(0.157)
	Sig. (2-tailed)	0.000	0.000	0.101
	N	110	110	110
SCE	Correlation Coefficient	0.618	0.662	(0.157)
	Sig. (2-tailed)	0.000	0.000	0.101
	N	110	110	110
CEE	Correlation Coefficient	0.573	0.275	0.475
	Sig. (2-tailed)	0.000	0.004	0.000
	N	110	110	110
ICE	Correlation Coefficient	0.618	0.662	(0.157)
	Sig. (2-tailed)	0.000	0.000	0.101
	N	110	110	110
VAIC	Correlation Coefficient	0.695	0.687	(0.074)
	Sig. (2-tailed)	0.000	0.000	0.445
	N	110	110	110

Table 1 show that HCE, SCE, ICE and VAIC do not have significant correlation on ATO. Only CEE that is significant to ATO. HCE, SCE, CEE, ICE and VAIC have significant correlation to ROA and EP. This result then continued to the regression analysis.

Table 2 shows the regression analysis for hypothesis 1 to 3. Based on the F significant values, those models are significant. The first until the third model have three

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independent variables, thus this study uses DW range in 1,74 < DW < 2,26. From the statistical values of VIF and DW, those models are free from multicollinearity and autocorrelation. Therefore the three models are appropriate to examine the H1, H2, and H3.

Model 1 is used to test H1. The significant value of coefficient variable HCE is lower than 0.1 at the critical value 10%. It implies that H1a to H1c is accepted. Therefore, there is a positive and significant influence from HCE to ROA.

Table 2. The Regression Model Summary of Hypothesis 1 – Hypothesis 3

	COEFFICIENTS				ANOVA		MODEL SUMMARY	
	Unstandardized Coefficients	t	Sig.	VIF	F	Sig.	Adjusted R Square	Durbin-Watson
(Constant)	-0.0063	-3.729	0.0003					
HCE **	-0.0035	-1.889	0.0616	8.1898				
SCE *	0.0387	5.518	0.0000	8.2317				
CEE *	0.0328	10.034	0.0000	1.0410				
Regression					82.57773	0.0000		
Model 1. Predictors: (Constant), CEE, HCE, SCE. Dependent variable: ROA							0.691858	1.930344
(Constant)	-181172.7399	-3.1894	0.0019					
HCE *	179073.7935	2.9121	0.0044	8.1898				
SCE	59343.9005	0.2523	0.8013	8.2317				
CEE *	305215.5538	2.7848	0.0063	1.0410				
Regression					29.88686	0.0000		
Model 2. Predictors: (Constant), CEE, HCE, SCE. Dependent variable: EP							0.442913	2.165373
(Constant)	0.0677	7.7057	0.0000					
HCE	-0.0021	-0.2253	0.8222	8.1898				
SCE	-0.0024	-0.0667	0.9469	8.2317				
CEE	0.1554	9.1652	0.0000	1.0410				
Regression					29.28796	0.0000		
Model 3. Predictors: (Constant), CEE, HCE, SCE. Dependent variable: ATO							0.43775	1.800039

Similar result also found for variables SCE and CEE. The significant values of coefficients of those variables are less than 0.05 at the critical value 5%. This study finds that there are positive and significant impact from SCE and CEE toward ROA. The model 2 is used to test H2. From the significant values only HCE and CEE which have significant influence on EP. Thus, H2a and H2c are accepted, while the H2b is rejected. Model 3 is used to test H3. The significant values show that only CEE that has positive and significant on ATO. It means that only H3c is accepted.

Table 3 shows the regression analysis for hypothesis 4. Based on the F significant values, those models are significant. The third until the sixth models have two independent variables, thus this study uses DW range in 1,72 < DW < 2,28. From the statistical values of VIF and DW, those models are free from multicollinearity and autocorrelation. Therefore the three models are appropriate to examine the H4.

In the third and fourth models, the significant value of coefficient variables of ICE and CEE are lower than 0.01 at the confidence interval 90%. Therefore, the hypotheses H4a and H4b are accepted. Different result found in model 6, where the coefficient variable of ICE is not significant since the significant value is higher than 0.1. Thus, the hypothesis H4c is rejected.

