Intellectual Capital and Business Performance In Indonesian Manufacture Companies

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Abstract: This study was intended to confirm the relationship of intellectual capital value efficiency (VAIC^{TM}) and the main components of company resources (physical, human and structural capitals) with financial performance (ROA) and Market Value (M/B). The research was conducted in the manufacturing sector; an industry with the largest growth and contribution to the Indonesian economy. This study used a sample of 171 manufacturing sector companies listed on the Indonesia Stock Exchange in 2014-2016. The test results revealed that physical capital (VACA) is the dominant factor that played its roles in financial performance and market value, and human capital (VAHU) only played its roles in financial performance. Then, structural capital (STVA) had no role in financial performance or market value.

Keywords: intellectual capital, Human capital, Physical capital, Structure capital, financial performance, Market value.

1 Introduction

The manufacturing sector is interesting to be the object of research since this sector is the largest contributor to the Gross Domestic Product (GDP) in Indonesia. The manufacturing sector's growth reached 17.88 percent in 2016 and increased to 20.16 percent in 2017. The Central Bureau of Statistics (BPS) in 2017 reported that the sub-sector contributing the highest growth was the food and beverage industry by 13.76 percent, the machinery industry and equipment at 9.51 percent, base metal industry by 7.05 percent, and textile and apparel industry of 6.39 percent The number of workers absorbed in manufacturing sector reached more than 17 million or 14.05 percent of the Industrial sector workforce in Indonesia. The contribution to employment can be understood because this sector is a labor-intensive industry.

The growth of the manufacturing sector is in line with the significant increase in Manufacturing Value Added. The increasing value of this industry is certainly the role of all components of the company's resources including intellectual capital (Altiner & Toktas, 2017). Intellectual capital cannot create value itself, but it will provide optimal results when intellectual capital is combined with other company resources (Pulic, 2008). The efficiency of intellectual work and other company resources will form an aggregate indicator that shows the overall efficiency of the company in creating company value added. Empirical evidence explains the relationship between intellectual capital and economic growth (Barro, 2001; Hassanzadeh, 2014; Sunde & Vischer, 2015; Neeliah & Seetanah, 2016; Ali, et al, 2018; Bist, 2018).

Stewart (1999) explains that intellectual capital is all knowledge of employees, organizations and the ability of companies that play a role in creating added value and competitive advantage. Intellectual capital value is presented with intangible assets in company's balance sheet (Roos, et al. 1997; Bist, 2018), The International Federation of Accountants (IFAC) divides intellectual capital into three components; Human, Organizational, and Relational capitals (Petty & Guthrie, 2000). Organization for Economic Co-operation and Development classifies Intellectual capital as organizational and human capital owned by a business organization (Guthrie, 2001). Intellectual capital is the center of attention related to super-fast

changes in technology that require the availability of knowledgeable and skillful human capital so that it can create synergy within a company. Researchers classify intellectual capital into three main components; human, structural, and customer capitals (Fitz-Enz, 2000; Roos, et al, 1997; Bontis, 1998; Bontis & Fitz-enz, 2002). Human capital represents the knowledge and individual skills of an organization. Structure capital is the company's capital which includes procedures, systems, culture, and databases. Customer capital or Relational capital describes the ability to establish harmonious relationships with partners from suppliers, customers, the government, and the surrounding community (Bontis, 2010).

The studies on intellectual capital have been conducted by previous researchers. In general, they associated financial performance and market performance using objects in the service industry. For example, Bontis & Fitz-enz (2002); Munjuri & K'Obonyo (2015); Chahal & Bakshi (2016); Ozkan, et al. (2017); Nawaz & Haniffa (2017); and Girma (2017) conducted the studies in financial sector, and the studies in sports sector were conducted by Munjuri & K'Obonyo (2015); Yasar, et al. (2015); Magoutas, et al. (2012); and Scafarto & Dimitropoulos (2018). The studies in educational services were conducted by Bakhtiar & Haider (2014); Kucharčíková, et al. (2015); Barbosa, et al. (2016); and Secundo, et al. (2018).

