

Does Intellectual Capital Matter? A Case Study of Indonesia Sharia Banks

DIAN KARTIKA RAHAJENG *
NADYA ZAHARA HASIBUAN
Universitas Gadjah Mada

Abstract: *This study aims to examine the impact of Intellectual Capital (IC) on financial performance in the Islamic banking sector in Indonesia. We adopt the Pulic's value-added intellectual coefficient (VAIC™) as the widely used measurement for IC. The paper used secondary data derived from the annual reports of eleven Islamic banks from 2012 to 2018. This study uses firm size and level of risk as a control variable. We utilize the resource dependency theory as an analytical tool. The findings show that the IC does not significantly matter and influence the profitability of Islamic banks. However, the results also show a significant impact on human capital and structural capital on the profitability of sharia banks. The findings can be useful as an input for the practitioners in Islamic banks in managing their investments in IC in Indonesia Islamic banks. This paper also contributes to the theory and literature by particularly the adoption of the resource dependency theory to analyze the IC in Islamic banks.*

Keywords: *Financial Performance; Indonesia; Intellectual Capital; Islamic Banks*

Abstrak: *Artikel ini bertujuan untuk menganalisis dampak dari modal intelektual (Intellectual Capital/IC) pada performa keuangan di bank umum syariah (BUS) di Indonesia. Kami mengadopsi model Pulic's value-added intellectual coefficient (VAIC™) sebagai model pengukuran IC yang sering digunakan dalam berbagai penelitian. Kami menggunakan data sekunder berupa laporan keuangan dari periode 2012 hingga 2018. Studi ini menggunakan ukuran korporasi dan level risiko sebagai variabel kendali. Kami menggunakan teori ketergantungan sumberdaya (resource dependency theory/RDT) sebagai alat analisis. Temuan yang diperoleh adalah IC tidak secara signifikan berpengaruh pada profitabilitas BUS. Namun demikian, temuan lain menyatakan bahwa terdapat pengaruh signifikan modal sumber daya manusia (human capital) dan modal struktural (structural capital) pada profitabilitas BUS. Temuan kami dapat bermanfaat bagi praktisi BUS sebagai masukan pengelolaan investasi terutama pada IC. Artikel ini juga berkontribusi pada teori dan literatur terkait RDT dan VAIC terutama di konteks BUS di Indonesia.*

Kata Kunci: *Bank Syariah; Indonesia; Modal Intelektual; Performa Keuangan*

1. Introduction

IC is considered an essential factor in organizations, especially banking corporations, since it directly leading to human resources. IC has unique characteristics that are not easily imitated and cannot be substituted (Martín-de-castro, Delgado-verde, López-sáez, & Navas-lópez, 2011). IC is unique is due to the actual value of IC lies in the skills of people in the company, knowledge to make products, internal processes, and marketing power to sell products from the company (Kamukama, 2015). These assets are used by companies to create strategies in creating value for their companies without fear of being followed by competitors (Kamukama, 2015). Therefore, IC becomes one of the essential things for companies to have as a source of creating a competitive advantage that can generate corporate profits (Bontis, Keow, & Richardson, 2000).

In the era of the knowledge-based economy (knowledge-economy era), information technology and intellectual expertise being the essential resources that companies must effectively manage to be able to gain sustainable profits (Gogan et al., 2016). The knowledge-based economy is an economic system that emphasized knowledge and technology utilization, distribution, and improvement to boost its business entities' performance (Organisation For Economic Co-Operation And Development, 1996). Companies are required to have people who are proficient at finding and processing accurate information and turn it into useful knowledge that is useful for the market or consumers (Horibe, 1999). Before the development of information technology, as it is today, people generally focus on input factors such as labor, capital, and raw materials that are being prioritized on improving the company's performance (Yalama & Coskun, 2007). However, this tendency seems to have eroded since the emerge of a knowledge-based economy era (Pal & Soriya, 2012), as the knowledge-workers have to utilize their intellectual power than the physical ones to create value (Barney & Hesterly, 2008). Therefore, corporations in the knowledge-economy era evaluate employees from their creativity, ideas, and analytical skills (Horibe, 1999).

Therefore, IC becomes the essential factors for enterprises to survive in the knowledge-economy era. The company realized that the internal expertise and unique experience of the people in the company would be a milestone in creating business profits (Andriessen, 2004). The unique experience and internal expertise owned by people in the company, in this case, are interpreted as intangible resources from the company as the basis for creating innovation, competence and business success (Andriessen, 2004). These are the characteristics of the IC.

IC also essentials for knowledge-intensive firms such as banks (Al-Musali & Ku Ismail, 2016). Mention and Bontis (2013) state that banks are considered as knowledge-based companies because their primary resources are intangible, and most of their activities are related to intellectual work. The main activities in banks usually involve close interaction with customers and, to a large extent, depend on the integration of information technology in creating new products or services (Mention & Bontis, 2013).

Interaction with customers, integration of information technology, and innovation creation are contained in the components of IC. Therefore, it can be said that the efficient use of IC to achieve success in banking takes precedence over other industries because the provision of high-quality services by banks depends on their investment in IC-related matters such as human resources, brand development, and system (Ahuja & Ahuja, 2012). The influence of IC in Islamic banks is also significant as most activities in Islamic banks are based on trust, and building trust in customers needs the intellectual skills of an employee. Maintaining reputation, credibility, and legitimacy is of utmost importance in any organization, including Islamic banks (Nawaz & Haniffa, 2016).

As a business entity, Islamic banks also need to generate reasonable profit through their activity in order to survive in a competitive environment. Profitability is an essential tool used in measuring bank performance and as one of the essential factors that signify management success, shareholder satisfaction, attractiveness to investors, and corporate sustainability (Bekmezci, 2015). Alarussi and Alhaderi (2011) state that the quality and efficiency of managers depend on their ability to identify elements that can lead to increased profitability, including the ability to maintain its human resources.

Managers must wisely allocate the company's resources for reaching sustainable business, moreover, for Islamic banks that hardly compete with the conventional ones. Knowing Indonesian markets with the Muslim majority population, it is not impossible to increase the profitability and reach sustainability of Islamic banks (Bekmezci, 2015). However, based on the data from 2012-2019 extracted from the OJK database in the table below, it can be seen that the level of profitability (ROA, the return of assets) of Islamic banks is still low compares to the conventional banks.

