

Intellectual capital performance of Islamic banks in Indonesia: Towards competitive advantages**Irma Setyawati^{a*}, Tri Widyastuti^a, Adelina Suryati^a, Nira Haryatie Hartani^b**^a*Universitas Bhayangkara Jakarta Raya, Indonesia*^b*Universiti Utara Malaysia***CHRONICLE***Article history:*

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The purpose of this research is to analyze the relationship between intellectual capital and financial performance of eleven Islamic banks in Indonesia over the period 2013-2016, using the value-added intellectual capital model, utilizing panel data with seemingly unrelated regression analysis. The results of this research indicate that structural capital efficiency had a significant influence on return on assets, and asset growth. Thus, for Islamic banks in Indonesia, all non-human assets, including the standard operating procedures, storage of all data, structural procedures, governance and policies for decision-making had significant effects on return on assets, and asset growth. Islamic banks in Indonesia can achieve competitive advantages in terms of return on assets, and asset growth, because they have positive value added reflected in intellectual capital value consisting of human capital efficiency, structural capital efficiency and capital employee efficiency.

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1. Introduction

Indonesia has been dealing with changes in the financial system since 1990, especially in facing the political demands of Islamic scholars and organizations. The first Islamic cooperative was founded in 1990, then in 1991, followed with village banks and Islamic banks in 1992 (Abdul-Majid et al., 2010). In 1998, both conventional banks and Islamic banks were given official recognition of the existence of a dual banking system by Bank Indonesia, as part of new bank activities (Thompson, 2008). Even though 26 Islamic banks have been established in Indonesia for 26 years and is supported by majority of the Muslim population, Islamic banks in Indonesia have not shown progress. The total assets of Islamic banks are only around 5% rather than to the total assets of the banking industry in Indonesia (Setyawati et al., 2015).

The low total assets in banks with Islamic principles in Indonesia might be caused by internal and external factors. Internal factors include limitations in channeling funds, limited bank products, and income contribution from non-operational activities (other than funding activities), while the lack of public understanding of Islamic banks might be the external factor. The *Murabaha* concept is the most popular term in Islamic microfinance institutions and is only understood by 26.85% of its customers. Customers

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who do not understand the concept of *Mudaraba* are 80.72%, and the same pattern also applies to the concept of *Musharakah*. While for *Ijarah* products, only a small number of customers understand the concept, indicating that the majority of customers do not recognize Islamic bank products (Masyita & Ahmed, 2011).

Considering such conditions, it is necessary for Islamic banks to achieve competitive advantages, because they have to compete with both fellow Islamic banks and conventional banks. This is important to fulfill the wishes, needs, and expectations of stakeholders and make the organization's performance improve continuously. To achieve sustainable improvement, it is necessary to increase effectiveness and efficiency to achieve the ability to design, create, manage and develop organizational processes (Pulic, 2016; Suroso et al., 2017).

During the industrial era, value creation was done through mass production of goods, which meant value added for an organization in the form of physical creation. Thus, financial capital played a decisive role. Value creation depends on quantity, hence a large number of employees involved in low-wage jobs, trying to produce as many items as possible. Supposedly, the value created does not depend on increasing goods and services, but the content of knowledge is included in goods and services (Rehman et al., 2012).

Value is not created by the quantity of goods and services, but through the quality contributed by employees, such as knowledge in designing, new software programs, or creating new medicine. People are the main carriers of knowledge. Employees are treated as investments, such as investments made in factories and machinery to create value during the industrial economy. Investing in employees means investing in the main drivers of the contemporary economy. Intangible assets, including intellectual capital are sources of economic value and corporate wealth, in addition to the products produced by companies (María Díez et al., 2010; Mondal & Ghosh, 2012). Intellectual capital is highly trusted in creating greater value for the company (Wang & Chang, 2005).

To achieve this state of business, it is only possible that the company increases its competitiveness continuously and upholds the knowledge assets of organizations that shape intellectual capital. Thus, measuring and managing intellectual capital is very important and needed in improving organizational performance and the process of creating dynamic value (María Díez et al., 2010; Pulic, 2016; Suroso et al., 2017). In a knowledge-based economy, the most strategic asset is intellectual capital. Intellectual capital is not explicitly listed on the balance sheet, but has a positive impact on its performance and success (Gan & Saleh, 2008; Hajeb et al., 2015; Maditinos et al., 2011; Rehman et al., 2011). In the future, intellectual capital will be able to create value and improve company performance (Black & Khanna, 2007).