The intellectual capital studies in the manufacturing sector were conducted by Wang, et al. (2011), (Molodchik, et al, (2012) Khan, et al. (2015), (Gomez-valenzuela, 2015), (Arslan & Zaman, 2014), Cisneros, et al. (2018). The results of the research conducted related to the effect of the intellectual capital component on company performance had not found consistent results. Some researchers found that the components of human and relational capitals had a positive effect on performance (Wang, et al, 2011; Arslan & Zaman, 2014; Khodabakhshi, 2011; Gomez-valenzuela, 2015) The other finding shows that human and structural capitals are the factors that determine company performance, while relational capital does not influence financial performance (Molodchik, et al, 2012; Arslan & Zaman, 2014). The different finding shows that human, structure, and relational capitals influence organizational performance (Bernasek & Shwiff, 2001; Syed Ismail, et al. 2017; Cisneros, et al, 2018). Pal & Soriya, (2012) in their research did not find a relationship between the three intellectual capital components with financial performance.

This study used a sample of manufacturing sector companies listed on the Indonesian capital market (IDX) by referring to the concept developed by Bontis (2000) that intellectual capital has an impact on performance when human resources have the knowledge applied in the organization. Each industrial sector has a different impact on company performance depending on the level of knowledge and the utilization of knowledge by the organization. It is commonly known that manufacturing industries in Indonesia are labor-intensive sectors and their skills are low, making them vulnerable to technological development. According to the international labor organization (ILO), more than 60 percent of jobs in Indonesia is vulnerable to technological development and machine automation. It was also explained that the obstacles in increasing technological sophistication, especially in the manufacturing sector, were due to the limited skilled workforce and high fixed capital cost (ILO, 2017). The purpose of this study was to confirm the role of the three elements of intellectual capital in increasing the added value of the manufacturing industries and their effects on financial and market performances.

2 Literature Review and Hypothesis

2.1 Intellectual Capital

Intellectual capital is a term frequently used in several disciplines, especially those related to information technology. In economic theory, intellectual capital is used to describe intangible corporate wealth. The authors tried to continue to develop the definition of intellectual capital so that it can be widely accepted, particularly in terms of its measurement. Initially, intellectual capital was defined as intellectual material that can be formalized and utilized to produce higher value assets. Klein and Prusak (1994) and Edvinson (1997) define intellectual capital as hidden values which constitute a gap between market value and book value. Therefore, the equation is; Market value = Book value + Intellectual capital. Goh (2000) cites the concept of intellectual capital developed by Stewart (1998) that intellectual capital is the sum of all things given by everyone involved in a company which includes knowledge, information, intellectual property rights and

experience that can be used to create wealth and excellence to compete. Miller, et al. (1999) summarize the concept developed by the Organization for Economic Cooperation and Development; they explain that intellectual capital is an economic value of two categories of intangible asset consisting of organizational and human capitals. Organizational capital refers to software systems, distribution networks, and supply chains, while Human capital includes human resources in organizations and external resources related to organizations such as consumers and suppliers. Mavridis (2004) says that intellectual capital is an intangible asset that gives value to companies which include patents, intellectual property rights, copyrights, and franchises. A more complete definition is explained by Bukh, et al. (2005) that intellectual capital is a driver of competitive advantage and a link between a company's ability to regulate and utilize the knowledge of the company. Therefore, intellectual capital can provide knowledge-based resources which, when used optimally, enable the company to carry out its strategy effectively and efficiently.

Regarding several definitions of intellectual capital, this study used a concept developed by several authors stating that intellectual capital consists of three constructs; human capital, structural capital, and customer capital or relational capital (Stewart, 1998; Bontis, 2000; Mavridis and Kyrmizoglou, 2005; Ruta, 2009). Human capital reflects the company's collective to produce the best solution based on the knowledge possessed by all people in the company. Human capital is a combination of genetic inheritance; education; experience, and attitude on business, and this capital will increase if the company is able to use the knowledge held by its employees (Bontis, et al, 2000).

Structural capital is a company's ability to carry out its routine processes and structures that support employees' efforts to produce intellectual performance and overall business performance; for example, company's operational systems, manufacturing processes, organizational culture, management philosophy and all forms of company property, Structural Capital is also related to supporting infrastructures, processes, and databases that enable human resources within the organization to function properly (Bontis, et al, 2000). Relational Capital or Customer Capital is a component of intellectual capital that describes the harmonious relationship the company has with its partners, both from suppliers and loyal customers because they are satisfied with the company's services. This relational capital can arise from various parts outside the company environment that can add value to the company (Bontis, et al, 2000).