Table 1.1
Comparison of *sharia* bank and conventional bank

No	Tahun	ROA <i>Sharia</i> Bank	ROA Conventional Bank
1	2012	1,94%	3,46%
2	2013	1,43%	2,55%
3	2014	0,41%	2,64%
4	2015	0,49%	2,78%
5	2016	0,63%	2,33%
6	2017	0,63%	2,87%
7	2018	1,28%	2,55%
8	2019	1,73%	2,48%

Therefore, considering the importance of understanding IC roles in Islamic banks and its relevance on business profitability as well as limited research on the effect of IC on profitability in Islamic banks in Indonesia (Ulum, 2016), this study attempts to fill the research gap.

2. Literature Review

Research on IC is not only carried out in the banking industry but also in other industries such as manufacture, information technology, textiles, and health. The studies show variable results. For instance, Yalama and Coskun (2007) study the performance of ICs from banks listed on the Istanbul Stock Exchange Market (ISE) in Turkey. This study revealed that the average influence of IC on profitability in the banking sector at

This study proves that returns from portfolios formed with IC components are higher than portfolios formed based on fixed assets. Ting and Lean (2009) support the opinion that there is a positive relationship between IC and ROA in financial sector companies in Malaysia. This study shows a negative and insignificant relationship between SCE and ROA.

Nawaz and Haniffa (2016) study the effect of IC on the financial performance (i.e., ROA) of Islamic banks in various countries by control its company size, risk level, company complexity, and status the listing. The result is that there is a significant positive relationship between IC and ROA. Nawaz and Haniffa (2016) also show that HCE and CEE are the main components that contribute to Islamic banks' profit. Al-Musali and Ku Ismail (2016) support Nawaz and Haniffa's opinion for banks in the Gulf Cooperation Council (GCC). Al-Musali and Ku Ismail (2016) state that IC, in general, can drive the profitability growth of commercial banks in the GCC, except in Qatar and Kuwait, which are heavily influenced by physical and financial capital (CEE) in profit generation.

Tran and Vo (2018) study the causal relationship between IC and ROA of commercial banks in Thailand. The results show that an increase in bank profitability in Thailand is not entirely affected by IC. However, among all IC components, CEE is the component that has the highest contribution in creating bank profitability in Thailand. On the other hand, Tran and Vo's study shows that HCE reduces the profitability of commercial banks in the current period but has a positive influence on the creation of future profits.

From the presentation of the findings of previous studies, in general, there is a positive relationship between IC and profitability. Nevertheless, some opinions contradict these results. Such research conducted in South Africa by Firer and Williams (2003) found that there was no significant relationship between IC and company profitability. However, when compared to each component, SCE has a contribution moderate to the profitability of companies in South Africa.

Bontis et al. (2013) also study the impact of IC used in the Serbian hospitality sector. The study discusses how much IC and its components affect company

performance as measured by ROA. They argue that IC is not related to company profitability, as companies make more profits through physical and financial capital.

3. Theoretical Framework and Hypothesis Development

3.1. Theoretical Framework

This paper adopts the resource dependency theory, which highlights the need to secure and manage resources to fully create maximum benefit to organizations (Harrison & Freeman, 2013). Resource dependency theory also emphasizes the resource capability (i.e., stakeholder) to create a competitive advantage to the organizations (Barney & Hesterly, 2008). The resources can be in the form of tangible resources such as buildings, equipment, products, information systems, and intangibles assets such as brand and company culture (Barney and Hesterly, 2008). The referred company resources are company-owned assets that have advantages and are controlled by the company (Gamble, Peteraf, & Thompson, 2017). The meaning of corporate capability here is the company's capacity to carry out internal activities competently (Gamble et al., 2017).

According to the resource dependency theory, there are two underlying assumptions regarding the capabilities and resources of the company (Barney & Hesterly, 2008). First, even though the companies are in a similar industry, company resources and capabilities can be different (resource heterogeneity) (Barney & Hesterly, 2008). Second, the core notion of the resource dependency theory is that the possession of specific resources can result in superior performance (Andersén & Ljungkvist, 2016); and, in order for this performance to be sustained, these resources cannot be entirely mobile (resource immobility) (Barney & Hesterly, 2008).

These two assumptions can explain the reason why a company can be superior to other companies even though they are in a similar industry. According to Barney (1991), in Chen et al. (2005), when a company has capabilities and is equipped with unique and valuable resources, and it is costly to be emulated by its competitors (strategic resources), then the company can easily create competitive advantages. These characteristics are very compatible with IC. Compared to physical assets, ICs are more

difficult to imitate or replace and are not sold freely in the market (Riahi-Belkaoui, 2003). Therefore, IC can be categorized as a strategic resource that can provide a competitive advantage through value creation and ultimately will generate profits for the company (Riahi-Belkaoui, 2003).

Based on the explanation of the resource dependency theory, it can be concluded that the company's ability to use strategic resources appropriately can ultimately create value for the company. Roos et al. (2011) say that these strategic resources must be different from others, scarce, difficult to replicate, or replace. These criteria are the following IC. Therefore, it can be said that the resource dependency theory supports the relationship between IC and the company's ability to create profit or profitability.

Knowledge is the basis of IC as it creates value for organizations. Therefore at the heart of organizational capabilities. Intellectual capital is increasingly recognized as an important strategic asset for sustainable corporate competitive advantages (Ramezan, 2011). From theoretical perspectives, IC, as an organizations' resources, is used to create and enhance the organizational value, and success requires IC and the ability to manage this scarce resource controlled by a corporation (Ramezan, 2011).

3.2. Hypothesis Development

Tom Stewart is a pioneer of discussions on IC. Tom Stewart sparked interest in researchers about IC through his book titled *Intellectual Capital: The New Wealth of Organizations* in 1997. Tom Stewart discussed a lot about how companies create value through the power of their brains or minds, referred to as IC (Stewart, 1997; Sullivan, 1999). Other researchers finally tried to explain the true meaning of IC so that there were various opinions of experts regarding the notion of IC. Even so, specific definitions of what IC means is not yet defined (Wang et al., 2014).

