Intellectual capital and financial performance of state-owned banking: evidence from Indonesia

Rosita*

Faculty of Economics and Business,
Diponegoro University,
Semarang, Indonesia
and
STIE Surakarta,
Solo, Indonesia
Email: Rositasetiawan@gmail.com
*Corresponding author

Imam Ghozali and Puji Harto

Faculty of Economics and Business,
Diponegoro University,
Semarang, Indonesia
Email: ghozali_imam@yahoo.com
Email: pujiharto@gmail.com

Heri Susanto

Faculty of Economics and Business,
Diponegoro University,
Semarang, Indonesia
and
STIE Surakarta,
Solo, Indonesia
Email: herisusanto303@gmail.com

Fatlina Zainuddin

Faculty of Economics and Business,
Diponegoro University,
Semarang, Indonesia
and
Tadulako University,
Palu, Indonesia
Email: fatlina.z@gmail.com

Abstract: The purpose of this study is to investigate the relationship between the efficiency of intellectual capital (IC) and the financial performance of state-owned banking companies in Indonesia. IC Efficiency in state banks uses VAIC^{TM} with measures of human capital efficiency (HCE), structural capital

efficiency (SCE) and capital employed efficiency (CEE). Financial performance using company return is profitability measured by return on asset (ROA) and return on equity (ROE). The samples of the study were state-owned banks in the period of 2012–2016. This study uses panel data from the financial statements of state-owned banking companies. The results of this study show that VAIC^{TM} has relationship with ROA, except CEE. However, ROE has no relationship with IC efficiency of all efficiency measures. Therefore, the efficiency of IC in state-owned banking companies is considered as part of the reason for the improvement of its performance in terms of ROA although not all efficiencies of IC must be done by banking companies, especially from CEE. It should be supported by financial and physical capital.

Keywords: intellectual capital; human capital efficiency; HCE; structural capital efficiency; SCE; capital employed efficiency; CEE; financial performance; state-owned banking; Indonesia.

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Biographical notes: Rosita is a student of PhD Program at Faculty of Economics and Business, Diponegoro University and a lecturer in Accounting Department at STIE Surakarta, Central Java.

Imam Ghozali is a Professor of Accounting at the Faculty of Economics and Business at Diponegoro University. Currently, he is the Director of the PhD Program in Economics and Business School, Diponegoro University, Semarang, Central Java.

Puji Harto is a Lecturer in Accounting Department and Director of Accounting Profession Education Program at Faculty Economics and Business, Diponegoro University, Semarang, Central Java.

Heri Susanto is a student of PhD Program at Faculty of economics and business, Diponegoro University and a Lecturer in the Accounting Department at STIE Surakarta, Central Java.

Fatlina Zainuddin is a student of PhD Program at Faculty of Economics and Business, Diponegoro University and a Lecturer in Management Department at Faculty of Economics and Business, Tadulako University, Palu, Central Sulawesi.

1 Introduction

Intangible assets are known in the amendment of Indonesian Financial Accounting Standards no.19 (revised in 2000). Intellectual capital (IC) is one of the intangible assets form to be a subject and important concern of companies in Indonesia. Companies have not realised that IC is an important aspect, because IC is not visible and cannot be formulated in real. The banking company's life depends on the collection and release of funds in the community by doing sustainable innovation in order to be able to survive in the macroeconomic conditions. Banking companies are required to be adaptive in

information technology in order to compete with competitors. Banking improvement of profitability and efficiency are generally not sustainable, because there is a weakness in the structure of productive assets. This cannot be separated from the role of IC, as Knowledge Management assumes that competitive advantage can be supported by the ownership of corporate IC in Indonesia. The fierce competition in the banking company in Indonesia forces the government to be able to manage state-owned banks in order to have good performance. At the end of 2016 some state-owned banks have unsatisfactory performance reports resulting in low stock valuations. The reason is that the government encourages increased efficiency in interest rates, because interest rates in Indonesia are too high compared to other countries. This effort has not been able to produce the desired banking performance. Bank Rakyat Indonesia (BRI) is the only one which achieves the desired performance. The efficiency of state- owned banks is still limited to operational factor in competing with other banks, and knowledge management has not been considered, especially the IC owned. However, most banking companies in Indonesia still do not concern with IC because it is difficult to put it into the capital.