2.2 Value Added Intellectual Coefficient (VAIC)

Measuring intellectual capital as an important component of a company is not easy. Then, it requires a model that can present the components of intellectual capital in company assets (Bontis, 2000). Related to this, Pulic (2000) proposes an indirect measurement model for Intellectual Capital by measuring Value Added Intellectual Coefficient (VAIC). The VAIC method is designed to present information on the value creation efficiency of a company's tangible and intangible assets. This model begins with measuring a company's ability to create value added (VA). VA is an indicator to assess business success and shows the company's ability to create value. VA is calculated as the difference between output and input. The data used in the calculation of VAIC is based on financial statements, which are usually audited by professional public accountants. According to Firer and Williams (2003), VAIC has the advantages, namely using a measurement basis that is easily calculated, standardized, and consistent, allowing comparative analysis to be carried out effectively throughout the company. Intellectual Capital is measured by the value added created by employee capital (VACA), human capital (VAHU) and structural capital (STVA). The combination of the three added values is symbolized by the name of VAIC (Pulic, 1998; 2000).

2.3 Value Added Intellectual Capital (VAIC) and Financial Performance

According to Stewart (1998), intellectual capital is all things given by everyone involved in a company which includes knowledge, information, intellectual property rights and experience that can be used to create wealth and competitive advantage. Intellectual capital is an asset that can be operated to develop company performance; the higher the intellectual capital, the higher the company performance. Empirical evidence shows that intellectual capital is a resource that can be used for competitive advantages and financial performance (Harrison & Sullivan, 2000; Abdolmohammadi, 2005; Khan, et al., 2015; Maditinos, et al, 2011). Related to this explanation, the following hypothesis was developed:

H1: The higher the Intellectual capital (VAIC), the greater the Financial Performance

Intellectual capital is decomposed into three components; human, structural, and relational or physical capitals (Fitz-Enz, 2000; Roos, et al., 1997; Bontis, 1998; Bontis & Fitz-enz, 2002). Each component contributes to company performance; the contribution of each different component depends on the industrial sector and the ability to utilize intellectual capital (Bontis, 2000). Wang, et al (2011) examined the effect of the intellectual capital component on performance in three Chinese industrial sectors. The results found a positive effect of material capital on the performance in the manufacturing and real estate sectors, and human capital has a positive effect on the performance in the manufacturing sector. Arslan and Zaman (2014) conducted a study on the effect of Intellectual capital components on the financial performance of the Pakistan Oil and gas sector. The results found that human capital and structure capital have a positive effect on financial performance. Gomez-Valenzuela (2015) found a positive effect of relational and human capitals on the performance in the manufacturing sector, while in the service sector, structural and relational capitals have a positive effect on business performance. Human, structure, and physical capitals have an effect on performance (Bernasek & Shwiff, 2001; Syed Ismail, et al 2017; Cisneros, et al, 2018). Based on the empirical evidence, the hypotheses were arranged as follows:

H2a: The greater the human capital (VAHU), the greater the Financial Performance

H2b: The greater the structure Capital (STVA), the greater the Financial Performance

H2c: The greater the physical capital (VACA), the greater the Financial Performance

2.4 Intellectual Capital (VAICTM) and Market Value

The applicable accounting system records the value of assets owned by a company calculated based on its book value. On the basis of the recording system, a difference between market and book values appears. The increasing performance company will be responded by the market with higher market value (Chen, et al, 2005; Firer and Williams, 2003; Riahi-Belkaoui, 2003; Hemmati, et al, 2013; Sharma, 2018). The companies with higher market value than the book value indicate growth. In other words, the number of intangible assets (market value-book value) is evidence of market appreciation for the company, which means an increase in the value of the company. The empirical evidence shows that Intellectual capital assets are closely related to market performance (Chen, et al., 2005; Shijin, et al, 2012). Based on the empirical evidence as explained, the following hypothesis was proposed:

H3: the greater the Intellectual Capital (VAIC), the higher the market value.

2.5 Intellectual Capital Components and Market Value

Partially, each component of intellectual capital contributes to market performance; each component has a different effect on performance depending on the industrial sector. Human capital is the most important component in determining the market value (Gomez-valenzuela, 2015; Żarnik-żuławska, 2016; Mashayekhi & Nasab, 2016). The other findings indicate that structure capital is a

component that affects stock prices (Mashayekhi & Nasab, 2016; Sardo, 2017). In the other hand, Chen (2005), Sardo (2017), and Mashayekhi and Nasab (2016) found that structure capital is a component that determines market value. Based on the explanations, the following hypotheses were developed:

H4a: The greater the VACA, the higher the market value.
H4b: The greater the VAHU, the higher the market value.
H4c: The greater the STVA, the higher the market value.

