

# Does Intellectual Capital Improve Bank Performance?

(A Comparative Study of Indonesian State-Owned and Private Banking)

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**Abstract**—The main purpose of this study is to examine the effect of Intellectual Capital on the financial performance of Indonesian state-owned and private banking from the period of 2001 – 2018. The study used proxies such as; Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital Efficiency (RCE) and Capital Employed Efficiency (CEE) as proxy for Intellectual Capital. This research covers 8 Indonesian conventional State-Owned (Himpunan Bank Negara / Himbara) and Private Banking (Bank Swasta). To assess the intellectual capital, this research use EVAICPlus method as quantifiable measure. The data for the study were analyzed by using Partial Least Square (PLS) and Mann Whitney U Test. Testing the effect of intellectual capital on both Indonesian state-owned and private banking shows a positive and significant result. The result of this study indicates that well allocated intellectual capital banks can improve its financial performance. Furthermore, the result of Mann Whitney U Test shows that there is no significant difference in intellectual capital between the state-owned banks and private banks in Indonesia. The study recommended that investment in intellectual capital is needed to improve financial performance of Indonesian banking.

**Keywords**—*intellectual capital, bank performance, Indonesian state-owned and private banks*

## I. INTRODUCTION

As one of the significant contributors to the growth of the national economy, banks are considered as a qualifier knowledge companies because bank's main resources are intangible and most of activities are assimilated by intellectual work [1]. This gives attention that intellectual capital (IC) is one of the tools to determine the value of a bank. Therefore, bank management needs to pay attention to intellectual capital to increase bank value [2].

Stated by the Knowledge Based View, intellectual capital is more likely to boost to the achievement of banks and maintain better performance than tangible resources. It differs from tangible resources which are no difficulty replicated, can be substituted, then easily bought, only intellectual capital resources that completely all the source of competitive

advantage that valuable, rare, cannot be replicated, then cannot be replaced [3]. Thus, the prospect for developing long term value and competitive advantage is more important in efficient IC. This is especially true of knowledge intensive sector such as banks. Thus, efficient IC utilization is more important to achieve conquest in banking sector than other because the provision of high quality services by banks depends on its investment in intellectual capital. Intellectual capital related items such as human capital resources, brand equity, and processesing systems [4].

The achievement of banking success is often reflected through the financial performance contained in the financial statements. Financial performance is one of the assessments of the performance of a bank, the main indicator that becomes a benchmark is earnings. Bank earnings indicate the ability of banks to profit and become a bank indicator in fulfilling obligations for funders, in addition profit is used in many aspects by external and internal users as signals for performance [5]. The increase in earnings obtained by banks indicates a positive performance in the conventional commercial bank sector, because earnings are an important element in measuring each measure of bank financial performance ratios such as profitability ratios calculated through a proxy ROA and ROE. Banks performance especially oh their performance is an indicator that describes the conditions that occur in banks in terms of the economy, where the better the bank's financial performance, it can be assumed that the bank can manage and use all of its resources as effectively and efficiently as possible.

In this study, the object under study is financial services, especially banks that are gathered in conventional banks. More specifically this study compares between State-Owned Bank and Private Bank. Comparing in efficiency and performance of public and privat banking is an important area of research [6]. Accounting, academics, professional and practitioners determine the role of intellectual capital and knowledge management in enhancing banking sector efficiency. IC is tools that is capable and as a major asset of generating sustainable

competitive advantage and high levels of financial performance [7]. The list of companies show in table 1.

TABLE I. LIST OF COMPANIES

No	Issuer Code	Companies	Category
1.	BBNI	PT Bank Negara Indonesia Tbk	State-Owned Banking
2.	BBRI	PT Bank Rakyat Indonesia Tbk	
3.	BBTN	PT Bank Tabungan Negara Tbk	
4.	BMRI	PT Bank Mandiri Tbk	
5.	BBCA	PT Bank Central Asia Tbk	Private Banking
6.	BNGA	PT Bank CIMB Niaga Tbk	
7.	BDMN	PT Bank Danamon Tbk	
8.	BBKP	PT Bank Bukopin Tbk	

Source: Data processed. 2019

## II. RELATED WORK

IC has a significant and positive influence on the financial performance [8]. But, on the other hand, other research showed different results that IC did not affect the company's financial performance [9]. Research on the influence of IC is interesting to be re-examined because there are still differences in results in previous studies. While the research on the Intellectual Comparison of the sector between emergency banking and private banking is interesting to do considering that not many similar studies have been conducted in Indonesia. The table comparison shows in table 2.

