

Intellectual Capital and Firm Performance: Evidence from the Jakarta Islamic Index

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12

Sofyan HadinataDosen Fakultas Ekonomi dan Bisnis Islam UIN Sunan Kalijaga
sofyan.hadinata@uin-suka.ac.id**Abstract**

Measurement in accounting is an interesting thing, this study presents a method of residual income model (RIM) to measure intellectual capital (IC). This method quantitatively assesses IC in support of knowledge-based view theory to explain the relationship of IC to company profitability. This paper presents panel data regression using a company listing the Jakarta Islamic Index on the IDX. The research period from 2014 to 2017. The results showed that intellectual capital had a significant effect on company performance. The implications of this study provide a tool for managers to allocate resources in intellectual capital that can enhance sustainable competitive advantage.

Keywords: Intellectual Capital, RIM, JII, Performance**1. Introduction**

In the era modern economic especially intangible organizational resources contributed more to maintain superior positions (Barney, 1991). According to Bontis (1998), intellectual capital (IC) is an intangible asset that can generate profits but is not appropriate in the company's financial statements. Organizations that can create consistent innovation in terms of business processes or the creation of new products will be more likely to maintain a competitive advantage (Tidd, Bessant, & Pavitt, 2005). Companies must be able to encourage increased employee competence to encourage innovation that can create corporate excellence (Roos, Roos, Edvinsson, and Dragonetti, 1997). Cabrita, Silva, Rodrigues, & Dueñas (2017) argue that the continuity of the company depends on the ability of IC companies in the form of the ability to innovate, competence, customer service, and organizational intelligence.

The resource-based theory holds that company performance depends on the ability of companies to manage tangible assets and intangible assets owned. Physical capital and human capital as the main sources in the traditional economic outlook for productive activities of the company (Nahapiet & Ghoshal, 1998). According to Subramaniam & Youndt (2005), IC is an intangible asset that is important in supporting business sustainability. IC has an impact on performance because it is based on unique knowledge and is difficult for other companies to duplicate (Barney, 1991).

Many kinds of literature reveal various IC concepts and their impact on competitive advantage and performance. Furthermore, IC can be grouped into three dimensions consisting of human capital (HC), structural capital (SC), and relational capital (RC), which are accepted by the majority of researchers such as (Bontis, Keow, & Richardson, 2000; Edvinsson and Malone, 1997; Edvinsson & Sullivan, 1996; Roos, Roos, Edvinsson, and

Dragonetti, 1997; Sveiby, 1997). But the results of the study found different results if each of the components were tested respectively. Edvinsson and Malone (1997) classify intellectual capital into human capital and structural capital. Roos, Pike, and Fernstrom (2005) grouped IC into 3 dimensions, namely human capital, structural capital, and relational capital. So that allocating the right investment in the IC component becomes an important factor for positioning the company's business strategy (Kong & Ramia, 2010). Literature that links IC and the performance of Sharia-based nonfinancial companies is still small. While the development of the capital market in Indonesia is quite encouraging so that it attracts researchers to conduct the study.

Sharia shares are securities or shares that do not conflict with the principles of sharia in the capital market. The definition of shares in the context of Islamic stocks refers to the definition of shares generally governed by other OJK laws and regulations. There are two types of sharia shares recognized in the Indonesian capital market (IDX). First, stocks that meet the sharia stock selection criteria based on OJK regulation No. II.K.1 concerning the issuance of sharia securities list, the second is shares listed as sharia shares by issuers or sharia public companies based on OJK regulations Number 17 / POJK.04 / 2015. All sharia shares registered on the Indonesian Syariah Capital Market are listed on the IDX, is entered into the Sharia Securities List (DES) issued by the OJK regularly, every May and November. The Jakarta Islam Index (JII) is the first Shariah stock index to be launched on the IDX on July 3, 2000. JII only consists of 30 of the most liquid sharia shares listed on the IDX (idx.co.id).