3. Methodology

3.1 Population and Samples

The population of this study is all companies listed on the Indonesia Stock Exchange (IDX) in 2014-2016 were 167 companies as shown in Table 1.

Table 1: Sample Industry

No	Industry sector	Sub sectors number	Companies number
1	Basic & Chemical Industry	9 sub - sectors	71 companies
2	Various Industry	6 sub - sectors	45 companies
3	Consumer good industry	6 sub - sectors	51 companies

Using purposive sampling technique, by eliminating companies that do not generate profits and have negative equities, get polled data 419.

3.2 Independent variable

This study uses independent Intellectual Capital variables which are measured based on the value added created by employed capital (VACA), human capital (VAHU), and structural capital (STVA). The combination of the three components is symbolized by the name VAIC ™ (Pulic, 2000). VAIC™ formulations are as follows:

a. Value Added (VA) is defined as the added value generated during the year (Chen, et al., 2005), which is formulated:

VA = Sales - Cost of Goods Sold- Depreciation

b Human Capital (HC) = Total expenditure for employees formulated:

VACA = VA: CE

c. Value Added Human Capital (VAHU) is a ratio that shows the contribution created by a monetary unit invested in HC to the value added, and formulated:

VAHU = VA: HC

d. Structure Capital Value Added (STVA) is the contribution of SC success in creating added value formulated:

STVA = SC: VA

e. Value Added Intellectual Coefficient (VAICTM) Represents the total efficiency created by three intellectual components of capital that are considered as Business Performance Indicators

VAIC = VACA + VA

3.3 Dependent Variable

The dependent variable of this study is financial performance and market value. Financial performance variables use ROA profitability proxy (Chen, et al., 2005), dependent variables consist of:

a. Return on assets (ROA), describes business profits and company efficiency in asset utilization (Chen, et al., 2005) which is formulated:

ROA = Net profit: Total assets

b. Market value is the market response to the company's stock price, as a form of

appreciation for the equity of the company. This market value is measured by comparing the book value of shares with stock market prices (Chen, 2005; Sardo, 2017; Mashayekhi & Nasab, 2016), market values are formulated:

M/B = market value of stock: book value of stock

3.4 Regression Model

This study used Regression as an analytical tool, and it was used to measure the roles of intellectual capital (VAICTM) and its three components (VACA, VAHU, and STVA) on financial performance (ROA) and market value (M/B). To examine the roles of independent variables, this study used four regression models. Model 1 measured the roles of VAIC on ROA; Model 2 measures the roles of VACA, VAHU, and STVA on ROA; model 3 measured the roles of VAIC on M/B; Model 4 measured the roles of VACA, VAHU, and STVA.

The four regression models were mathematically formulated as follows:

$$ROA_{it} = \alpha_0 + \alpha_1 VAIC_{it} + \varepsilon_{it} \quad (1)$$

$$ROA_{it} = \alpha_0 + \alpha_1 VACA_{it} + \alpha_2 VAHUit + \alpha_3 STVAit + \varepsilon_{it} \quad (2)$$

$$M/B_{it} = \alpha_0 + \alpha_1 VAIC_{it} + \varepsilon_{it} \quad (3)$$

$$ROA_{it} = \alpha_0 + \alpha_1 VACA_{it} + \alpha_2 VAHUit + \alpha_3 STVAit + \varepsilon_{it} \quad (4)$$