Resource Based Theory (RBT) is very appropriate to explain research on Intellectual. According to RBT, IC meets as a specific intangible asset in creating a competitive advantage so it can create value for the company. This value is in the form of an optimal performance in the company.

Knowledge Based View (KBV) is a new existence from a Resource Based View perspective. KBV shows that knowledge in its various forms is a resource interest. The KBV approach involves human capital in the company's routine occupation. This can be achieved through accelerating employee involvement in the formulation of the long term goals and company's activities. From this explanation, according to RBT and KBV, IC fulfills the poin as a specific resource for establishing value added. This value added is in the form of better performance in the company [10].

IC is defined as intangible assets that are-explicitly not included in balance sheet but have an impact on company performance [11]. This study uses the E-VAIC<sup>TM</sup>plus measurement method to measure IC performance. E-VAIC<sup>TM</sup>plus is the most appropriate measurement model. E-VAIC<sup>TM</sup> measures IC performance through the components of HCE, SCE, RCE, and CEE.

HCE is the company's competence to produce Value-Added (VA) from funds issued by the company for employees. Companies with quality and competent human capital can be a competitive advantage for companies, so they can improve the performance and value of the company. HCE is estimated by the formula:

$$HCE = VA / HC$$

Source: [10]

TABLE II. COMPARISON OF BANKS SECTOR

State-Owned Bank				%change		
	Category	2016	2017	2018	in 2017 from 2016	in 2018 from 2017
1	Total Income	231,633,140	248,466,472	269,565,745	7.27%	8.49%
2	Total Modal	409,288,356	460,580,648	504,449,873	12.53%	9.52%
3	Total Asset	2,859,550,794	3,222,863,687	3,614,158,591	12.71%	12.14%
4	Total Loan	1,809,534,506	2,025,021,728	2,316,905,893	11.91%	14.41%
5	Net Profit	54,964,515	67,286,149	76,170,109	22.42%	13.20%
Private Bank				%change		
	Category	2016	2017	2018	in 2017 from 2016	in 2018 from 2017
1	Total Income	101,813,825	103,677,390	105,213,126	1.83%	1.48%
2	Total Modal	192,838,585	214,283,794	241,868,264	11.12%	12.87%
3	Total Asset	1,198,402,283	1,301,325,207	1,373,975,554	8.59%	5.58%
4	Total Loan	739,834,277	800,196,004	890,799,796	8.16%	11.32%
5	Net Profit	26,597,355	30,262,886	33,631,126	13.78%	11.13%

Source: Data processed. 2019

Explanation:

- HCE: Human Capital Efficiency, the ratio of Va to HC.
- VA: Value added is estimated as output minus input, output is total revenue. Inputs are calculated from sales expenses and total operating expenses other than employee expenses.

- HC: Human capital is the total salary and wages, costs of benefits and bonuses, training and seminar fees, official travel expenses.

Structural Capital Efficiency (SCE) shows how much SC contributes in value creation. Structural Capital Efficiency is calculated from Process Capital (PC) and Innovation Capital (InC) components. PCs are calculated through depreciation and amortization expenses. InC is calculated with the costs of

research and development (RD). SCE is calculated using the formula:

$$SCE = \frac{InC}{VA} + \frac{PC}{VA}$$

Source: [10]

Explanation:

- SCE: Structural Capital Efficiency, ratio of SC
- InC: Innovation Capital is calculated with the costs of research and development (RD).
- PC: Process Capital is calculated by depreciation and amortization expenses.
- VA: Value added is estimated as output minus input, output is total revenue. Inputs are calculated from sales expenses and total operating expenses other than employee expenses.

Relational Capital (RC) is measured using marketing costs. The value of a company depends on the marketing activities of the company, so that marketing costs are directly proportional to the increase in company performance and value. RCE is estimated by the formula:

$$RCE = RC / VA$$

Source: [10]

Explanation:

- RCE: Relational Capital Efficiency, VA ratio to RC.
- VA: Value added is estimated as output minus input. Input is calculated from the sales expense and total operating expenses other than employee expenses.
- RC: Relational capital is measured using marketing expenses (advertising expenses).