Kannan and Wilfried (2004) state that IC refers to things like knowledge, experience, and information that can create wealth for companies. This opinion is also supported by Sullivan (1999), who said that IC is a collection of ideas, inventions, technology, general knowledge, computer programs, designs, data skills, processes, creativity, and publications that can be converted into profits. Edvinsson and Malone

(1997) mentioned in Soetanto and (2019) that IC is simply knowledge that can be measured or can be converted into value.

The Pulic's value-added intellectual coefficient (VAIC™) as the widely used measurement for IC. The purpose of the VAIC method is to measure the efficiency of the use of intellectual capital (Pulic, 2000). The model changes two components of intellectual capital, human and structural capital, into financial figures, and this forms the value-added intellectual coefficient (VAIC™). IC is a representation of the resources in the company that can create value for the company through knowledge and understanding (Nahapiet & Ghoshal, 1998). As said by Ghosh and Mondal (2009) that IC is still challenging to measure because it is not explicitly disclosed in financial statements, but when a company can manage it appropriately, IC will become a competitive advantage for the company all the time. Therefore, the first hypothesis of this study is stated as follows.

H1: VAIC™ has a significantly positive relationship to ROA

3.2.1. Components of Intellectual Capital in The VAIC Model

Similar to the real understanding of IC, experts also have not determined precisely the components of IC (Al-Musali & Ku Ismail, 2016). Few works of literature defined IC into three main components namely, structural capital (SC), relational capital (RC), and human capital (HC) (Appuhami & Bhuyan, 2015; Chen et al., 2005; Saint-Onge, 2002; Stahle et al., 2011; Sullivan, 1999). They argued that RC is knowledge about external companies, including relationships with consumers, suppliers, market conditions, government, and related industries (Tayles et al., 2007). Stated, RC is the knowledge the company has about its business environment (De-Pablos, 2004). The focus of RC is about the company's ability to absorb, use, and explore its knowledge of its business environment to create relational value with external stakeholders (Martín-de-castro et al., 2011). RC, for example, customer loyalty, customer satisfaction, company image the good, and the power to negotiate and build alliances (Joshi et al., 2013).

This research follows the VAIC model (Public 2004), which intended to measure the extent to which a company produces added value based on intellectual (capital) efficiency or intellectual resources. Stahle et al. (2011, p.533) described VAIC calculations into three main variables: human capital (HC), which is interpreted as employee expenses; structural capital (SC), which is interpreted as the difference between produced added value (VA) and human capital (HC); and capital employed (CE), which is interpreted as financial capital, e.g., book value. Based on these classifications, VAIC is calculated as the direct sum of key efficiency figures, which in turn are calculated as ratios (i.e., Capital Employed Efficiency/CEE = VA/CE; Human Capital Efficiency/HCE = VA/HC; Structural Capital Efficiency/SCE = SC/VA).

The first variable is the HC. Sullivan (1999) explain simply that HC and employees do not belong to the company. However, the company has intellectual assets generated by HC from employees that can create a competitive advantage (Gogan et al., 2016). The advantage is due to HC represents the intellectual abilities of people within the company in responding to changes and meeting the needs of consumers (Gogan et al., 2016). Kannan and Wilfried (2004), who support this opinion, say that HC includes employee competence, the ability to establish relationships and create value.

HC is an essential component in the IC (Nourani et al., 2018). Companies will be able to produce competitive advantages if there are human resources who have innovation, competence, and creativity (called HC) (Al-Musali & Ku Ismail, 2016). Moreover, in intensive-knowledge firms, especially Islamic banks. As Colombo and Grilli (2005) said, the higher the use of HC, the higher the entrepreneurial judgment of the company. So, with sustainable HCE (Human Capital Efficiency), management can improve employee performance and ultimately will increase the company's ability to generate profits (Hsu, 2007). So, the first sub-hypothesis in this study is as follows.

H1a: HCE has a significantly positive relationship to ROA

The second variable is SC. SC are values or knowledge resources that remain attached to the company when employees leave the company (Bontis, 1998; S. Ghosh & Mondal, 2009; Su et al., 2011). The company owns SC, and this is what distinguishes HC from SC. SC includes databases, information systems, routines, procedures, and

processes that help the company's operations as well as creativity and innovation as well as corporate culture (Mention & Bontis, 2013).

Companies with an active SC tend to have a supportive culture that allows individuals in the company to try new things, learn, and dare to take risks (Bontis et al., 2000). In other words, companies tend to have a supportive environment for their employees to increase productivity, reduce total production costs, and increase profitability if they have a high SCE (Structural Capital Efficiency) (Bontis et al., 2000). This means that the company will be able to increase its ability to earn profits. Therefore, the second sub-hypothesis of this study is as follows.

H1b: SCE has a significantly positive relationship to ROA

The last variable is CE. The ability of banks to generate profits will be better if it combines IC and financial capital (Nawaz & Haniffa, 2016). CEE (Capital Employed Efficiency), in this case, represents the total monetary value of BUS tangible assets that are used to improve the ability of Islamic banks to generate profits (Nawaz & Haniffa, 2016). So, the third sub-hypothesis in this study is as follows.