Various methods have been developed to measure intellectual capital, because it has an impact on value creation and improve financial performance. Indicators for measuring intellectual capital consist of human resource skills, completeness of data, standard operating procedures, organizational structure and firm value in financial markets (Lu et al., 2014; Maditinos et al., 2011).

The latest research analyzes the suitability of intellectual capital and company financial performance using value-added intellectual capital models (VAIC) (Joshi et al., 2013; La'lbar et al., 2012; Pulic, 2016; Čater & Čater, 2009). VAIC is easy to implement and is an effective model for measuring the performance of a company's intellectual capital and making comparisons between companies (Piluso, 2013; Rehman et al., 2011; Ulum et al., 2014).

The research objective is to analyze the relationship between intellectual capital and financial performance using the VAIC model of eleven Islamic banks in Indonesia during 2012-2014, using panel data regression. Whereas previous researches did not analyze the efficiency of human resources, structural

capital, employee capital and added value, we aim to fill this gap and contribute to the literature in this study. Therefore, it can be said that this research is a preliminary study to explore the relationship between the efficiency of intellectual capital added value and financial performance by combining all Islamic banks in Indonesia.

2. Literature Review

2.1. Intellectual Capital

Intellectual capital is the skills and creativity of employees that can be improved by involving employees in various training programs, thereby increasing their abilities and competencies which ultimately increases organizational efficiency. Efficient employees will produce a more efficient organization, and in turn increase the efficiency of value added. All non-human assets, which consist of standard operating procedures, storage of all data, structural procedures, governance, policies, copyright, patents are used for decision making, which is the core of structural capital (Inkinen, 2015). One of the determinants of the profits obtained by the company is the capital invested in the business, with an indicator of the value of return on investment and is a measure of capital employed. Capital employed is the sum of current and fixed assets used in business and the sum of fixed assets to working capital or by reducing current liabilities from total assets. The company invests by using capital efficiently. Therefore, the efficiency of capital used is the main determinant of financial performance and the stock market (Lalbar et al., 2012).

2.2. Value Added Intellectual Coefficient (VAIC™)

Value Added Intellectual Coefficient (VAIC™) is a very important approach for creating corporate value. VAIC™ includes Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE). This methodology is often used by many researchers (Gan & Saleh, 2008; Ismail & Nik Muhammad, 2009; Joshi et al., 2010; Maditinos et al., 2011; Mondal & Ghosh, 2012; Ozkan et al., 2016; Rehman et al., 2012; Rehman et al., 2011; Salman et al., 2012; Suroso et al., 2017; Ting & Lean, 2009; Ulum et al., 2014; Zehri et al., 2012).

VAIC™ is used as a measure to evaluate the efficiency of a company with the following formula:

$$VAIC^{TM} = HCE + SCE + CEE \quad HCE = \frac{VA}{HC}$$

$$SCE = \frac{SC}{VA} \quad CEE = \frac{VA}{CE}$$

$$VA = output - input$$

Chen Goh (2005) used VAIC™ in his research and showed that almost all banks have relatively higher human resource efficiency than the structural and capital efficiency. Wei Kiong Ting and Hooi Lean (2009) examined the performance of intellectual capital and its relationship with financial performance in the financial services sector in Malaysia from 1999 to 2007. The results of this study showed a positive association between VAIC™ and return on assets (ROA). In addition, the three components of VAIC™ could explained ROA by 71.6 percent. Mavridis (2005) conducted a study for the effect of physical capital and human capital on VAIC™ in the banking sector in Greece. The results revealed that physical capital and human capital had a normal, strong, significant effect on ROA and the three components of VAIC™ had positive correlations with ROA, but human capital had a relatively much higher influence, and concluded that intellectual capitalists or workers' knowledge very strongly contributes to the success of the company and especially to added value.

In his research, Puntillo (2009) conducted a research on Italian banks for the period 2005- 2007, and the result was that the value of intellectual capital influenced business performance, using ROI and ROA as

the independent variable. Intellectual capital in the study consisted of the value of human capital and structural capital efficiency.

2.3. Theoretical framework

Theoretical framework is described in Fig 1.