#### A. Capital Employed Efficiency

CEE shows how much VA is generated by a unit of Capital Employed (CE). CE consists of financial capital and physical capital. CE is the total funds owned by the company. The efficiency of CE is calculated by the formula:

$$CEE = VA / CE$$

Source: [10]

Explanation:

- CEE: Capital Employed, ratio of VA to CE.
- CE: Capital employed is calculated from total equity plus net income.

#### B. Bank Performance

Bank performance is illustrated by the capacity to generate sustainable profitability. The bank's performance can be measured traditionally. These traditional performance measures include calculation of ROE and ROA. The banking sector in Indonesia is required to report on the company's performance, this is in accordance with Bank Indonesia Regulation No. 13/1 / PBI / 2011 regarding the measurement of health of commercial banks in Indonesia.

#### C. ROA

Return on Assets (ROA) calculate the return on the company's total assets [12]. This ratio is used to evaluate the effectiveness and efficiency of managing all assets carried out by the company. ROA is calculated using the formula:

$$ROA = \frac{\text{Earning After Tax (EAT)}}{\text{Total Assets}}$$

Source: [12]

#### D. ROE

ROE calculate the return on total capital owned by the company. This ratio is used to determine the effectiveness and efficiency of companies in managing their own capital. ROE is an important financial indicator as an investor's consideration in making investment decisions. ROE is calculated using the formula:

$$ROE = \frac{\text{Earning After Tax (EAT)}}{\text{Total Equity}}$$

Source: [12]

### III. METHODOLOGY

Meanwhile, from the objectives to be achieved, this study can be categorized as explanatory research. Explanatory research is research that seeks to explain whether there is a relationship between the research variables, that aims to the relationship between one variable and another variable [13].

Furthermore, based on the level of exploration (level of clarity), this research is classified as comparative research, where this study is comparative, with the same variables for different sample groups, by comparing whether significant differences in IC between Himbara Banks then Private Banks.

#### A. Hypothesis Model 1

The hypothesis model 1 show in figure 1.

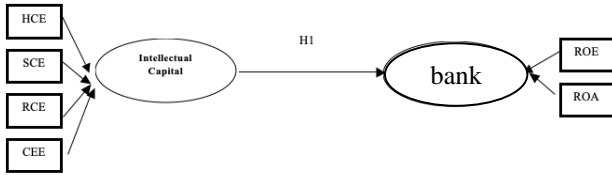


Fig. 1. Hypothesis model 1.

H1: Intellectual Capital has a significant effect on Bank Performance.

B. Hypothesis Model 2

The hypothesis model 1 show in figure 1.

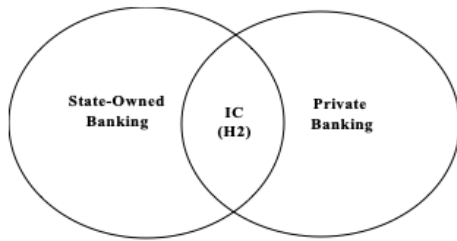


Fig. 2. Hypothesis model 2.

H2: There are significant differences in IC between Himbara banks and private banks in Indonesia.

IV. RESULTS AND DISCUSSION

Description of research variables in the form of minimum values, maximum value, average and standard deviation shown in table 3 as follows:

TABLE III. DESCRIPTIVE ANALYSIS OF RESEARCH VARIABLE

Indicator	Minimum	Maximum	Average	Standard Deviation
HCE	1.216	6.214	2.832	1.079
SCE	0.028	0.151	0.061	0.024
RCE	0.014	0.151	0.050	0.025
CEE	0.183	0.694	0.398	0.123
VAIC	1.585	6.844	3.341	1.122
ROA	0.128	3.410	1.782	0.810
ROE	1.492	31.283	15.723	6.375

Source: Processed Data (2019)

Furthermore, the descriptive analysis of the Intellectual Capital variable shows that HCE is the most effective component contributing to adding value to the company compared to SCE, RCE or CEE. Bank performance as measured by ROA and ROE shows that ROA and ROE show a positive average in all banks both for himbara bank and private bank.

Evaluation of the formative model validity is done by calculating the weight value. An instrument is declared valid if the value of Tstatistics  $\geq$  T-table (1.96). The results of testing the validity of formative models are presented in the following table 4:

TABLE IV. THE RESULTS OF TESTING THE VALIDITY OF FORMATIVE MODELS

Variable	Indicator	Weight	Standard Error	T Statistics	P Value
IC	HCE	0.319	0.097	3.291	0.002
	SCE	-0.660	0.032	20.813	0.000
	RCE	0.100	0.044	2.274	0.030
	CEE	0.220	0.102	2.160	0.039
BP	ROA	0.525	0.148	3.555	0.001
	ROE	0.372	0.140	2.652	0.012

Source: Processed Data (2019)

Based on the result, it shows that all indicators produce Tstatistics values greater than T-tables (1.96) or probabilities smaller than level of significance (Alpha  $(\alpha) = 5\%$ ). Thus indicators that measure the variable intellectual capital and bank performance are declared valid.