H1c: CEE has a significant positive relationship to ROA

3.2.2. Profitability

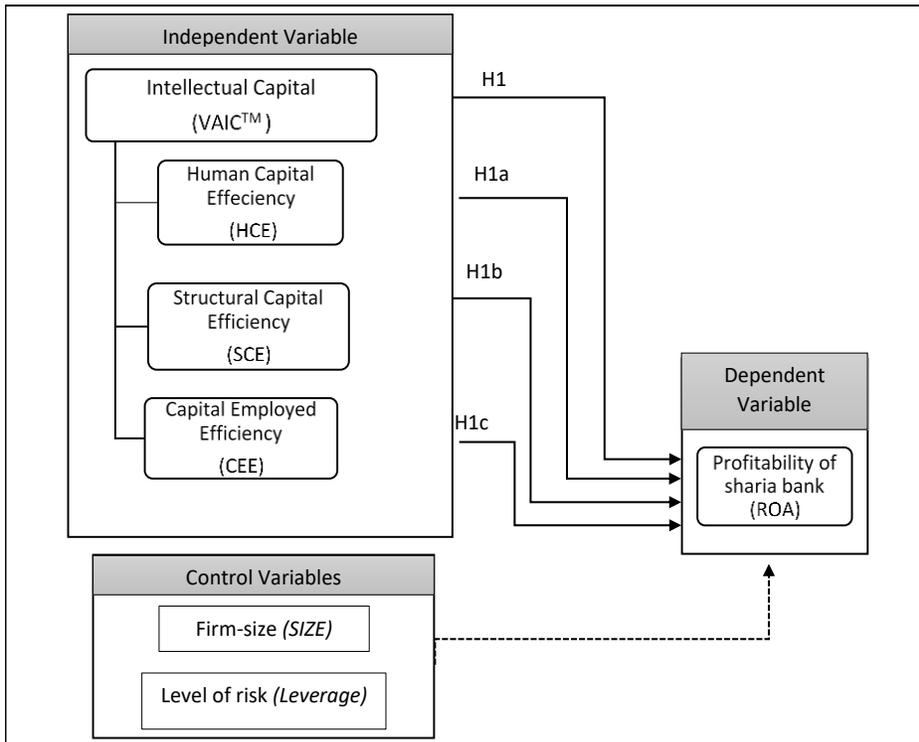
Profitability is the size of a company in generating net income with a certain level of assets, share capital, and sales (Hanafi, 2004). In general, profitability is defined as the acquisition of a company that results from revenue that has been reduced by all costs for a specified period (Alarussi & Alhaderi, 2011). Return on assets (ROA) is used as a measure of profitability BUS in this study. ROA is a representation of the efficiency of a company using its assets in generating profits (Al-Musali & Ku Ismail, 2016).

The higher the ratio means, the better the efficiency and effectiveness of asset management, and conversely, the lower the ratio, the lower the efficiency and effectiveness of asset management (Hanafi, 2004). As Stewart (2007) said in Nawaz and Haniffa (2016) that the use of ROA as a measure of a company's ability to generate profits in research on ICs is more suitable for use because it can reflect the monetary value of intangible assets.

4. Research Framework

This study uses the dependent variable, namely BUS (Bank Umum Syariah, Islamic common banks) profitability, which is measured by ROA. The independent variable in this study is IC, which consists of human capital, structural capital, and relational capital. VAICTM is used as a tool for proxy IC. This study uses a controlling variable that is the size of the company that is proxied by SIZE and the level of risk that is measured by leverage.

Figure 1.
Research Framework



4.1. Research Method

This paper uses secondary data from annual financial reports of Islamic common banks. The data was obtained from the Islamic commercial bank websites and the database of Center for Research in Islamic Economics and Business (Pusat Kajian Ekonomika Bisnis Syariah, PKEBS) Faculty of Economics and Business Universitas

Gadjah Mada (FEB UGM). Hypothesis testing is done by STATA 15 software. There are two equations generated in this study. The first equation examines the relationship between IC as measured by the value-added intellectual coefficient (VAICTM) in the aggregate of return on assets (ROA) with bank size and risk level as the control variable.

$$ROA = \beta_0 + \beta_1 VAIC^{TM} + \beta_2 SIZE + LEVERAGE + \varepsilon \quad (1)$$

The second equation examines the relationship between value-added intellectual efficiency (VAICTM) for each component of return on assets (ROA) with the size of Islamic banks and the level of risk as to the control variable.

$$ROA = \beta_0 + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE + \beta_4 SIZE + LEVERAGE + \varepsilon \quad (2)$$

Variable measurement

According to Pulic (2004), measurements for each component of the IC are as follows.

$$HCE = \frac{VA}{HC}$$
$$SCE = \frac{VA - HC}{VA}$$
$$CEE = \frac{VA}{CA}$$

Human capital (HC) is a large amount of capital invested for knowledge workers, namely salary, benefits, and training. CA is the book value of the net assets (Al-Musali and Ku Ismail, 2016). Structural Capital Efficiency (SCE) is the difference between the added value for the company and the amount of capital invested in knowledge workers (Al-Musali & Ku Ismail, 2016). Value-added (VA) is a plus for banks (Al-Musali & Ku Ismail, 2016; Nawaz & Haniffa, 2016). VA measurements can be carried out using the formula below.

$$VA = \text{Output} - \text{Input}$$

VA can be defined as the result of a reduction between output and input used. The output is gross profit from a bank, and input is all operational expenses of the Islamic bank (Pulic, 2004). Salary and wage expenses are not included in the calculation of value-

added due to employee compensation, and other costs incurred for training and development will be treated as investments, not as bank expenditures (Pulic, 2004).

Furthermore, the measurement of the dependent variable will be measured using ROA that is by distributing net income to total assets. The bank size is measured by using the total assets of Islamic banks in the corresponding year, and it is natural-logged. Then, the level of risk as a controlling variable in this study is measured by leverage. Leverage is a comparison between the company's total debt and its total assets.

4.2. Sampling method, population, and sample

The population in this study is all registered Islamic common banks in the Financial Services Authority (Otoritas Jasa Keuangan, OJK) for the period 2012-2018. We adopt purposive sampling methods, and the criteria are complete data related to variables and Islamic banks with positive ROA.

4.2.1. Data Analysis Techniques

This research will use maximum and minimum values, average values, and standard deviations to explain the independent and dependent variables.

4.2.2. Data analysis model

We used panel data regression model. The regression estimation model can be done by three methods, namely *common effect*, *fixed effect*, and *random-effect* methods.

4.2.3. Determination of data analysis model

Determination of the best data analysis model between *common effects*, *fixed effects*, and *random effects* can be done through F statistical tests, *Lagrange Multiplier* (LM) tests, and Hausman tests (Widarjono, 2018).

4.2.4. Classical Assumption

The assumption test is performed to see whether or not there are problems of autocorrelation, heteroscedasticity, multicollinearity, and normality in the research

model that has been made (Kuncoro, 2007b). This study tests autocorrelation, heteroscedasticity, multicollinearity in the regression model. The normality test was not carried out since the number of samples used in this study is statistically sufficient. The estimator is relatively generally distributed with a reasonably large sample size (Widarjono, 2018; Wooldridge, 2016). According to some econometrics experts, a sample size of 30 in a study can be said to be satisfactory, although it does not guarantee the occurrence of error distribution (Wooldridge, 2016).

4.3. Hypotheses testing

4.3.1. The coefficient of determination (R^2)

The coefficient of determination by (Kuncoro, 2007a) is the value used to see how much ability of independent variables in explaining the variation in the dependent variable. If the coefficient of determination is close to 1, then it can be said that the independent variable can provide almost all information about the dependent variable (Kuncoro, 2007a).