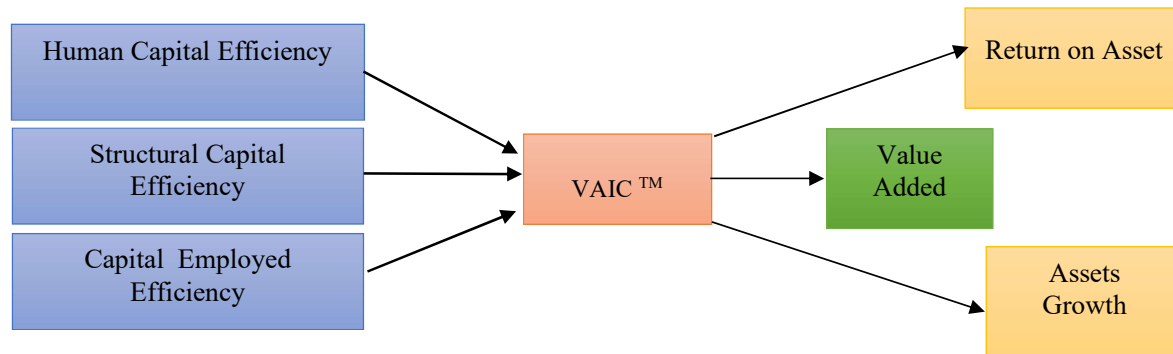


Fig 1. Theoretical Framework

3. Hypotheses Development

Several studies have found an association between VAIC and financial performance models, indicating that the intellectual capital affects the rate of profit, production and allocation efficiency, and earnings per share (Ozkan et al., 2016; Rehman et al., 2011), and highlights positive relationships between intellectual capital and investor capital gains (Joshi et al., 2013).

Many studies exploring the relationship between financial ratios and intellectual capital show that there is a direct relationship between two variables (Joshi et al., 2013). A number of researches have suggested that the efficiency of human resources have a relationship with the market value of the company (Chen et al., 2005; Gan & Saleh, 2008; Hajeb et al., 2015; Joshi et al., 2010; Maditinos et al., 2011; Ozkan et al., 2016; Rehman et al., 2012; Salman et al., 2012; Ting & Lean, 2009; Zehri et al., 2012). Thus

Ho: There is no competitive advantage when Islamic banks are able to increase their performance through intellectual capital.

Ha: There is competitive advantage when Islamic banks are able to increase their performance through intellectual capital.

4. Research Methodology

4.1. Data collection

Intellectual capital and financial performance data were taken from the publication from 2013 to 2016, using the monthly data of eleven Islamic banks in Indonesia. Data sources came from the website of Bank Indonesia and the Financial Services Authority.

4.2. Econometric Specification

The estimation in this study uses a panel data model (Wooldridge, 2009). To test the relationship between intellectual capital and the performance of Islamic banks, seemingly unrelated regression (SUR) is used for Eq. (1) and Eq. (2), while Eq. (3) uses a simple linear regression equation.

Dummy variable is added to the data of the Islamic banks that have competitive advantages and ones with no competitive advantages. Therefore, this study uses the dummy interception variable, as there are many values of the intercept term differ between the two categories (Gujarati & Porter, 2010). Data is processed with the 15th version of Stata statistical program. The equations used are as follows:

$$ROA_{it} = a_1 + b_1HCE_{it} + b_2SCE_{it} + b_3CEE_{it} + b_4D_{1it} + \varepsilon_{1it} \quad (1)$$

$$AG_{it} = a_2 + b_5HCE_{it} + b_6SCE_{it} + b_7CEE_{it} + b_8D_{2it} + \varepsilon_{2it} \quad (2)$$

$$VA_{it} = a_3 + b_7VAIC^{TM}_{it} + \varepsilon_{3it} \quad (3)$$

where Eqs. (1-3) represent multiple regression estimations. By using panel data estimation, it is determined to use a fixed effect rather than random effects approach so that ordinary least square (OLS), such as heteroscedasticity, autocorrelation and multicollinearity are implemented. The selection of panel data models uses the Hausman test. In addition, the number of individuals (N) is smaller than the amount of research time (T), thus being chosen to use a fixed effect (Gujarati & Porter, 2010). The specific criteria of each Islamic bank can be indicated by a fixed effect approach. Table 1 below shows the variables used as proxies of intellectual capital and the variables that influence them. In the table, there are expected notations and effects from each determinant as reflected in the literature.