Table 2: Descriptive statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
VACA	-.250	.530	.125	.129
VAHU	-23.510	45.540	10.250	10.586
STVA	-25.040	4.310	.817	1.352
VAIC	-25.000	46.700	11.193	10.801
ROA	.020	65.720	8.480	8.838
M/B	-.030	48.670	3.397	6.402

source: data processed

3.5 Descriptive Statistic

Table 2 shows the statistical value of the mean and standard deviation of the intellectual capital component, VACA shows the mean of 0.125 and the standard deviation of 0.129; VAHU with the mean of 10.250 and the standard deviation of 10.586, STVA with the mean of 0.817 and standard deviation of 1.352. These statistical values of the means show the average contribution of one monetary unit of the funds invested to create added value. Then, the standard deviation is a statistical value that describes the number of the distributions or variations of the mean value of each variable. VAHU is the component that has the highest mean and standard deviation. It means that HC is the main factor in creating added value. The mean of VAIC at 11.193 describes that each average manufacturing company is able to create the added value by 11.19 from each monetary unit used. The average value of ROA is 8.480 indicating that the contracted sector company in each unit of an asset used is able to generate a net profit of 0.848. This figure is a measure of asset use efficiency. The mean value of M/B is 3.397 indicating that the average company in the manufacturing sector has a

market value of 3.397 times of its book value. It means that the value of the company is not reflected in the value in the financial statements (Chen, 2005).

4. RESULTS.

Table 3 presents the output of regression model 1 and the role of intellectual capital in financial performance, while Table IV presents the output of regression model 2 which measures the effect of the intellectual capital components of VACA, VAHU, and STVA on financial performance. Hypothesis 1 of this study states that intellectual capital has a positive effect on financial performance. Based on the results of the testing to model 1 as shown in Table 3, the regression coefficient value is 0.186 and p-value 0.000.

This value means that statistically intellectual capital (VAIC) is proven to affect financial performance, and this finding is consistent with previous studies conducted by Chen, et al. (2005), Arslan, et al. (2015), and Sardo, et al. (2017).

Table 4 is the result of the equation test of model 2 which measures the effect of the intellectual capital component on financial performance. The test results show that not all intellectual capital components are proven to influence financial performance. VACA and VAHU variables are statistically proven to play a role in the formation of financial performance. This can be seen from the statistical value of p-value ≤ 0.05 of these two variables. STVA variables are not proven to affect financial performance, and this can be seen in the statistical value t: 0.295 at p-value $0.768 \geq 0.05$. The results of this study are consistent with previous studies conducted by Wang et al. (2011) Arslan &, Khodabakhshi (2011), Zaman (2014), and Gomez-valenzuela (2015). The test results of the two models also show a significant increase in the statistical value of Adjusted R square, from 0.049 to 0.639. This increase in the values means that the three intellectual variables of VACA, VAHU, and STVA can explain more about financial performance.

Table 3: Model Regression 1

Coefisient	**t**	**p-value**	**Result**
6.401	10.787	0.000	
.186	4.868	0.000	Accepted
Adjusted R Square : 0,049 ; F value : 23,699 ; sig : 0,000			

source: data processed

Table 4: Model 2 Regression Test

Coefisient	t	*p-value*	*Result*
23,273	7,172	0,000	Accepted
.083	2.097	0,037	Accepted
.086	.295	,768	Rejected
Adjusted R Square : 0,639 ; F value : 25,674 ; sig : 0,000			

source: data processed

Table 5 presents the results of the test of Hypothesis 3 on the effect of intellectual capital on market value. Table 4 presents the results of the test of Hypothesis 4 on the effect of the intellectual capital component on market value. The results of testing model 3 as shown in

Table 5 show the regression coefficient value of VAIC 0.046 with p-value 0.000. This value means that statistically, intellectual capital has a positive effect on market value, so this result supports previous studies conducted by Firer and Williams (2003), Riahi-Belkaoui (2003), Chen, et al. (2005), Hemmati, et al. (2013), Sharma, Berzkalne, et al. (2014), Nuryaman (2015), and Nimtrakoon (2015) (2018). The effect of the intellectual capital components on market value can be seen in Table 6 which shows that the intellectual components predicted to affect market value and only VACA which is proven to affect market value. It can be seen from the statistical value of the regression coefficient of 10.641 with p-value 0.000 ≤ 0.05. VAHU and STVA are not proven to affect market value, and it can be seen that the two variables p-value (0.452 and 0.957) ≥ 0.05. These results indicate that manufacturing sector investors value the fundamental value or physical capital rather than human capital as well as the structure capital. This finding is consistent with the studies conducted by Berzkalne, et al. (2014), Nuryaman (2015), and Nimtrakoon (2015).