4.3.2. F statistical test

The test is conducted to find out whether the independent variables simultaneously and significantly influence the dependent variable (Ghozali, 2018). The provision used in this test is that if the model used is a *random effect*, the Chi probability value less than α indicates that the independent variables are simultaneously significant and affect the dependent variable.

4.2.3. T statistical test

The variables are tested individually to find out whether the independent variables are individually able to explain variations of the dependent variable (Ghozali, 2018). The provisions in this test can be seen from the *p-value* of the regression results of the sample model. The independent variable is said to be significant and influences the independent variable if the *p-value* is less than 0.05.

5. Result and Discussion

5.1. Description of the Sample

Table 1
Sample Research

No.	Criteria	BUS (n)
1	Number of BUS registered with the Financial Services Authority (OJK) in the year 2012-2018	14
2	Number of BUS that has a negative ROA	(3)
3	Number of BUS that has incomplete data	(2)
4	Number of samples	9
5	Number of years of observation	7
6	Number of years of observation that has incomplete data (2017/2018)	(2)
Number of observations		45

5.2. Descriptive Statistics Analysis

Table 2
Descriptive Statistics Analysis

Variable	N	Average	Standard Deviation	Minimum	Maximum
ROA	45	0.014374	0.0155807	0.0008	0.0951
VAIC	45	2.377389	2.163825	-10.35488	4.882659
HCE	45	1.767074	2.189701	-11.21963	4.085246
SCE	45	0.5334107	0.2093066	0.2543792	1.473687
CEE	45	0.769039	0.103406	-0.224379	0.4359924
SIZE	45	29.96823	1.230271	27.92721	31.99834
LEVERAGE	45	0.2879553	0.2581984	0.0979337	0.9326237

The average of the dependent variable, ROA, is 0.014374, with a standard deviation of 0.0155807. This value indicates that the distribution of data is not too far from the average. The minimum ROA value comes from BRI Syariah banks, which is 0.0008. The maximum value of ROA comes from Maybank Syariah, which is equal to 0.0951. The independent variable VAIC has a minimum value of -10.35488 and a

maximum value of VAIC of 4.88265. It shows that the variation in differences in VAIC values is not too significant between samples.

As for the average value of the VAIC component, firstly, the average value of HCE, which is equal to 2 (rounding) with a standard deviation of 2.189701. It shows that the added value generated from funds spent on labor is two times. Secondly, the average value of SCE is equal to 0.5334107, with a standard deviation of 0.2093066. It shows that the structural capital needed to produce added value for Islamic common banks is 0.5334107. Thirdly, the average value of CEE is 0.769039, with a standard deviation of 0.103406. It shows that the added value generated from the capital used is 0.769039 times. The average of the first control variable is the size of Islamic banks (SIZE) is 29,96823, and the standard deviation is 1.230271. The average of the second control variable is the level of risk of Islamic banks (leverage) is 0.2879553, and the standard deviation is 0.2581984.

5.3. Determination of Data Analysis Models

5.3.1. Statistical Test F or Common Test

F statistical test shows that the probability value of F is 0.0214. This value is smaller than the α value of 0.05. So H_0 in this test is rejected. Therefore, a better model used for equation 1 in this study is the fixed effect model. Equation 2 also uses the same test. The results of the statistical test F or standard test for equation two are presented in table 3 below. In this table, it is known that the probability value F is 0.0018, which means this value is smaller than the α value of 0.05. Therefore, H_0 is rejected, which means that in equation two, the fixed-effect model is better used than the common effect model.

Table 3
Common Test

<i>H₀: common effect model; H₁: fixed effect model</i>	
F(8,31)	4.15
Prob > F	0.0018

5.3.2. *Hausman test*

Hausman test is needed to determine the best model between the fixed-effect model or the random-effect model. Hausman test shows that the Chi² Probability value is 0.2938. This value is higher than the α value of 0.05. Therefore, the random effect model is a better model to be used than the fixed effect model. Furthermore, the same test is also carried out in equation 2. The Chi² probability value is 0.1079. This value means higher than the α value of 0.05. Therefore, the second equation is better to use the random effect model than the fixed effect model.

5.3.3. *Classical Assumptions Test*

Table 4.
Heteroscedasticity Test Results for Equation 1

Chi ²	35.10
Prob > Chi ²	0.0000

Table 5.
Heteroscedasticity Test Results for Equation 2

Chi ²	18.55
Prob > Chi ²	0.0000

The test results show that the Chi² probability values of equations 1 and 2 are smaller than the α value of 0.05, so it can be said that the model used contains heteroscedasticity problems. Robust command or also called white's standard error in STATA, which is useful for making the standard error in the model used to become robust against heteroscedasticity disorders (Torres-Reyna, 2007).

5.3.4. *Multicollinearity test analysis*

The results of multicollinearity testing for equations 1 and 2 presented in Tables 6 and 7, indicate that there are no multicollinearity problems in the regression model used.

Table 6
Multicollinearity Test Results for Equation 1

Variable	VIF	Tolerance (1/VIF)
SIZE	1.11	0.897281
LEVERAGE	1.09	0.920727
VAIC	1.05	0.951789
Average of VIF	1.08	

Table 7
Multicollinearity Test Results for Equation 2

Variable	VIF	Tolerance (1/VIF)
CEE	6.06	0.164911
LEVERAGE	4.82	0.207491
HCE	2.01	0.497886
SCE	1.38	0.726685
SIZE	1.22	0.818505
Average of VIF	3.10	

5.3.5. Hypothesis test analysis

Table 8
Regression result for equation 1

Independent Variable	Coef.	z	P> z
VAIC	0.0003613	1.15	0.252
SIZE	-0.0063035	-1.80	0.072
LEVERAGE	-0.0132954	-1.48	0.138
Observation			45
Number of groups			9
Within R-squared			0.0296
Overall R-squared			0.2468
Wald Chi ²			7.85
Prob > Chi ²			0.0492

Table 9
Regression result for equation 2

Independent Variable	Coef.	z	P> z
HCE	0.0016092	1.73	0.084
SCE	0.0560008	4.23	0.000
CEE	-0.0079519	-0.29	0.774
SIZE	-0.0035141	-2.62	0.009
LEVERAGE	-0.0086135	-0.73	0.466
Observation			45
Number of groups			9
Within R-squared			0.6837
Overall R-squared			0.7025
Wald Chi ²			637.52
Prob > Chi ²			0.0000

5.3.6. Analysis of the goodness of fit test

The value of overall R² equation 1 is 0.2468. It means that independent variable intellectual capital and control variables, namely company size and leverage, can explain 24.68% of the variation of the profitability of Islamic banks and 75.32% explained by other variables not examined in this study. Equation 2 shows the overall R² value of 0.7025 or 70.25%. It means that independent variables, namely HCE, SCE, and CEE, as well as the control variables, namely company size, and leverage can explain 70.25% of the variation of the profitability of Islamic banks and 29.75% explained by other variables not examined in this study.