Table 1
Operationalization of Variables used in the Regression Equation

VARIABLE	Operationalization of the ROA and AG	HYPOTHESES WITH ROA AND AG
DEPENDENT VARIABLE		
Return on asset (ROA)	Ratio used to measure the results of an investment	NA
Asset Growth (AG)	Change in total assets	
INDEPENDENT VARIABLE		
Human capital efficiency (HCE)	Skills, abilities, knowledge and experience of employees when leaving the company	+
Structural capital efficiency (SCE)	Knowledge owned by the company, including standard operating procedures, storage of all data, structural procedures, governance, policies, norms, and culture	+
Capital employed efficiency (CEE)	Company's investment in the assets consisting of fixed assets and working capital	+
Dummy variable	A dummy variable that takes a value of 0 for a bank that has a competitive advantage (seen from a positive VA score) and a dummy variable that takes a value of 1 for a bank that does not have a competitive advantage (seen from a negative VA score)	+ / -
Value added (VA)	Return of the resources (human and structural capital) used by the company	NA
Value added intellectual coefficient (VAIC TM)	The efficiency of corporate value creation, which consists of human capital efficiency, structural capital efficiency and capital employed efficiency	NA

5. Result and discussion

5.1. Selection of the Data Panel Estimation Model

The selection of panel data models uses fixed effects, the Hausman test. In addition, the amount of research time (T) is greater than the number of individuals (N), so the use of fix effect model is more appropriate (Gujarati & Porter, 2010). By using the panel fixed effect model, it will show the individual effects of each Islamic bank.

5.2. Multicollinearity Test

Multicollinearity test is determined by the correlation coefficient between independent variables. If the partial correlation value between the independent variables is greater than 0.8, it means that there is multicollinearity between the independent variables (Wooldridge, 2009). Table 2 shows the correlation

coefficient between variables, where the partial value of the correlation between the independent variables is smaller than 0.8, meaning there is no multicollinearity.

Table 2
Correlation Coefficient between Variables

	ROA	AG	HCE	SCE	CEE	DUM
ROA	1.0000					
AG	0.2663	1.0000				
HCE	-0.0590	-0.0501	1.0000			
SCE	0.0034	-0.1394	0.1556	1.0000		
CEE	-0.0660	-0.0621	0.7830	0.2195	1.0000	
DUM	-0.1009	-0.0924	0.7271	0.3144	0.7458	1.0000

5.3. Heteroscedasticity Test

Heteroscedasticity tests were performed using Bruesch-Pagan Lagrange Multiplier (BP-LM test) and Likelihood Ratio (LR test) test (Gujarati & Porter, 2010). If the p-value is less than 0.05, that means there is no element of heteroscedasticity in the model. Table 3 shows that the p-value is less than 0.05, which means that the structural variance model is not heteroscedastic.

Table 3
Heteroscedasticity Test

Breusch-Pagan Lagrange Multiplier Panel Heteroscedasticity Test	
Ho: Panel Homoscedasticity - Ha: Panel Heteroscedasticity	
Lagrange Multiplier LM Test	= 372.68815
Degrees of Freedom	= 10.0
P-Value > Chi2(10)	= 0.00000
Greene Likelihood Ratio Panel Heteroscedasticity Test	
Ho: Panel Homoscedasticity - Ha: Panel Heteroscedasticity	
Likelihood Ratio LR Test	= 321.92827
Degrees of Freedom	= 10.0
P-Value > Chi2(10)	= 0.00000

5.4. Autocorrelation Test

For the autocorrelation test using Wooldridge Test, if the p-value is less than 0.05, there is no autocorrelation. Table 4 shows that the p-value less than 0.05, which indicates no autocorrelation.

Table 4
Autocorrelation Test

Wooldridge test for autocorrelation in panel data	
H0: no first order autocorrelation	
F(1, 10)	= 26.284
Prob > F	= 0.0004

5.5. Estimation of research result

Table 5 reveals the empirical relationships of all the proposed research equations. Basically, we have three equations of ROA, AG and VAICTM. In the first equation, the dependent variable in the equation is illustrated in the global test through the F statistical test, with p-value <0.05. The R square is equal to 0.9025 or 90.25%. In the second equation, the dependent variable in the equation is illustrated in the global test through the F statistical test, with p-value <0.05. The R square is 0.9340 or 93.4%. While the third equation, the F statistical test states that this equation is significant because p-value < 0.05, so the equation can be accepted in describing the independent variables. With R square of 0.9360 or 93.6%.