This study uses a valuation model from previous research that uses a financial performance model, in the financial performance model we will use a model with financial statement data (Sydler, Haefliger, & Prukša, 2014). Based on a suggestion from a previous author, Sydler et al. (2014) each variable of intellectual capital is represented by one indicator. According to Sydler et al. (2014) that research on companies in one country will make the model more accurate and reliable because if different countries, it is very difficult because of the different legal and risks, such as the risk of currency differences, country policy risk, and others. The research aims to analyze the relationship between IC and company performance included in the JII index. This research will contribute to IC litigation in the context of companies in the category of sharia stock most traded on IDX.

2. Literature Review and Hypothesis

Edvinsson and Malone (1997) define IC as a knowledge asset that can be converted into value-added companies. Whereas Stewart (1997) argues that IC is the accumulation of science, company information, property rights and individual experience in organizations include patents, business processes, knowledge management, technology, and data of customers and suppliers. Castro (2014) classifies IC into three sub-components namely HC, SC, and CC (customer capital). HC represents the abilities, knowledge, skills, expertise, and experience of employees that can be utilized by the company in achieving its objectives. SC is the deposition of employee knowledge identified in the company system (Roos, Bainbridge, & Jacobsen, 2001). SC is an infrastructure built by human resources by transferring knowledge into intangible assets. SC can be in the form of procedure, structure, culture (Bontis, 1998).

Human resources are an important asset of the company because they can create added value (Dotzel, Shankar, & Berry, 2013). Companies that have human resources with higher skills and education tend to have better performance (Hsu, & Fang, 2009). Prajogo & Oke (2016) said that companies that develop their human resources by increasing knowledge and skills will increase creativity and generate new ideas that will result in improved performance. Human capital investment is positively related to firm performance (Nawaz, 2019). The measurement of human capital is difficult because of the unavailability of market prices. Wakelin (1998) said the amount of compensation the company receives can be received by the company's human capital.

R&D expenditure can increase the value of the company because these activities can create new assets (Chan, Kensinger, & Martin, 1992). Previous research has found evidence that R&D expenditures have a positive impact on a company's market value (Bandeira & Afonso, 2010; Coombs & Iii, 2005; DeCarolis, D. M., & Deeds, 1999; Lev & Sougiannis, 1996). Sydlar et al. (2014a) said R&D expenditure is an appropriate measure to describe structural capital.

Advertising expenditures are positive for increasing market value (Klock & Megna, 2000). The market responds to advertising expenditure as a relational capital investment because it has a positive impact on the company's future cash flow (Barnett & Salomon, 2006). The company advertises to increase brand value in the market so that it will increase customer loyalty. Companies with high customer loyalty will increase the trading volume so that it is easier to win marketing competitions (Leslie, M., & Holloway, 2006). Sydlar et al. (2014) argue that advertising expenses are an appropriate proxy for measuring relational capital. The advertising expenses invested can provide benefits for the company in the future, so that it can reflect the definition of customer capital.

Research that links IC with company performance is still being contested so it is still interesting to develop further (Tasawar Nawaz, 2017). Previous research results like Kharal et al. (2014) this study found that IC positively affected performance specifically in the oil and gas industry Pakistan. Ozkan, Cakan, & Kayacan (2017) found that human capital (HCE) had a positive effect on banking performance in Turkey. Lu, Wang, & Kweh (2014) said that IC had a positive impact on the performance of insurance companies in China. Sardo & Serrasqueiro (2017) said IC is positively related to financial and market performance as measured by ROA and Tobin's Q. Kim & Taylor (2014) said that productivity of HC, SC and Capital Employed Efficiency (CEE), each positive and significant effect to stock prices. However, compared with total assets to book value the results are not significant

Another study conducted by Kim & Taylor (2014) results showed that the productivity of HC, SC, and CEE each had a significant and positive effect on stock prices while the productivity of total assets was not significant on stock prices. This research was conducted on 160 companies listed on the Australian Exchange. Tiwari & Vidyarthi (2018) the results of his study stated that there is a positive relationship between IC and bank performance. In particular, HC and SC showed a significant positive on the performance of banks while the IC efficiency of private banks was better than government banks in India. Research conducted on 34 banks in India in 1999-2015. Joshi, Cahill, & Sidhu (2010) found evidence that VAIC has a significant relationship with personal costs (HC) and VA in banks in

Australia. Whereas total assets, number of employees, bank size, and total equity have no impact on bank performance. Al-Musali & Ismail (2016) the results of his study found that IC has a related positive on bank financial performance indicators in all GCC countries. While partially if the IC component is tested with financial indicators the results vary.