Table 5: Model 3 Regression Test

Independent Variable	**Coefisient**	**t**	***p-value***	**Result**
Constant	1.629	11,598	0.000	
VAIC	.046	4.860	0.000	Accepted
Adjusted R Square : 0,052 ; F value : 23,616 ; sig : 0,000				

source: data processed

Table 6. Model 4 Regression Test

Independent Variable	**Coefisient**	**t**	***p-value***	**Result**
Constant	1.342	4.451	.000	
VACA	10.641	6.743	.000	Accepted
VAHU	- .015	-.753	.452	Rejected
STVA	.007	.054	.957	Rejected
Adjusted R Square : .098; F value : 16,220 ; sig : 0,000				

source: data processed

5. DISCUSSION AND CONCLUSION

This research was conducted to confirm the role of Intellectual capital and its components on financial performance and market value in the manufacturing sectors of the Indonesia Stock Exchange. This manufacturing sector has the highest growth and contributes the most to the economy. On the other hand, the manufacturing sector is a labor-intensive industry which is largely limited in skills (ILO, 2017). To analyze the role of the intellectual capital, four regression models were developed with eight hypotheses.

Based on the result findings as shown in Table 3, it can be concluded that intellectual capital as measured by value-added efficiency (VAIC) has proved to play a role in determining financial performance. These findings are consistent with previous studies conducted by Chen, et al. (2005), Arslan, et al. (2015), and Sardo, et al. (2017). Table V is the testing result of the role of intellectual capital on market value, based on the regression coefficient 0.046 and p-value 0,000. It can be concluded that the added value of intellectual capital has a positive

role in market value. These findings support previous studies by Firer and Williams (2003), Riahi-Belkaoui (2003), Chen, et al. (2005), Hemmati, et al. (2013), Sharma, Berzkalne, et al. (2014), Nuryaman (2015), and Nimtrakoon (2018). Table 4 illustrates the role of the intellectual capital components on financial performance. Based on the results of this test to model 2, it can be concluded that VACA and VAHU have proven to play a role in financial performance, while STVA has no proven role in financial performance. VACA is proven to be the dominant factor in determining financial performance, and it can be seen from the figure of the regression coefficient value of 23.273 that is far greater than the regression coefficient of VAHU 0.083. These findings can be concluded that the factors that form financial performance are dominated by physical and financial capitals (CE). Human capital (HC) has a smaller role in financial performance. This result can be understood because the manufacturing sector is a labor-intensive industry and the skill level is limited (ILO, 2017). Table 6 shows that VACA is a factor that determines market value since the two components of the intellectual capitals of VAHU and STVA are not proven to influence market performance. This finding can be concluded that investors in the manufacturing sector value the fundamental value or physical capital rather than human capital and the structure capital. This finding is consistent with the studies conducted by Berzkalne, et al. (2014), Nuryaman (2015), and Nimtrakoon (2015).

References:

[1] Ali, M., Egbetokun, A., & Memon, M. (2018). Human Capital, Social Capabilities and Economic Growth. Economies, 6(1), 2

[2] Altiner, A., & Toktas, Y. (2017). Eurasian Journal of Economics and Finance Relationship Between Human Capital and Economic Growth: an Application To Developing Countries. Eurasian Journal of Economics and Finance, 5(3), 87–98.

[3] Arslan, M., & Zaman, R. (2014). Intellectual Capital and its Impact on Financial Performance: A Study of Oil and Gas Sector of Pakistan. International Letters of Social and Humanistic Sciences, 43, 125–140.

[4] Bakhtiar, M. J., & Haider, M. (2014). The Nexus of Intellectual Capital with Performance in Higher Education Sector through Mediation of Sense making.

[5] Barbosa, S., Vale, J., Vale, V. T., & Branco, M. C. (2016). Intellectual Capital and Performance in Higher Education Organizations. Proceedings of the International Conference Theory and Applications in the Knowledge Economy, 670–681.

[6] Barro, R. J. (2001). Human {Capital} and {Growth}. American Economic Review, 91(2), 12–17.

[7] Bernasek, A., & Shwiff, S. (2001). Gender, risk, and retirement. Journal of Economic Issues, 35(2), 345–356.

[8] Bist, J. P. (2018). Financial development and economic growth: Evidence from a panel of 16 African and non-African low-income countries. Cogent Economics and Finance, 6(1), 1–17.