Table 5
Results of Research Estimates

Variable	Equation 1	Equation 2	Equation 3
	ROA as the dependent variable (n = 528)	AG as the dependent variable (n = 528)	VA as the dependent variable (n = 528)
Constant	0.008***	0.044***	-0.386**
HCE	0.0002	-0.0038	
SCE	49.925***	-125.6915*	
CEE	-0.0002	0.0023	
DUM	-0.0128**	-0.0263	
VAIC TM			1.086***
R ²	0.903	0.934	0.936
F (prob)	0.000	0.000	0.000

Based on Table 5, Eq. (1) indicates that SCE has a positive and significant influence on ROA. The results of this study are consistent with research conducted by several researchers (Lipunga, 2015; Lu et al., 2014; Sharabati et al., 2010; Suroso et al., 2017). Similarly, in equation 2, SCE has a significant influence on AG. It means that all non-human assets, including non-human assets, which consist of standard operating procedures, storage of all data, structural procedures, governance, policies, copyright, patents are needed for decision making have a significant influence on ROA and AG. While in the third equation, VAICTM significantly affects VA, where VAICTM consists of components of HCE, SCE and CEE, which means that these three components will create significant value added for Islamic banks in Indonesia. In this study, Islamic banks that can create value added, will be able to gain a competitive advantage for the sustainability of their business. Table 3 and Table 4 show the eleventh Islamic banks that perform well (shown by ROA and AG) when they can create competitive advantages. Table 6 shows that only Bank BNI Syariah Indonesia has a negative ROA, because it has a negative VA, indicating that there are ten Islamic banks in Indonesia which have a competitive advantage. While looking at the number of AGs, all Islamic banks in Indonesia have a competitive advantage (Table 7). The rating of competitive advantage, judging from the achievement of ROA and AG, is presented in Table 8.

Considering the achievement of ROA, the most efficient Islamic banks to achieve competitive advantages (positive VA score) is Bank BCA Syariah (ROA = 2.74%) followed by Bank Victoria Syariah (ROA = 1.97%) and Bank Bukopin Syariah (ROA = 1.97%) = 1.67%) and Bank BNI Syariah (ROA = -0.017%) is the most inefficient. ROA = 2.74% indicates that every rupiah of assets owned by Bank BCA Syariah will generate a return of IDR 2.74, where in this study ROA is influenced by HCE, SCE, CEE, with positive VA score. By building up the resources they have, the services produced by Islamic banks will generate high profits, provided that Islamic banks have better resources than their competitors (conventional banks), making it impossible for competitors to replicate the same products at the same cost (Setyawati, 2017). While considering the achievement of AG, Islamic banks with the best growth for achieving a competitive advantage (positive VA score) are Bank Mega Syariah (AG = 8.46%) followed by Bank BNI Syariah (AG = 8.08%) and Bank Syariah Mandiri (AG = 6.31%). The bank with the lowest asset growth is Bank BCA Syariah (AG = 1.02%). AG = 8.46% shows that the assets of Bank Islamic banks increase by 8.86% per year, whereas in this study the AG is influenced by HCE, SCE, CEE, with positive VA score. Increased assets show that assets owned by Islamic banks are increasing, from both the source and the use of funds.

6. Conclusion and Recommendations

VAICTM is an important method for measuring the performance of Islamic banks' intellectual capital. Based on the two research equations, SCE had a significant effect on ROA and AG. Thus, for banks with sharia principles in Indonesia, all non-human assets, including standard operating procedures, storage of all data, structural procedures, governance, policies, copyright, patents are important for decision making and they have significant influence on ROA and AG. Basically, Islamic banks in Indonesia can achieve competitive advantages in terms of ROA and AG. By using a dummy variable, we see a positive value added. The conclusion is reflected in Eq. (3), where VAICTM consisting of HCE, SCE and CEE has a positive and significant influence on VA.

Table 6
Return on Assets of banks Banks in Indonesia which have a Competitive Advantage