While the results of Nawaz & Roszaini (2017) say that a positive relationship VAIC and accounting performance (ROA). However, for SC indicators there is no significant ROA. So it can be concluded that the ability to create corporate VA is strongly influenced by HCS and CEE. Hamdan (2018) found evidence supporting the relationship between IC and market-based. Research carried out in Saudi Arabia and Bahrain, further analysis also revealed different results between these countries.

Empirically HC is considered to affect performance positively, and the results of previous studies have been collected to support this claim. A study conducted by Chen, Cheng, & Hwang (2005) shows that human resources have a positive effect on market value and company profitability, this study was conducted in Taiwan. Kamath (2007) found evidence that HC has a significant impact on the profitability and productivity of pharmaceutical companies in India. Ting & Lean (2009) shows that HC has a positive impact on profitability (ROA), this study was conducted at financial institutions in Malaysia.

But the contrasting study results also found by Chu, Chan, & Wu (2011) found evidence that HC harms stock market performance, but positively on profitability (ROA). Whereas if it is associated with the performance impact measured by shareholder return (ROE) and productivity (ATO) is not significant. In contrast, Maditinos, Chatzoudes, Tsairidis, & Theriou's (2011) study results show a positive relationship between HC with market performance and ROE, whereas if it is associated with ROA and company growth has no impact. Based on the above discussion the following hypotheses can be formulated:

Hypothesis: intellectual capital has a positive effect on financial performance

3. Methodology

This study uses the dependent variable profitability, while the independent variable is intellectual capital. Measurement of variables for company performance is to use modified ROA for book values to reduce heteroscedasticity. Whereas the independent variable is measured by the modified RIM model (Sydler, Haefliger, & Pruksa, 2014b).

Intellectual capital (IC) Model assets use the following formula:

$$IC = (H_t + S_t + R_t) + (1 - \alpha)(IC_{t-1})$$

$$= (H_t) + (1 - \alpha)(IC_{t-1})$$

IC is intellectual capital at time t, α is the accumulation level ($0 < \alpha < 1$), δ is the amortization level ($0 < \delta < 1$) cost, H_t is human capital (personal cost) at time t, S_t is R&D at time t, R_t is the advertising expense at the time, and t the cost of creating intellectual capital. To determine the value of intellectual capital t and intellectual capital t-1 using the formula:

$$MVT = \beta_1 BVT + \beta_2 (rf BVT - 1) + (\beta_1 + \beta_2) IET + \beta_3 VtNI_t \wedge R \alpha \delta$$

This study chose the Islamic industry because of the increasing development of the Islamic stock market in Indonesia. Sharia shares are the most actively traded category on the Indonesia Stock Exchange, namely the JII (Jakarta Islam Index) category. Companies that are sampled are those that are consistently included in the JII Index during this research period, namely 2014-2017. The researchers guessed that companies included in JII have profitability above the industry average so they are actively traded and have a large intellectual capital composition. Another criterion is that companies disclose more data in the annual report as supporting data needed in this study. Based on the criteria determined above the samples that met the criteria were 16 companies with a total sample of 64 samples. To test the sample data, a panel data analysis with a significance level of 5% was performed.

Figure 1
Description of the variables used in the adjusted RIM

Symbol	Name	Description
Ht	Personal Cost	Wages & salaries, social security, pensions, profit sharing costs and other benefits related to personnel
St	R&D expenses	Expenditures for research and development that occur in the fiscal year
Rt	Advertising costs	Sales/marketing fees/advertising costs
IET	Earning per share	Calculated from net income divided by the number of ordinary shares outstanding
BVT	Book value per share	Total equity/number of shares outstanding
MVT	The average share price for ten days at the end of the year	The price of the last ten days in each year
ROA	Return on asset	Net income before extraordinary items - minority rights / average total assets