The policy of decision making for users of financial statements is not only seen from the aspects of financial information which is mandatory, but it should also consider the information which is voluntary. Disclosure of information about IC owned by the company is one form of voluntary disclosure. Disclosure of IC is an important factor as a signal to investors about the company's affairs intensively in a competitive global economic environment.

The Government of Indonesia has launched a fiscal intensive policy for companies conducting the research and development process since 2003. This policy is expected to increase the company's attention to the importance of IC, which in turn increases the voluntary disclosure of IC. Finally, with the intensive given will bring efficiency impact for the company (Melani, 2013).

IC of banking companies is interesting to study because banking sector is a moving company in service sector. All government and private banks tend to have similar activities and products that is collecting and channelling funds to the community. Financial factor is one of the most important sources of financial companies, as there are other assets owned but they are not explicitly implied in the financial statements of the companies. Compared to other manufacturing sectors for example, manufacturing companies can produce different outputs even within the same business sector.

IC is becoming widely recognised in the business world, so a lot of research has been conducted regarding IC. IC comes from economists in Western Europe with several terms relating to intangible assets. IC is an intangible asset that has added value to the company. IC is difficult to measure in accounting, but it can be measured by looking at its effectiveness. IC began to be a major of discussion in accounting and corporate management in Asia (Andriessen and van den Boom, 2007). IC is believed to be a competitive advantage that makes companies perform better. The increase in IC can make the company a better added value and as a leverage in improving the company's performance in the future (Tan et al., 2007; Tseng and James Goo, 2005). The research question is that how to investigate the relationship between IC and the financial performance of the company.

The aim of this research is to find out the correlation between IC efficiency and financial performance of banking companies owned by the government in Indonesia. Because all efficiencies are focused only on operational factor. In the management of IC efficiency by creating added value, not much has been done by state-owned banks

because it is difficult in measuring, expressing and entering IC in information as its competitive advantage. Efficiently managed IC is expected to improve the performance of state owned banking companies. Measurement of IC efficiency so far by using value added intellectual capital (VAIC™). VAIC™ is outlined using the measures of human capital efficiency (HCE), structural capital efficiency (SCE) and capital employed efficiency (CEE) (Ousama and Fatima, 2015) to produce better corporate financial performance with increased profitability measured. by return on asset (ROA) and return on equity (ROE) (Dženopoljac et al., 2016).

IC efficiency components that can explain the relationship with the performance of banking companies will be used by companies to conduct management knowledge in order to have a competitive advantage by using its resources to be able to provide added economic value. So it can raise the company's performance in obtaining return in the form of profitability as desired stakeholders.

2 Literature review

IC is the amount of knowledge capital that can be utilised to obtain competitive advantage in a company (Youndt et al., 2004). Schiuma and Lerro (2008) suggest that IC can be understood by looking at the different values between market value and the book value of the company so as to gain financial benefits. IC comprises three dimensions including human capital, relational capital and structural capital (Bontis, 1998; Edvinsson and Sullivan, 1996; Roos, 1998; Sveiby, 1997), which become knowledge factors that can improve sustainable performance in an organisation (Marr et al., 2004).

Shareholder is a party considered by the company, but stakeholders have a very big strength in the company (Riahi-Belkaoui, 2003). Shareholder takes into account the returns. But a bigger return is the addition of more value than other companies as stakeholder considerations (Meek et al., 1995). So the added value and return as an explanation of the stakeholder theory used in assessing the company's performance.

There has been a number of research on IC in the international context (Alipour, 2012; Clarke et al., 2011; Cohen and Kaimenakis, 2007; Dženopoljac et al., 2016; Joshi et al., 2013; Maria Diez et al., 2010; Mehralian et al., 2012; Salehi, 2014; Uadiale and Uwalomwa, 2011). A number of research on IC of companies has also been conducted in Indonesia (Djamil et al., 2013; Iswati and Anshori, 2007; Razafindrambinina, 2011; Sihotang and Winata, 2008; Solikhah et al., 2010; Ulum et al., 2014).