5.3.7. Analysis of F statistical tests

The Chi² probability value in the regression model test of equation 1 is 0.0492. This value is less than α 0.05. Therefore, it can be said that the independent variable IC simultaneously significant and influential on the dependent variable that is the profitability of Islamic banks.

The F test results for equation two are seen from the Chi^2 probability value because it uses the same model that is a random effect. The Chi^2 probability value in the regression model test of equation 2 is 0.000, which means that the value is less than α 0.05. Therefore, it can be said that the IC independent variables (HCE, SCE, and SCE) are simultaneously significant and influence the dependent variable, namely, profitability.

5.3.8. Analysis of *t* statistical tests

From these tests, the p-value is 0.252. Therefore, it can be concluded that the VAICTM independent variable does not significantly influence the dependent variable ROA. In contrast, the control variable of bank size has a p-value of 0.072, with a coefficient of -0.0063035. Therefore, H₀ in this test was rejected at the 10% significance level. Therefore, it can be said that the firm size control variable has a negative but significant effect on the dependent variable ROA at a significance level of 10%. While for the Islamic bank's risk level (leverage) has a negative effect on ROA and is not significant. Based on the results of the analysis above, H₁, which states that VAICTM has a significantly positive relationship to ROA of Islamic common banks in Indonesia, is not accepted.

T-test results for equation 2 show that the p-value of HCE is 0.084, with a coefficient of 0.0016092. It means that HCE has a significant positive effect on the dependent variable ROA at a significance level of 10%. Furthermore, the SCE variable has a p-value of 0.0000 with a coefficient of 0.0560008. Therefore, SCE has a positive and significant effect on ROA. While CEE has a negative and not significant effect on ROA, it can be seen from the p-value that is equal to 0.774, which exceeds the α value of 0.05 and the coefficient of -0.0079519.

Meanwhile, the control variable of bank size has a p-value of 0.009 with a coefficient of -0.0035141. Therefore, it can be said that the firm size control variable has a significant negative effect on the dependent variable ROA at a significance level of 1%. While for the Islamic bank risk level (leverage) has a p-value of 0.466 with a

coefficient of -0.0086135. That is, leverage does not have a significant effect on ROA and has a negative relationship.

5.4. Discussion

5.4.1. Effect of VAICTM on profitability

The results of the hypothesis analysis show that IC projected by VAICTM does not significantly influence profitability but has a positive relationship direction. The results of this paper are different from previous studies, which mainly stated that there was a positive and significant influence between IC and ROA (see Chen et al., 2005; Nawaz and Haniffa, 2016; and Al-Musali and Ku Ismail, 2016).

Research conducted in countries that invest significantly in ICs such as Australia and Finland can support this claim (Bontis et al., 2013). However, for countries that still cannot use IC efficiently and rely on physical and financial capital in creating profits, it cannot show that IC affects the profitability of the company. Therefore, it can be concluded that the BUS in Indonesia is still focusing on physical and financial capital than ICs to create profits. Hence, IC is not being prioritized to Islamic banks in Indonesia.

5.4.2. The effect of VAICTM component on profitability

It is statistically proven that HCE has not positively significant to ROA. This finding echoes Ghosh and Mondal (2012) and Nimtrakoon (2015), which state that there is no significant relationship between HCE and ROA. However, if the significance level is changed to 10%, it can be said that HCE has a significant positive effect on ROA. The small contribution of HCE can be a cause of an insignificant influence of IC on ROA because HCE itself is the primary and most crucial component in the formation of IC. Also, it is statistically proven that SCE has a significant positive effect on ROA. Therefore, it can be said that the higher use of structural capital will be able to increase BUS profitability. This finding also echoes Al-Musali and Ku Ismail (2016); Dzenopoljac, Yaacoub, Elkanj, and Bontis (2017); and Wang et al. (2014).

It has been shown in the analysis at H1c, which states that CEE has a significant positive effect on ROA is rejected. CEE has a negative effect on ROA, indicating that the addition of physical assets from BUS will not increase profits. It indicates that the addition of assets such as buildings may and may not increase profitability. This result supports the view of Andriessen (2004) which states that as business growth in the era of knowledge-based economics becomes more aggressive; companies realize that internal expertise and unique human experience (intangible organizational resources) can create essential milestones in business performance as the basis for innovation, competence, and success rather than the use of physical and financial capital.

Among the three IC components, SCE is the component that has the highest contribution to increasing BUS profitability in Indonesia. It means that Islamic banks in Indonesia rely more on the use of structural capital in creating profitability rather than using employed capital (physical and financial capital) and human capital. The results of this study are consistent with the resource dependency theory that focuses on the company's performance and capabilities to create a competitive advantage (Barney & Hesterly, 2008). SCE is a clear picture of the company's strategic resources that are unique and not easy to imitate so that it can be relied upon to create a competitive advantage, which ultimately increases profitability (Wang et al., 2014).

5.5. Conclusion Hypothesis Test Results

Table 10
Conclusion Hypothesis Test Results

Hypotheses	Independent Variable	Result	Conclusion
H1	IC	IC has a positive relationship to ROA but not significant	Rejected
H1a	HCE	HCE has a positive relationship to ROA at the 10% significance level	Accepted
H1b	SCE	SCE has a positive relationship to ROA at the 1% significance level	Accepted
H1c	CEE	CEE has a negative relationship to ROA and insignificant effect	Rejected

6. Conclusion, Implication, Limitation

It can be concluded that IC, which is proxied by VAICTM, does not have a significant effect on the profitability of Islamic banks in Indonesia. IC is not a significant factor in increasing profitability. The influence of IC components on the profitability of Islamic banks has varied results. HCE has a significant positive effect on ROA. It means that Islamic banks in Indonesia are well in managing HCE to increase profitability. SCE has a significant positive effect on profitability. SCE's contribution to increasing BUS profitability in Indonesia has the highest value. It means that Islamic common banks in Indonesia rely heavily on the use of SCE in increasing profitability. CEE is negatively related and has no significant effect on profitability. The rejected hypotheses H1c (CEE) is due to many factors, such as the low priority of capital employed (physical and financial capital). Comparing to the accepted hypotheses H1b (SCE), it shows that BUS in Indonesia is more to utilize structural capital than the capital employed. Even though this finding echoes Andriessen (2004), further research is recommended.