4. Result

Based on the results of the sampling obtained 16 companies under predetermined criteria with the number of observations from 48 observers, then the data is processed by the square panel method at least with random effects. Statistical results show that (X) intellectual capital variables affect 78.40 percent of financial performance. Part of the variable net income (NIBV), book value (BV) affects financial performance while intellectual capital does not affect financial performance. In this study, intellectual capital is measured from the costs incurred consisting of employee costs (total costs) in the total of all costs associated with employees, namely salaries, remuneration, personal allowances

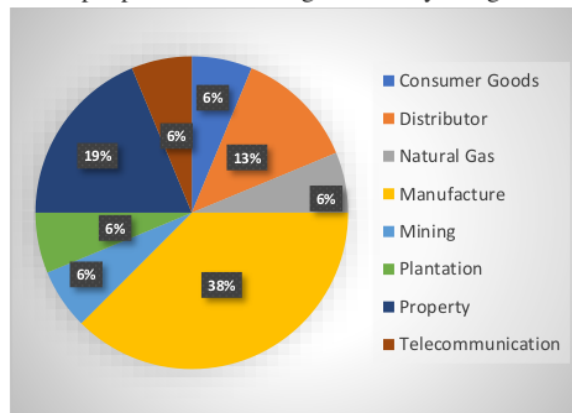
(uniforms, insurance, pensions, transportation, overtime, meals), training costs the employee.

Figure 2
Statistical Test Results

Variabel	Coefisien	Std. Error	t-Statistik	Prob.
BV	-1,101558	0.351650	-3,132538	0,0031
NIBV	38,57442	3.149310	12,24853	0,0000
IET	0.197144	0.426845	0.461863	0,6465
IE1	-,312086	0.498766	-,625715	0,5348
C	2532.360	1130.633	2.239771	0,0303
R-squared	0.802397	Mean dependent var	7567.232	
Adjusted R-squared	0.784015	S.D. dependent var	11.180,09	
S.E. of regression	5195.852	Akaike info criterion	20,04744	
Sum squared resid	1.16E + 09	Schwarz criterion	20,24236	
log-likelihood	-476.1386	Hannan-Quinn criteria	20,12110	
F-statistik	43,65204	Durbin-Watson stat	1.965101	
Prob (F-statistic)	0.000000			

The second is costs related to research and development (research cost) consisting of research and product development costs, including exploration costs for mining companies. The third is the cost of marketing (relational cost) which consists of advertising costs, including client meals and entertainment expenses. The assumption used for amortization is 12.5%, referring to the prevailing tax provisions in Indonesia, that the assets that have an 8-year economic age are 12.5% per annum amortization rate using the straight-line method. While the risk-free interest rate of the researcher uses the Bank Indonesia interest rate reference.

Figure 3
Sample profiles according to industry categories:



We observed 16 companies as a sample, the majority of the samples came from the property, manufacturing industry sector, distributor, and other sectors with the same percentage. According³⁰ Hirsch-Kreinsen, Jacobson, & Robertson (2006) industry category if linked to R&D costs: (1) High-technology industries,¹⁰ where the R&D expenditure are at least 5% of the output and they include the following industries: aircraft, spacecraft, pharmaceutical, office, accounting, and computing machinery, radio, TV, communication equipment and medical, precision, and optical instrument; (2) Medium-high-technology industries, where the⁹ R&D expenditure are between 3% to 5% of the output and they include the following industries: electrical machinery and apparatus, motor vehicles, trailers, semitrailers, chemicals excluding pharmaceuticals, railroad equipment and transport equipment, machinery and equipment; (3) Medium-low-technology industries, where the R&D expenditure are between 0,9% to 3% of the output and they include the following industries: building and repairing of ships and boats, rubber and plastic product, coke, refined petroleum products and nuclear fuel, other non metallic mineral products, and basic metal and fabricated metal product; (4) Low-Technology industries,¹⁵ where the R&D expenditure are less than 0,9% of the output and they include the following industries: manufacturing and recycling, wood, pulp, paper product, printing and publishing, food product, beverage, tobacco, textile, textile product, leather and footwear.