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Table 3. The Regression Model Summary of Hypothesis 4

	COEFFICIENTS				ANOVA		MODEL SUMMARY	
	Unstandardized Coefficients	t	Sig.	VIF	F	Sig.	Adjusted R Square	Durbin-Watson
(Constant)	0.0089	5.0488	0.0000					
ICE *	0.0050	8.8897	0.0000	1.0002				
CEE *	0.0359	10.2007	0.0000	1.0002				
Regression					92.9793	0.0000		
Model 4. Predictors: (Constant), ICE, CEE. Dependent variable: ROA							0.6279	1.9884
(Constant)	-173806.2709	-3.2397	0.0016					
ICE *	154994.9032	9.0399	0.0000	1.0002				
CEE *	296378.7686	2.7695	0.0066	1.0002				
Regression					45.0967	0.0000		
Model 5. Predictors: (Constant), ICE, CEE. Dependent variable: EP							0.4472	2.1696
(Constant)	0.0677	8.1674	0.0000					
ICE	-0.0022	-0.8302	0.4083	1.0002				
CEE *	0.1553	9.3928	0.0000	1.0002				
Regression					44.3463	0.0000		
Model 6. Predictors: (Constant), ICE, CEE. Dependent variable: ATO							0.4430	1.7997

Table 4. The Regression Model Summary of Hypothesis 5

	COEFFICIENTS				ANOVA		MODEL SUMMARY	
	Unstandardized Coefficients	t	Sig.	VIF	F	Sig.	Adjusted R Square	Durbin-Watson
(Constant)	-0.0021	-1.0117	0.3140					
VAIC *	0.0059	8.1303	0.0000	1.0000				
Regression					66.1018	0.0000		
Model 7. Predictors: (Constant), VAIC. Dependent variable: ROA							0.3739	2.3080
(Constant)	-142508.7517	-2.9623	0.0038					
VAIC *	158861.0949	9.3776	0.0000	1.0000				
Regression					87.9393	0.0000		
Model 8. Predictors: (Constant), VAIC. Dependent variable: EP							0.4437	2.2479
(Constant)	0.1026	10.3016	0.0000					
VAIC	0.0021	0.6006	0.5493	1.0000				
Regression					0.3608	0.5493		
Model 9. Predictors: (Constant), VAIC. Dependent variable: ATO							0.0033	2.0222

Table 4 shows the regression analysis for hypothesis 5. Based on the F significant values, the ninth model is not significant. The significant value of VAIC is also not significant in any level of confidence interval. Therefore, H5c is rejected. Model 7 and model 8 show that H5a and H5b are accepted.

7.2 Discussion

This study found positive and significant influence of intellectual capital on financial performance. The value added intellectual capital which is described into HCE, SCE and CEE are significant to ROA. The VAIC itself is also significant to ROA. In the form of ICE, the intellectual capital efficiency is also significant to ROA. The results in this part are supported by some studies

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(Firer and Williams, 2003; Chen et al., 2005; Shiu, 2006; Ting and Lean, 2009; Razafindrambinina and Anggreni; 2011; Clarke et al., 2011; Rachmawati, 2012; Banimahd et al., 2012; Fathi et al., 2013; Joshi et al., 2013). The strongest model to explain ROA is when HCE, SCE and CEE used together in one model, and CEE is found as the strongest variable in explaining ROA.

This study found that VAIC has positive and significant impact on employee productivity. The ICE also has positive and significant influence on EP. These results are supported by Chen et al. (2005); and Clarke et al. (2011). But, the variables of value added intellectual capital are not totally success in influencing employee productivity. Similar to the previous studies (Chen et al., 2005; Clarke et al., 2011), only HCE and CEE have positive and significant influence on EP. SCE will have significant influence if it is put together with HCE as ICE.

The influence of VAIC is found not significant on assets turnover. The intellectual capital efficiency also found not siginificant to ATO (Chen et al., 2005; Clarke et al., 2011). Only CEE, as the part of VAIC, is significantly related to ATO.

8. Conclusion and Future Recommendation

This study has examined the influence of intellectual capital on financial performance. The value added intellectual capital (VAIC $^{(TM)}$) variables used in this study described into HCE, SCE and CEE. The sum of HCE and SCE named as intellectual capital efficiency (ICE). The results reveal that companies can get benefits by investing in intellectual capital, as this study found that intellectual capital and the value added are able to increase firm's profitability and employee productivity. Investing in human expenditures is valueable since the employees, staffs, and experts in are the company's assets. The human expenditures incurred, of course, to achieve the company's strategic goals. The capital employeed is found as the most consistent variable to explain company's profitability, employee productivity and assets turnover. It means that usage of physical and financial assets must be effective and efficient.

This study is conducting in banking industry of Indonesia. It is possible to find different result in other industries or other countries. The future studies can examine the influence of value added intellectual capital on some other firm's performance, both financial and non-financial performance.

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