[9] Bontis, Nick (National Centre for Management Research and Development, Richard Ivey School of Business, University of Western Ontario, London, Ontario, C. (1998). Intellectual capital: an exploratory study that develops measures and models. Management Decision. https://doi.org/10.1108/00251749810204142

[11] Bontis, N., Decision, M., & Vol, L. (2010). Página Document View - ProQueste Intellectual capital : an exploratory study that develops measures and models Página Document View - ProQueste. Management, 1–11.

[12] Bontis, N., & Fitz-enz, J. (2002). Intellectual capital ROI: A causal map of human capital antecedents and consequents. Journal of Intellectual Capital, 3(3), 223–247.

[13] Chahal, H., & Bakshi, P. (2016). Measurement of Intellectual Capital in the Indian Banking Sector. Vikalpa, 41(1), 61–73.

[14] Fitz-Enz, J. (2000). The ROI of human capital: Measuring the economic value of employee performance. Management. https://doi.org/10.1017/CBO9781107415324.004

[15] Girma, B. (2017). Intellectual Capital Efficiency and Its Impact on Financial Performances of Ethiopian Commercial Banks, 8(8), 17–31.

[16] Goh, T. (2000). Intellectual Capital: The New Wealth of Organizations. Personnel Review. https://doi.org/10.1108/pr.2000.29.1.115.1

[19] Gómez-valenzuela, V. (2015). Intellectual Capital in Manufacturing and Service Firms of the Dominican Republic: An Exploratory Approach. The Electronic Journal of Knowledge Management, 13(3), 198–208.

[20] Guthrie, J. (2001). The management, measurement and the reporting of intellectual capital. Journal of Intellectual Capital, 2(1), 27–41.

[21] Hagel, J., Brown, J. S., Samoylova, T., & Lui, M. (2013). Success or struggle : ROA as a true measure of business performance. Deloitte University Press, 4–18.

[22] Hassanzadeh, A. (2014). Asian Development Bank Institute, (497).

[23] Hemmati, H., Mohammadi, A., & Rezaeyan, N. (2013). Economic value added of intellectual capital on the market value of listed companies in Tehran Stock Exchange, 2(3), 1303–1307.

[24] Ibarra Cisneros, M. A., & Hernandez-Perlines, F. (2018). Intellectual capital and Organization performance in the manufacturing sector of Mexico. Management Decision, 56(8), 1818–1834.

[23] ILO. (2017, Utilizing technology for employment growth and employment, Indonesian Employment Report.

[24] Laporan Ketenagakerjaan Indonesia 2017. In Laporan Ketenagakerjaan Indonesia 2017.

[25] Khan, M. M. S., Yasser, F., & Hussain, T. (2015). Intellectual Capital and Financial Performance: An evaluation of Islamic banks in Pakistan. Islamic Banking and Finance Review, 2(1), 59–75.

[26[Khodabakhshi, A. (2011). Relationship between GDP and Human Development Indices in India. Ssrn, (2010), 1–9.

[27] Kucharčíková, A., Tokarčíková, E., & Blašková, M. (2015). Human Capital Management – Aspect of the Human Capital Efficiency in University Education. Procedia - Social and Behavioral Sciences, 177(July 2014), 48–60.

[28] Lindenberg, E. B., & Ross, S. A. (1981). Tobin's q Ratio and Industrial Organization. The Journal of Business, 54(1), 1.

[29] Magoutas, A. I., Papadogonas, T. a, & Sfakianakis, G. (2012). Market Structure, Education and growth. International Journal of Business & Social Science, 3(12), 88–95.

[30] Marchini, P. L., & D'Este, C. (2015). Comprehensive Income and Financial Performance Ratios: Which Potential Effects on RoE and on Firm's Performance Evaluation? Procedia Economics and Finance, 32(January 2009), 1724–1739.

[31] Mashayekhi, B., & Nasab, S. M. T. (2016). The Influence of the Intellectual Capital on the Firms ' Market Value : A Study of Listed Firms in the. International Journal of Economics and Management Engineering, 10(1), 164–168.

[32] Mavridis, D. G. (2004). The intellectual capital performance of the Japanese banking sector. Journal of Intellectual Capital, 5(1), 92–115.

[33] Miller, M., DuPont, B. D., Fera, V., Jeffrey, R., Mahon, B., Payer, B. M., & Starr, A. (1999). Measuring and Reporting Intellectual Capital From a Diverse Canadian Industry Perspective: Experiences, Issues and Prospects. OECD Symposium, Amsterdam, 1–59.