Other studies have shown that efficiency ratings in IC investments improve future financial performance (Javornik and Marc, 2012). The efficiency of ICs is divided into three components: HCE, SCE and CEE can be predicted in financial performance. Higher HCE and SCE investments can increase ROE and EPS. The efficiency of CEE can improve the performance of ROE, ROI and EPS (Wasim et al., 2011). The use of IC in the form of human capital and effective structural capital in the company will affect ROE and ROA, while ROE is also influenced by physical capital (Dženopoljac et al., 2016). In other studies also mentioned that market value and financial performance are positively influenced by IC (Chen et al., 2005). The competitive advantage of bank companies is also heavily influenced by the company's IC (Ahmad and Ahmed, 2016; Joshi et al., 2013; Mondal and Ghosh, 2012). IC affects the financial performance of US banking with human capital which is the largest component compared to other components in IC (Meles et al., 2016). The efficiency of IC in sharia banking also affects the company's

financial performance (Ousama and Fatima, 2015). The positive impact of ICs also exists in high-tech industries on financial and economic performance (Zéghal and Maaloul, 2010). The same results apply to banking companies with the determination that VAIC consisting of HCE, SCE and CEE is positively related to the company's financial performance as measured by ROA (Ahmad and Ahmed, 2016; Nawaz and Haniffa, 2017; Ozkan et al., 2017).

However, different results suggest that the presence of IC does not significantly distinguish the company's financial performance (Dženopoljac et al., 2016). The lack of a significant relationship between the efficiency of IC and the performance of the company is also reflected from the results of other studies on Italian firms (Celenza and Rossi, 2012).Other findings suggest that market value is only positively related to book value and income, but not with IC (Ferraro and Veltri, 2011). Conclusions which are in line with banking in Sri Lanka claim that IC has no influence on its financial performance. VAIC does not affect the ROE of financial institutions in the country, but physical capital is still the main factor that can determine the financial performance of banks in Sri Lanka (Aruppala et al., 2015).

Other studies suggest that the efficiency of IC is using Value Added has limited results and varies on productivity, profitability and market value, so physical capital becomes a significant indicator of firm performance (Firer and Mitchell Williams, 2003). The results of other studies suggest that IC is represented by VAIC have varying influence on bank financial performance (Al-Musali and Ismail, 2014; Berzkalne and Zelgalve, 2014).

However, there is limited research on the efficiency of IC for companies in Indonesia, especially for state-owned banking. The efficiency of IC is widely discussed in banking companies in the previous studies (Cabrita and Vaz, 2006; El-Bannany, 2008, 2012; Gigante and Previati, 2011; Nik Muhammad and Ismail, 2009; Ousama and Fatima, 2015; Pratiwi and Kadry, 2014; Puntillo, 2009; Ulum, 2013; Wei Kiong Ting and Hooi Lean, 2009). This study was conducted to analyse the relationship between IC and financial performance at state-owned banking. The development of digital-based financial institutions (FinTech) makes competition in the management of financial institutions in Indonesia very tight. Management of financial institutions to create competitive advantage through knowledge-based management (IC) will be known for its role with the limitations and advantages of banking in Indonesia.

3 Research methodology

3.1 Sample and data collection

Secondary data were used in this study. Financial statements of banking companies are the main sources of information. Population used is the financial statements of banking companies listed on the Indonesia Stock Exchange (BEI) in the period of 2012–2016. State-owned banking companies are used as samples because state-owned banks are starting to develop companies to compete with existing banks in Indonesia. However, the role of the government in its business entity is a ministerial appointment to be a shareholder, and it is also focused on the legislation. Ministry will supervise the directors of state-owned enterprises. So the state-owned banking policies managed by the management are related to the law that is Law No. 19 of 2003 on State-Owned

Enterprises. Six government banks listed on the IDX are used as samples including BRI, Bank Mandiri, Bank Negara Indonesia (BNI), Bank Danamon Indonesia, West Java and Banten Bank (Bank Jabar), Bank Rakyat Indonesia Agroniaga (BRI Agro), and Bank Tabungan Negara (BTN). Non-probability sampling was used in which all populations are used as samples or census methods.