The limitations of this paper are that the samples are limited to the Islamic banking industry. Therefore, the findings cannot be generalized to other industries. This study contributes to the practice that BUS management in Indonesia should start paying attention to IC management, especially regarding HCE and SCE, to increase profitability. In this knowledge-economy era, the intangible resources (IC) are the strategic resources of companies in creating profits and maintaining company sustainability.

References

- Ahuja, B., & Ahuja, N. (2012). "Intellectual capital approach to performance evaluation: a case study of the banking sector in India." *International Research Journal of Finance and Economics*, 93(1), pp.110-122.
- Al-Musali, M. A., & Ku Ismail, K. N. I. (2016). "Gross-Country Comparison of Intellectual Capital Performance and Its Impact on Financial Performance of Commercial Banks in GCC Countries." *International Journal of Islamic and Middle Eastern Finance Management*, 9(4), pp.512-531. <https://doi.org/10.1108/17538391111144515>
- Alarussi, A. S., & Alhaderi, S. M. (2011). "Factor affecting profitability in Malaysia." *Journal*

- of *Economic Studies*, 45(3), pp.442-458.
<https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Andriessen, D. (2004). "Designing a Method for the Valuation of Intangibles." In *Making Sense of Intellectual Capital* (pp. 1–8). Florida: Business Summaries.
<https://doi.org/10.4324/9780080510712>
- Appuhami, R., & Bhuyan, M. (2015). "Examining the influence of corporate governance on intellectual capital efficiency: Evidence from top service firms in Australia." *Managerial Auditing Journal*, 30(4/5), pp.347-372.
<https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Barney, J. B., & Hesterly, W. S. (2008). "Evaluating a Firm's Internal Capabilities." In *Strategic Management and Competitive Advantage* (2nd ed., pp. 74–107). New Jersey: Pearson Education.
- Bekmezci, M. (2015). "Companies' Profitable Way of Fulfilling Duties towards Humanity and Environment by Sustainable Innovation". *Procedia - Social and Behavioral Sciences*, 181, pp.228-240. <https://doi.org/10.1016/j.sbspro.2015.04.884>
- Bontis, N., Janosevic, S., & Dzenopoljac, V. (2013). "Intellectual Capital in Serbia's Hotel Industry." *International Journal of Contemporary Hospitality Management*, 27(6), pp.1365-1384. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Bontis, N., Keow, W. C. C., & Richardson, S. (2000). "Intellectual Capital and Business Performance in Malaysian Industries." *Journal of Intellectual Capital*, 1(1), pp.85-100.
<https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Chen, M.-C., Cheng, S.-J., & Hwang, Y. (2005). "An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance". *Journal of Intellectual Capital*, 6(2), pp.159-176.
<https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Colombo, M. G., & Grilli, L. (2005). "Founders' Human Capital and The Growth of New Technology-based Firms: A competence-based view". *Research Policy*, 34(6), 795–816. <https://doi.org/10.1016/j.respol.2005.03.010>
- De-Pablos, P. O. (2004). "Measuring and Reporting Structural Capital: Lessons from European Learning Firms Patricia." *Journal of Intellectual Capital*, 5(4), pp.629-647.
<https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Firer, S. S., & Williams, M. (2003). "Intellectual Capital and Traditional Measures of Corporate Performance." *Journal of Intellectual Capital*, 4(3), pp.348-360.
<https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Gamble, J. ., Peteraf, M. A., & Thompson, A. A. (2017). "Evaluating a Company's Resources, Capabilities, and Competitiveness." In *Essentials of Strategic Management: The Quest for Competitive Advantage* (5th ed., pp. 66–83). New York: McGraw- Hill.
- Ghosh, S., & Mondal, A. (2009). "Indian Software and Pharmaceutical Sector IC and Financial

- Performance.” *Journal of Intellectual Capital*, 10(3), pp.369-388. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Ghozali, I. (2018). “*Aplikasi Analisis Multivariate dengan Program IBM SPSS 25*” (9th ed.). Semarang: Badan Penerbit UNDIP.
- Gogan, L. M., Artene, A., Sarca, I., & Draghici, A. (2016). “Impact of Intellectual Capital on Organisational Performance.” *Social and Behavioral Sciences*, 221(pp.194-202). <https://doi.org/10.1108/09696470910927641>
- Hanafi, M. M. (2004). “Laporan Keuangan.” In *Manajemen Keuangan* (1st ed., p. 42). Yogyakarta: BPF.
- Horibe, F. D. E. (1999). “*Managing Knowledge Workers: New Skills Attitude to Unlock the Intellectual Capital in Your Organization.*” Ontario: Jhon Wiley & Sons.
- Hsu, D. H. (2007). “Experienced Entrepreneurial Founders, Organizational Capital, and Venture Capital Funding.” *Research Policy*, 36(5), 722–741. <https://doi.org/10.1016/j.respol.2007.02.022>
- Joshi, M., Cahill, D., Sidhu, J., & Kansal, M. (2013). “Intellectual Capital and Financial Performance: An Evaluation of The Australian Financial Sector.” *Journal of Intellectual Capital*, 14(2), pp.264-285. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Kamukama, N. (2015). “Intellectual Capital: An Analysis of Net FDI Drivers in BRIC Countries.” *Competitiveness Review: An International Business Journal*, 23(3), pp.260-283.
- Kannan, G., & Wilfried, G. (2004). “*Intellectual capital: Measurement effectiveness.*” *Journal of Intellectual Capital* (Vol. 5). <https://doi.org/10.1108/14691930410550363>
- Kehelwalatenna, S. (2016). “Intellectual Capital Performance During Financial Crises.” *Measuring Business Excellence*, 20(3), pp.55-78. <https://doi.org/10.1108/MBE-08-2015-0043>
- Kuncoro, M. (2007a). “Analisis Regresi 1: Dasar-Dasar dan Aplikasi Model Persamaan Tunggal.” In *Metode Kuantitatif: Teori Dan Aplikasi Untuk Bisnis Dan Ekonomi* (2nd ed.). Yogyakarta: UPP AMP YKPN.
- Kuncoro, M. (2007b). “*Metode Kuantitatif: Teori Dan Aplikasi Untuk Bisnis Dan Ekonomi.*” Yogyakarta: AMP YKPN.
- Martín-de-castro, G., Delgado-verde, M., López-sáez, P., & Navas-lópez, J. E. (2011). “Towards ' An Intellectual Capital-Based View of the Firm ': Origins and Nature.” *Journal of Business Ethics*, 98(4), pp.649-662. <https://doi.org/10.1007/s10551-010-0644-5>
- Mention, A.-L., & Bontis, N. (2013). “Intellectual Capital and Performance Within The Banking Sector of Luxembourg and Belgium.” *Journal of Intellectual Capital*, 14(2), pp.286-

309. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Nahapiet, J., & Ghoshal, S. (1998). "Social Capital, Intellectual Capital, and the Organizational Advantage." *The Academy of Management Review*, 23(2), pp.242-266. <https://doi.org/10.2307/259056>
- Nawaz, T., & Haniffa, R. (2016). "Determinants of Financial Performance of Islamic Banks: An Intellectual Capital Perspective," 8(2), pp.1-55. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Nimtrakoon, S. (2015). "The Relationship between Intellectual Capital, Firms' Market Value and Financial Performance: Empirical Evidence from The ASEAN". *Journal of Intellectual Capital*, 16(3), pp.587-618.
- Nourani, M., Chandran, V., Kweh, Q. L., & Lu, W. M. (2018). "Measuring Human, Physical, and Structural Capital Efficiency Performance of Insurance Companies." *Social Indicators Research*, 137(1), 281–315. <https://doi.org/10.1007/s11205-017-1584-6>
- Organisation For Economic Co-Operation And Development (OECD). (1996). "*The knowledge-based economy.*" *General Distribution*. Paris. Retrieved from <http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=OCDE/GD%2896%29102&docLanguage=En>
- Pal, K., & Soriya, S. (2012). "IC Performance of Indian Pharmaceutical and Textile Industry." *Journal of Intellectual Capital*, 13(1), pp.120-137. <https://doi.org/10.1108/14691931211196240>
- Pulic, A. (2004). "Intellectual Capital – Does It Create Or Destroy Value?" *Measuring Business Excellence*, 8(1), 62–68. <https://doi.org/10.1108/13683040410524757>
- Riahi-Belkaoui, A. (2003). "Intellectual Capital and Firm Performance of US Multinational Firms: A study of The Resource-based and Stakeholder Views." *Journal of Intellectual Capital*, 4(2), pp.215-226. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Roos, G., Bainbridge, A., & Jacobsen, K. (2011). "Intellectual Capital Analysis As a Strategic Tool." *Strategy & Leadership*, 29(4), pp.21-26.
- Saint-Onge, H. (2002). "Tacit knowledge The Key to The Strategic Alignment of Intellectual Capital." *Journal of Planning History*, 24(2), pp.10-16. <https://doi.org/10.1177/153851320200100311>
- Soetanto, T., & Liem, P. F. (2019). "Intellectual Capital in Indonesia: Dynamic Panel Approach." *Journal of Asia Business Studies*, 00–00. <https://doi.org/10.1108/JABS-02-2018-0059>
- Stahle, P., Stahle, S., & Aho, S. (2011). "Value Added Intellectual Coefficient (VAIC): A Critical Analysis." *Journal of Intellectual Capital*, 12(4), pp.532-551. <https://doi.org/10.1108/EL-01-2014-0022>

- Stewart, T. A. (1997). *Intellectual Capital*, London, Nicholas Brealey Publishing.
- Sullivan, P. H. (1999). "Profiting from intellectual capital." *Journal of Knowledge Management*, 3(2), pp.132-143. <https://doi.org/10.1108/13673279910275585>
- Tayles, M., Pike, R. ., & Sofian, S. (2007). "Intellectual Capital, Management Accounting Practices, and Corporate Performance: Perceptions of Managers." *Accounting, Auditing, & Accountability Journal*, 20(4), pp.522-548.
- Ting, I. W. K., & Lean, H. H. (2009). "Intellectual Capital Performance of Financial Institutions in Malaysia." *Journal of Intellectual Capital*, 10(4), pp.588-599. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Torres-Reyna, O. (2007). "Panel Data Analysis Fixed and Random Effects using Stata (v. 4.2)." Retrieved from <http://dss.princeton.edu/training/>
- Tran, D. B., & Vo, D. H. (2018). "Should Bankers Be Concerned With Intellectual Capital? A Study of The Thai Banking Sector." *Journal of Intellectual Capital*, 19(5), pp.897-914. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Ulum, I. (2016). "Model Pengukuran Kinerja Intellectual Capital Dengan Ib-VAIC Di Perbankan Syariah." *Inferensi*, 7(1), 185. <https://doi.org/10.18326/infsl3.v7i1.185-206>
- Wang, Z., Wang, N., & Liang, H. (2014). "Knowledge Sharing, Intellectual Capital, and Firm Performance." *Management Decision*, 52(2), pp.230-258. <https://doi.org/10.1108/MD-02-2013-0064>
- Widarjono, A. (2018). "Ekonometrika: Pengantar dan Aplikasinya Disertai Panduan EViews" (5th ed.). Yogyakarta: UPP STIM YKPN.
- Wooldridge, J. M. (2016). "Introductory Econometrics: A Modern Approach" (6e ed.). Boston: Cengage Learning.
- Yalama, A., & Coskun, M. (2007). "Intellectual Capital Performance of Quoted Banks on the Istanbul Stock Exchange Market." *Journal of Intellectual Capital*, 8(2), pp.256-271. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>
- Zeghal, D., & Maaloul, A. (2013). "Analysing Value Added as An Indicator of Intellectual Capital and Its Consequences on Company Performance." *Journal of Intellectual Capital*, 11(1), pp.39-60. <https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216>

intentionally blank