A. H1 Hypothesis Testing

TABLE V. THE RESULT H1 HYPOTHESIS TESTING

Eksogen	Endogen	Path Coefficient	SE	T Statistics	P Value
Intellectual Capital	Bank Performance	0.633	0.040	15.834	0.000

Source: Processed Data (2019)

Table 5 above show the effect of intellectual capital on bank performance results in a T statistics value of 15,834 and a probability of 0,000. The results show that T statistics  $> 1.96$  or probability  $<$  level of significance  $\alpha = 5\%$ . This means that there is a significant influence of intellectual capital on bank performance.

From the calculation above, the structural model formed is:

Equation:  $Y = 0.633 X$

B. H2 Hypothesis Testing

TABLE VI. THE RESULT Z TEST STATISTIC

Bank	Mean	Z	Probabilitas
Himbara	0.942	-1.552	0.121
Swasta	0.967		

Source: Processed Data (2019)

It seen that the normality test on intellectual capital data between debt banks and private banks in Indonesia produces Kolmogorov-Smirnov statistics of 0.096 and 0.203 with probabilities of 0.200 and 0.000 (in Table 7). It can be seen that testing the IC data Himbara's bank in Indonesia produces probabilities  $>$  alpha (5%), so that the IC data Himbara's bank in Indonesia are declared normal. Meanwhile, the IC data private's bank in Indonesia produce a probability of  $<$ alpha (5%), so that the IC data private's bank in Indonesia are declared abnormal. Furthermore, to examine the differences in intellectual capital between forest banks and private banks in Indonesia must use another testing method, namely Mann Whitney Test because one of the data is not normal.

Based on the following test, it can be seen, the homogeneous testing of IC data between debt banks and private banks in Indonesia produced Levene statistics of 10,921 with a probability of 0.001. It can be seen that the testing of intellectual capital data between state-owned banks and private banks in Indonesia produces probabilities  $< \alpha$  (5%), so that the data is declared not to have a homogeneous variety.

The testing of differences in intellectual capital between state-owned banks and private banks in Indonesia was carried out using Mann Whitney Test with the following hypothesis.

H0: There is no significant difference in intellectual capital between state-owned bank and private bank in Indonesia

H1: There is a significant difference in intellectual capital between state-owned bank and private bank in Indonesia

TABLE VII. THE RESULT KOLMOGOROV-SMIRNOV TEST STATISTIC

Bank	Kolmogorov Smirnov	Probabilitas
Himbara	0.096	0.200
Swasta	0.203	0.000

Source: Processed Data (2019)

Based on the test results shown in table 6, it can be seen that the resulting Z test statistic is -1.552 with a probability of 0.121. This means the probability  $(0.121) > \alpha$  (0.05). Thus it can be stated that there is no significant difference in intellectual capital between the state-owned banks and private banks in Indonesia. Judging from the average intellectual capital of private banks in Indonesia, it's worth higher than the average IC of state-owned banks in Indonesia.

## V. CONCLUSION

### A. The Effect of Intellectual Capital on Bank Performance

The intellectual capital has a positive and significant influence on bank performance. Regarding the type of company that applies intellectual capital, the banking sector is one of the sectors that has the most intensive intellectual capital. From the IC perspective, overall bankers are more homogeneous compared to other economic sectors. The banking sector is a business sector that is intellectually intensive and also includes the service sector, where customer service is highly dependent on intelligence of human capital.

### B. The Comparative of State-Owned Banks and Private Banks in Indonesia

The results of data processing that showed no significant differences between Himbara Bank and Private Banks showed

that all banks had sufficient attention to intangible assets such as intellectual capital. This shows that banks, both the Himbara Bank and the Private Bank are knowledge intensive industry sectors because their main activities are assimilated by intellectual work. Furthermore, the results of the study which show that private banks in Indonesia are worth more than the average intellectual capital in the Himbara banks show that from funds allocated by private banks to develop intellectual capital more efficiently than those budgeted by the Himbara bank.

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