Based on the above categories, the type of industry that becomes the sample is included in the category of low-technology industries except for Kalbe Farma Tbk which is a pharmaceutical industry which is included in the category of high-technology industries. In collecting costs related to intellectual capital, the authors experience difficulties because not all companies sampled reveal the costs of research and development in the company's annual report. Companies⁷ that do not disclose the costs of research and development include PT. AKR Korporindo Tbk, PT. Indofood CBP Sukses Makmur Tbk, PT. Bumi Serpong Damai Tbk, PT. Indofood Sukses Makmur Tbk, PT. Lippo Karawaci Tbk, PT. London Sumatra Indonesia Tbk Plantation, PT. Sumarecon Agung Tbk, PT. Telekomunikasi Indonesia (Persero) Tbk and PT. United Tractors Tbk. Companies that disclose the highest research and development costs are PT. The State Gas Company (Persero) Tbk, between 2015 and 2017 the company reported research and development costs of Rp. 7.840 billion. Then the second rank is PT. Adaro Energy Tbk, the company reports research and development costs in the span of 2015-2017 reporting research and development costs of Rp 4,673 billion.

In terms of expenditure for the personal cost, there was PT. Astra International Tbk as first ranks with total expenditure during the 2015-2017 period of Rp. 48,968. Billion. The second rank is occupied by PT. Telekomunikasi Indonesia (Persero) Tbk with a total expenditure of Rp. 40,338 during the 2015-2017 study period. While the third rank is occupied by PT. United Tractor Tbk with a total expenditure of Rp. 31,428 billion during the 2015-2017 period.

Spend the company's advertising costs that spend the most advertising costs are PT. Telekomunikasi Indonesia (Persero) Tbk with total advertising costs for the period of 2015-2017 amounting to Rp. 12,675 billion. Then the second rank was occupied by PT. Kalbe Farma Tbk with a total expenditure of Rp 4,974 billion over the period 2015-2017.

And the third rank is occupied by PT. Indofood Sukses Makmur Tbk with a total expenditure of Rp 4,463 billion during the 2015-2017 period.

Terms of performance as measured by earnings per share (EPS), PT United Tractors Tbk ranked first in achieving EPS with an average EPS of 2015-2017 amounting to Rp 1,464 per share. Then the second rank was obtained by PT. Unilever Indonesia Tbk by obtaining an average EPS from 2015-2017 amounting to Rp 849 per share. And the third rank is achieved by PT. Semen Indonesia (Persero) Tbk with an average EPS acquisition from 2015-2017 amounting to Rp 625 per share.

Based on the sample studied, almost all of the highest cost companies are personal costs, then marketing costs and the last is research costs. In Indonesia, there is a paradigm shift about humanity that was once considered a resource now that many think that human is capital. This is reflected in the philosophy of changing names from Human Resources to Human Capital in several large companies such as Bank Syariah Mandiri, Adaro Energy, Astra International, Telkom, BNI Syariah.

5. Discussion

Based on the results of the statistical findings in the study, intellectual capital does not affect the financial performance measured by using market performance, namely the average price of shares in the last ten days at the end of each year. This finding contradicts Sydler et al., (2014) that market behavior is influenced by company spending for personal costs, research and development costs, and advertising costs that are treated as assets that have benefits significant for the company in the future.

According to the author's analysis, this is because not all companies carry out comprehensive disclosure of the components of intellectual capital. The author tries to ask for comments from one of the human capital head groups from a company in Indonesia, he argues that the company has designed and improved their respective competencies that are expected by users (related managers) to utilize these competencies to improve company performance which ultimately can improve the company's competitive advantage, but in reality, many managers have not maximized these competencies in achieving company goals.

6. Conclusion

Our research provides evidence of intellectual capital that has not had a significant impact on the performance of companies included in the Jakarta Islamic Index (JII). This research model adopts one of the models developed (Sydler et al., 2014). The model developed is quantitative with the RIM method, so it is hoped that the bias can be explored further. This research still has a lot of limitations, including a limited research period of only 3 years, the sample company consists of various industrial fields so this affects creating intellectual capital, for example, the service industry costs a lot for personal costs and advertising, the mining industry costs a lot for research and exploration of mine reserves.

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