[34] Molodchik, M. A., Shakina, E. A., & Andreevna, A. (2012). Journal of Intellectual Capital Emerald Article : Intellectual Capital Transformation

Evaluating Model. Journal of Intellectual Capital Emeraldinsight, 13(4), 18.

[35] Munjuri, M. G., & K'Obonyo, P. (2015). Human Capital, Employee Empowerment and Performance of Commercial Banks and Insurance Firms in Kenya. International Journal of Arts and Commerce, 4(6), 163–181.

[36] Nawaz, T., & Haniffa, R. (2017). Determinants of financial performance of Islamic banks: an intellectual capital perspective. Journal of Islamic Accounting and Business Research, 8(2), 130–142.

[37] Neeliah, H., & Seetanah, B. (2016). Does human capital contribute to economic growth in Mauritius? European Journal of Training and Development, 40(4), 248–261.

[38] Ozkan, N., Cakan, S., & Kayacan, M. (2017). Intellectual capital and financial performance: A study of the Turkish Banking Sector. Borsa Istanbul Review, 17(3), 190–198.

[39] Petty, R., & Guthrie, J. (2000). Journal of Intellectual Capital. 1, 2(155–176), 155–176.

[40] Pulic, A. (2000). VAICTM – An Accounting Tool for Intellectual Capital Management. International Journal Technology Management, 20(5/6/7/8), 702–714.

[41] Pulic, A. (2008). The Principles of Intellectual Capital Efficiency - A Brief Description. Economist Intelligence Unit, (June), 1–21.

[42] Roos, J., Roos, G., Edvinsson, L., & Dragonetti, N. (1997). Intellectual capital: Navigating the new business landscape. New York University Press, (January). https://doi.org/10.1007/978-1-349-14494-5

[43] S. PRAVEENA, K. M. & T. S. (2015). an Analysis of Financial Performance of Sugar Industry in India. International Journal of Business and General Management (IJBGM), 4(3), 11–20.

[44] Salehi, M., & Biglar, K. (2009). Study of the Relationship between Structure capital Measures and Performance: Evidence from Iran. International Journal of Business and Management, 4(1), 97–103.

[45] Şamİloğlu, F., Öztop, A. O., & Kahraman, Y. E. (2017). The Determinants of Firm Financial Performance : Evidence From Istanbul Stock Exchange (BIST). IOSR Journal of Economics and Finance, 8(6), 62–67.

[46] Scafarto, V., & Dimitropoulos, P. (2018). Human capital and financial performance in professional football: the role of governance mechanisms. Corporate Governance (Bingley), 18(2), 289–316. https://doi.org/10.1108/CG-05-2017-0096

[47] Secundo, G., Lombardi, R., & Dumay, J. (2018). Intellectual capital in education. Journal of Intellectual Capital, 19(1), 2–9. https://doi.org/10.1108/JIC-10-2017-0140

[48] Sharma, P. (2018). Intellectual Capital and Firm Value : A literature review, 20(2), 1–8. https://doi.org/10.9790/487X-2002010108

[49] Shijin, S., Gopalaswamy, A. K., & Acharya, D. (2012). Dynamic risk-return relation with human capital: A study on Indian markets. International Journal of Emerging Markets, 7(2), 146–159.

[50] Sunde, U., & Vischer, T. (2015). Human capital and growth: Specification matters. Economica, 82(326), 368–390.

[51] Syed Ismail, S. H., Abd Ghani Azmi, I., Syed Kadir al-Haddad, S. latifah, Basir, S. A., & Nayan, I. (2017). The potential of al-Wasatiyyah value concept for human sustainability (HS) in civil service. Humanomics, 33(2), 150–162.

[52] Tobin, J., & Brainard, W. C. (1977). Asset Markets and the Total Cost of Capital. Economic Progress, Private Values and Public Economic Journal, 96(February 1976), 120–138.

[53] Wang, X., Liu, L., & Meng, C. (2011). Modeling Risk Management for Resources and Environment in China, 193–202. https://doi.org/10.1007/978-3-642-18387-4

[54] Yasar, N. N., Isik, M., & Calisir, F. (2015). Intellectual Capital Efficiency: The Case of Football Clubs. Procedia - Social and

Behavioral Sciences, 207, 354–362. https://doi.org/10.1016/j.sbspro.2015.10.105