Banks	Individual effect	Constant	Coefficient regression of	Coefficient regression of SCE	Coefficient regression of CEE	Coefficient regression of	Score ROA if DUM=0	Score ROA if DUM=1
Bank Jabar Syariah	0.0085	0.0085	0.0002	49.9252	-0.0002	-0.0128	0.0085	-0.0043
Bank BCA Syariah	0.0190	0.0274	0.0002	49.9252	-0.0002	-0.0128	0.0274	0.0147
Bank Victoria Syariah	0.0113	0.0197	0.0002	49.9252	-0.0002	-0.0128	0.0197	0.0070
May Bank Syariah	-0.0055	0.0029	0.0002	49.9252	-0.0002	-0.0128	0.0029	-0.0099
Bank Panin Syariah	-0.0062	0.0023	0.0002	49.9252	-0.0002	-0.0128	0.0023	-0.0105
Bank BNI Syariah	-0.0102	-0.0017	0.0002	49.9252	-0.0002	-0.0128	-0.0017	-0.0145
Bank Bukopin Syariah	0.0082	0.0167	0.0002	49.9252	-0.0002	-0.0128	0.0167	0.0039
Bank Mega Syariah	0.0024	0.0108	0.0002	49.9252	-0.0002	-0.0128	0.0108	-0.0020
Bank Muamalat Indonesia	-0.0015	0.0069	0.0002	49.9252	-0.0002	-0.0128	0.0069	-0.0058
Bank BRI Syariah	0.0035	0.0119	0.0002	49.9252	-0.0002	-0.0128	0.0119	-0.0009
Bank Syariah Mandiri	-0.0045	0.0040	0.0002	49.9252	-0.0002	-0.0128	0.0040	-0.0088

Table 7
Assets Growth of Islamic Bank in Indonesia, which have a competitive advantage

Banks	Individual effect	Constant	Coefficient regression of HCE	Coefficient regression of SCE	Coefficient regression of CEE	Coefficient regression of DUMMY	Score AG if DUM=0	Score AG if DUM=1
Bank Jabar Syariah	0.044	0.044	-0.003	-125.692	0.002	-0.026	0.044	0.018
Bank BCA Syariah	0.034	0.010	-0.003	-125.692	0.002	-0.026	0.010	-0.016
Bank Victoria Syariah	-0.013	0.057	-0.003	-125.692	0.002	-0.026	0.057	0.031
May Bank Syariah	-0.009	0.054	-0.003	-125.692	0.002	-0.026	0.054	0.027
Bank Panin Syariah	-0.016	0.061	-0.003	-125.692	0.002	-0.026	0.061	0.034
Bank BNI Syariah	-0.036	0.081	-0.003	-125.692	0.002	-0.026	0.081	0.054
Bank Bukopin Syariah	0.007	0.037	-0.003	-125.692	0.002	-0.026	0.037	0.011
Bank Mega Syariah	-0.040	0.085	-0.003	-125.692	0.002	-0.026	0.085	0.058
Bank Muamalat Indonesia	-0.016	0.061	-0.003	-125.692	0.002	-0.026	0.061	0.035
Bank BRI Syariah	0.016	0.028	-0.003	-125.692	0.002	-0.026	0.028	0.002
Bank Syariah Mandiri	-0.019	0.063	-0.003	-125.692	0.002	-0.026	0.063	0.037

Table 8
Ranking of competitive advantages of Islamic Banks in Indonesia

Islamic Bank	ROA	Ranking	AG	Ranking
Bank BCA Syariah	0.0274	1	0.0102	11
Bank Victoria Syariah	0.0197	2	0.0568	6
Bank Bukopin Syariah	0.0167	3	0.0371	9
Bank BRI Syariah	0.0119	4	0.0282	10
Bank Mega Syariah	0.0108	5	0.0846	1
Bank Jabar Syariah	0.0085	6	0.0443	8
Bank Muamalat Indonesia	0.0069	7	0.0608	4
Bank Syariah Mandiri	0.0040	8	0.0631	3
May Bank Syariah	0.0029	9	0.0536	7
Bank Panin Syariah	0.0023	10	0.0607	5
Bank BNI Syariah	-0.0017	11	0.0808	2

The main limitation of this study is the use of intellectual capital as a measurement model, which has been widely discussed in many previous studies. Another limitation of this study is the use of data, which is only a data of Islamic banks, while that of commercial banks are not used. Therefore, this study cannot determine the performance of each bank category. Therefore, future research can be done with different intellectual capital measurement models and various bank data. However, the results of this study can explain the importance of intellectual capital in increasing profitability and managing Islamic banks to achieve competitive advantages. Therefore, it can be said that developing performance on the basis of intellectual capital is very important, as important as physical investment. Especially for banks, it must be recognized as one of the important investments related to the use of reliable human resources, standard operating procedures, storage of all data, structural procedures, governance, policies, copyright, patents are needed for decision making, to encourage sustainable bank growth, along with other factors. Another implication of this research is that it helps the Indonesian banking industry, especially for Islamic banks and the regulators, also in overcoming factors affecting bank financial performance, and in taking actions to improve their value creation

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