3.2 Dependent, independent and control variables measurement

3.2.1 Dependent variables

Dependent variable used in this research is financial performance in the form of profitability (Celenza and Rossi, 2012; Javornik and Marc, 2012). Profitability measure from ROA from some previous research (Celenza and Rossi, 2012; Chen et al., 2005; Firer and Mitchell Williams, 2003; Javornik and Marc, 2012; Razafindrambinina, 2011). In addition to ROA, profitability also uses ROE sizes (Chatzoudes et al., 2011; Dženopoljac et al., 2016; Ousama and Fatima, 2015; Wasim et al., 2011).

3.2.2 Independent variables

The independent variable is VAIC™ (Pulic, 2000). The efficiency of IC uses measures composed of CEE, HCE and SCE (Firer and Mitchell Williams, 2003; Ousama and Fatima, 2015; Pulic, 1998).

$$VAIC^{TM} = CEE + HCE + SCE$$

CEE results from the comparison between the value added (VA) and the net book value of the firm. VA can be calculated by using output (all revenue) minus inputs (all costs except wages and wages) (Ousama and Fatima, 2015; Pulic, 1998).

$$CEE = VA / CE$$

where

VA = Out – In

Out = Revenue

In = All costs minus salary costs

CE = net asset value

To calculate the HCE is to divide the VA with the total cost of salaries and wages (HC). The formula is as follows:

$$HCE = VA / HC$$

SCE is calculated by measuring the amount of structural capital (SC) to produce VA (Firer and Mitchell Williams, 2003). SC is obtained by subtraction of VA with HC. The formulas thus formed are as follows:

$$SCE = SC / VA$$

where

$$SC = VA - HC$$

3.3 Control variables

Control variables used are leverage and firm size (Ousama and Fatima, 2015). LEVERAGE is the total debt divided by shareholder's equity. SIZE measurement by looking at the total revenue.

Study uses panel data from the financial statements of state-owned banking companies for regression analysis. Analysis to test the relationship between the efficiency of IC is using VAIC™ with the company's financial performance by looking at profitability as measured by ROA and ROE (Ousama and Fatima, 2015).

Creation of value added by the company will make stakeholders expect the desired return will be achieved. Added value established in the IC is part of the management of the banking company to obtain profitability improvements in the form of ROA and ROE.

3.4 Regression models

To explain the relationship between IC and financial performance, multiple regression models are used with the SPSS 16. This model is expected to explain the causal relationship between the independent variables (SCE, CEE, and HCE) to the dependent variables (ROA and ROE).

Regression equations that can be constructed from the model to measure the efficiency of IC with profitability are:

$$ROA = \alpha_{11} + \beta_{11}SCE + \beta_{12}CEE + \beta_{13}HCE + \beta_{14}SIZE + \beta_{15}LEV + \varepsilon_1$$

$$ROE = \alpha_{21} + \beta_{21}SCE + \beta_{22}CEE + \beta_{23}HCE + \beta_{24}SIZE + \beta_{25}LEV + \varepsilon_2$$

where

Profitability =ROA and ROE

α = constant

β = coefficient of determination

SCE = structural capital efficiency

CEE = capital employed efficiency

HCE = human capital efficiency

SIZE = size

LEV = leverage

ε = error.

4 Results and discussion

4.1 Descriptive statistics

Testing statistic description is done for the variables used in research that is VAIC, LEVERAGE, SIZE, ROA and ROE. Mean, median and standard deviation can be seen in Table 1.

Table 1 Descriptive statistics

	VAIC	*CEE*	*HCE*	*SCE*	*Leverage*	*Size*	*ROA*	*ROE*
Mean	3.408	0.33	2.51	0.569	23.923	128,569,545	1.84	14.8774
Median	3.333	0.323	2.402	0.584	19.019	41,591,486	1.68	13.69
Std. deviation	0.9127	0.1118	0.7071	0.1247	23.4356	244,450,000	0.77	6.1670149

Based on the results (Table 1) that the HCE value is greater than the CEE and SCE values. More efficiency in human capital than efficiency in capital structural and capital efficiency used in accordance with the Islamic banking in Malaysia (Ousama and Fatima, 2015).

4.2 Correlation analysis results

The results of Pearson correlation analysis are presented in Tables 2 and 3. This analysis is conducted to find out the relationship between variable dependent, independent and variable control. Table 2 shows that VAIC correlates significantly with ROA, ROE, and LEVERAGE ($p < 0.05$), but not significantly with SIZE ($p > 0.1$). This means that there is a relationship between the efficiency of IC is in state-owned banks with ROA, ROE and LEVERAGE. Better IC efficiency improves ROA and ROE regardless of size of a banking company. This is in contrast to previous studies which suggest that ICs are better at larger size banking companies (Ousama and Fatima, 2015).

Table 2 Results of VAIC™ correlation analysis

	VAIC	*ROA*	*ROE*	*Leverage*	*Size*
VAIC	1	**0.404***	**0.417***	**0.530****	0.068
		0.016	*0.013*	*0.001*	0.697
ROA	**0.404***	1	**0.859****	**0.652****	**–0.403***
	0.016		*0.000*	*0.000*	*0.017*
ROE	**0.417***	**0.859****	1	**0.665****	**–0.484****
	0.013	*0.000*		*0.000*	*0.003*
Leverage	**0.530****	**0.652****	**0.665****	1	–0.31
	0.001	*0.000*	*0.000*		0.07
Size	0.068	*–0.403**	**–0.484****	–0.31	1
	0.697	*0.017*	*0.003*	0.07	

Notes: ***, **,* significant at 1% , 5% and 10%.
The value in bold are the correlation coefficients.
The value in italic are the significance level.

Table 3 Results of correlation analysis of CEE, SCE and HCE

	CEE	*SCE*	*HCE*	*ROA*	*ROE*	*Leverage*	*Size*
ROA	0.291	0.285	**0.425***	1			
	0.09	0.096	*0.011*				
ROE	0.334	**0.338***	**0.426***	**0.859****	1	**0.665****	**–0.484****
	0.05	*0.047*	*0.011*	*0.000*		*0.000*	*0.003*
Leverage	**0.453****	**0.397***	**0.543****	**0.652****	**0.665****	1	–0.31
	0.006	*0.018*	*0.001*	*0.000*	*0.000*		0.070
Size	0.215	0.098	0.037	**–0.403***	**–0.484****	–0.31	1
	0.214	0.577	0.833	*0.017*	*0.003*	0.070	

Notes: ***, **,* significant at 1%, 5% and 10%.
The value in bold are the correlation coefficients.
The value in italic are the significance level.

4.3 Results

Results of VAIC™ correlation analysis with ROA and ROE (Table 4). which shows the relationship between the efficiency of IC and the company's financial performance seen from the profitability of ROA Goodness model made can be seen from the results of significance (Sig = 0.000) supported by the value adjusted R2 (0.462). So it can be explained that the ROA as a dependent variable associated with the independent variable is VAIC™ which is the sum of CEE, SCE and HCE of 46.2%. Results are consistent with previous research on VAIC™ with profitability as measured by ROA (Goh, 2005; Ousama and Fatima, 2015; Tan et al., 2007). However only CEE (0.447) is not related to ROA with significance <0.10. For SCE and HCE variables have a relationship with ROA and only variable control SIZE alone has a significant relationship while LEVERAGE has no relationship with ROA.

The size of profitability by using ROE of correlation analysis is almost equal to ROA that has a significance value of 0.000. VAIC™ (scoring of CEE, SCE and HCE) is related to profitability with ROE size of 0.487 (R2). So the VAIC™ variables in the model can explain the relationship with ROE of 48.7%, while the remaining 51.3% is a variable outside the model under study. However, if the variables are partially seen then CEE, SCE, and HCE have no significant relationship with ROE (<0.10). However, the LEVERAGE and SIZE control variables have a significant relationship with the ROE (<0.10). So the Hypothesis (1) proved that VAIC™ has a relationship with ROA in this study. Although not all measures of measure efficiency have a significant relationship. As for Hypothesis (2) is not proven to have a relationship with ROE. thus indicating that the efficiency of IC does not have a significant relationship with the return associated with investment by state owned banking companies.

The result of correlation analysis for VAIC™ with profitability, overall the highest relation is SIZE because it has the smallest significance value (0.05 for ROA and 0.01 for ROE). However CEE in state-owned banking companies is a variable that has no significant relationship to profitability (ROA and ROE).

It can be interpreted that SIZE with the size of income from banking companies owned by the government is the most significant factor in profitability that is with the increase in income it will make the company increased ROA and ROE it has. So income

is the only one that determines the return of state owned bank either in terms of return assets used or return of equity invested in the company. This result is in accordance with the research ever conducted (Ousama and Fatima, 2015). But the CEE which is the ratio of VA to net asset has no relationship with profitability (ROA and ROE), which means that every net asset usage to increase added value, but its added value no component of personal cost has nothing to do with ROA and ROE in state-owned banking companies. ROE which is only related to earnings (SIZE) indicates that the efficiency of IC (VAIC^{TM}) will not make ROE increase more. ROE will increase only because the income gained by state owned bank is increasing. This is in contrast to the results of research conducted on Islamic banks in Malaysia (Ousama and Fatima, 2015; Salleh and Selamat, 2007). While the cost for employees issued by state owned bank companies is closely related to the acquisition profitability of the company. Since the resulting value added for the issued capital does not include the personal cost component. So the performance of government-owned banking management should pay more attention to the role of employees in the business to gain profitability. This can be the government's attention from the ministries appointed in accordance with the Law to make policies related to the IC. Similarly, the government should pay attention to the increase in income in achieving the desired profitability of its banking companies.

Table 4 Results of VAIC^{TM} correlation analysis with ROA and ROE

Variable	*ROA*	*ROE*
Constant	1.834	8.89
	0.003	0.053
CEE	1.127	9.158
	0.447	0.346
HCE	1.286	1.488
	0.056	0.772
SCE	–6.462	–3.558
	0.082	0.901
Leverage	0.008	0.106
	0.221	0.054
Size	–0.000000000937	–0.000000009949
	0.051	0.01
R^2	0.541	0.563
	0.000	0.000
Adjusted R^2	0.462	0.487

Notes: ***, **,*Significant of 1%, 5% and 10%.
Adjusted R^2 = 0.472; F-value = 7.153 (p-value, 0.000)

ICs conducted by state-owned banking companies in Indonesia still need to be improved. Given that IC disclosure can increase transparency and accountability in the business sector, it is hoped that the disclosure of IC may be considered as a mandatory disclosure regulation or may be strengthened through government regulations. ICs owned by state-owned financial sector companies has been able to become the competitive advantage of

financial sector companies in improving their financial performance as reflected by the company's ability to generate ROAs, as well as from its own capital owned by the financial sector on equity

5 Conclusions

The efficiency of IC in banking companies in Indonesia, especially the government property is interesting to be studied. IC is as part of the components of financial statements that are expected to improve the financial performance of the company. The efficiency of IC (VAIC™) is considered as part of the component in improving the company's financial performance in previous studies. However, other studies found different result.

This study examines whether the efficiency of IC (VAIC™) has usability for the company in improving its financial performance. Using VAIC™ measures consisting of CEE, HCE and SCE to produce financial performance of government firms viewed from profitability (ROA and ROE). The result of this research is simultaneously VAIC™ has positive relationship to ROA, but partially, only HCE and SCE have positive relationship with ROA. The efficiency of the IC is related only to ROA, but does not have a significant relationship with profitability as measured by ROE.

The result is a guide for the management of state owned banking companies in improving their financial performance which is seen from the efficiency of IC. The efficiency of IC from the side of the placement of capital need not be too focused on efficiency, because efficiency will be more useful when human capital and structural capital done in state owned banking company.

The results of this study provide theoretical contributions to stakeholder theory that added value provided by the existence of IC efficiency can be considered by stakeholders in determining the performance of the company. The focus on achieving corporate value which has been measured from the achievement of tangible asset returns, with the role of IC in influencing company performance, or added value from the efficiency of intangible assets is one indicators of determining the company performance.

5.1 Limitations

The findings in this study are based on the financial sector of state-owned banks that cannot be generalised to banks in Indonesia. Sample size can be an important variable in relation to IC and banking performance in Indonesia. However, the possibility of replicating research using different samples will yield similar findings with this study. This study adds a literature of knowledge about IC to the state owned banking sector in Indonesia. This study is limited to state owned bank. Going forward can also be seen the impact of IC on the financial sector of government property other than banking. For example insurance so that can be seen the difference as well as the extent of the intellectual efficiency of capital in each sector of the financial sector owned by the government. The results obtained from this study clearly indicate the importance of IC efficiency to improve the financial performance of the banking sector of government finance.

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