STIESIA
ICOBUSS
e-ISSN 2746-5667
2nd INTERNATIONAL CONFERENCE ON BUSINESS & SOCIAL SCIENCES
Digital Transformation Business Strategy in Post Covid-19

Intellectual Capital And Capital Structure: A Study of Capital Formation of Financial Performance and Firm Value

Nur Fadjrih Asyik[1*], Muchlis[2], Hening Widi Oetomo[3]

[1] Accountancy, Sekolah Tinggi Ilmu Ekonomi Indonesia (STIESIA), Surabaya, Indonesia
[2] Accountancy, Muhammadiyah University, Surabaya, Indonesia
[3] Management, Sekolah Tinggi Ilmu Ekonomi Indonesia (STIESIA), Surabaya, Indonesia

*Corresponding Author: nurfadjrihasyik@stiesia.ac.id

Abstract: This study aimed to examine the effect of a firm's capital components, e.g., intellectual capital and capital structure, on the firm's performance that, in turn, increases the firm value. This study investigated 66 manufacturing companies as samples within 396 observations for six years from 2015 to 2020. As a result, this study indicated that intellectual capital and capital structure were capital factors that comprised value-added to optimize financial performance and converted a positive signal for investors. Financial performance could not mediate the impact of intellectual capital on firm value since investors had understood the prominence of skilled human resources, which could manage the company successfully and establish good relationships with external parties. At the same time, the capital structure affected financial performance and firm value because the optimization of the capital structure shows the level of security for the balance of risk and return. It becomes valuable information for investors.

Keywords: *Intellectual Capital*, *Capital Structure*, *Financial Performance*, *Firm Value*

1. Introduction

The industrialization era has been relatively fast and sophisticated in information technology development. Therefore, it requires companies to have more intellectual capital (IC) management innovations through restructuring traditional-based performance measurement systems to achieve and improve company competitiveness. Traditional performance measurement techniques cannot report financial performance comprehensively, particularly in companies with large investments in intangible assets, so stakeholder decision-making is not appropriate (Deep and Narwal, 2014; Chowdhury et al., 2018). The firm's competitive ability addresses the ownership of tangible and intangible assets, including the power of innovation, information systems development, organizational governance, and knowledge of human resources, which are important for a firm to survive in the economic era.

Previous studies discuss financial disclosure regarding intellectual capital information in developing countries (Abhayawansa and Azim, 2014; Sharma and Dharni, 2017). Stakeholders perceive to access complete and comprehensive information about components of intellectual capital. However, not all internal and external stakeholders understand how to use information about intellectual capital. They cannot address the benefits of the information in decision-making. So, it is important to inform the disclosure of intellectual capital and its benefits, taking into account the various expectations of stakeholders. Disclosure of intellectual capital is

expected to assist stakeholders in translating various core business activities, performance management, and strategic decision-making (Giuliani, 2016; Sharma and Dharni, 2017).

This study applied proxies of intellectual capital following Pulic (1999) to measure the efficiency of the firms' value-added on intellectual capital capabilities with three components of VAIC^{TM} (Value Added Intellectual Capital). The components involve the firm's resources, performance, and value. First, the firm's resources include (1) physical capital that is calculated using VACA (Value Added Capital Employed), (2) human capital that is calculated using VAHU (Value Added Human Capital), and (3) structural capital that is calculated using STVA (Structural Capital Value Added). Second, the firm's performance applies a proxy of Return on Assets (ROA) that its ratio is relevant to the productivity of the company's usage of resources and that can be measured using a comparison between profit after tax and the company's total assets. Third, the firm value variable shows the market reaction to the information on the company's performance measured using PBV (Price to Book Value).

Sinarmata and Subowo (2016) convince that VAIC^{TM} positively affects financial performance. In other words, there is a positive relationship between intellectual capital and the performance of a firm. Putri (2017) also argues that financial performance affects firm value, so intellectual capital is important to increase financial performance. The firm that manages and utilizes intellectual capital effectively and efficiently will increase its financial performance and market value. In short, the firm's increasing financial performance is good news that can affect positive responses from the market and elevate the firm's value.

Another important factor that affects the firm's value is the capital structure. In line with Muslichah and Hauteas's (2019) research, capital structure affects firm value (Priyatama and Pratini, 2021). The study of Myers (1984) describes that the position of the capital structure is below the optimal point, so the liabilities will increase the value of the company. On the other hand, if the position of the capital structure is above the optimal point, the growth of liabilities will decrease the value of the company. However, there are still inconsistencies in the research of Nurwlandari et al. (2021) finding a negative effect of capital structure on firm value. This is similar to the trade-off theory proposed by Myers (1984). Other research examining firm value obtains inconsistent results. Sudiyatno et al., 2021; Sulhan and Pratomo, 2020 state that profitability (ROA) affects firm value. Meanwhile, Hermawan and Maf'ulah (2014) show that profitability does not affect firm value.

This study involved both theoretical and practical benefits. The theoretical benefit re-examines the theory of intellectual capital, which is important for companies to support the achievement of firm value performance. The practical benefit refers to increasing the stakeholders' understanding of the usefulness of intangible assets and considering the efficiency aspect of the added value of intellectual capital. In turn, the understanding will harmonize interpretations of the company's performance by making a more complete and comprehensive disclosure of intellectual capital.

Therefore, the purpose of this study was to examine the effect of the company's capital consisting of intellectual capital and capital structure on the acquisition of company performance to raise the value of the company. In this study, intellectual capital efficiency is calculated using the Value Added Intellectual Capital (VAIC) coefficient. This measurement technique determines how intellectual and physical capital affects company performance and can create firm value.

2. Literature Review

Stakeholders Theory

Stakeholder theory emphasizes that investors are users of financial statements that the company must serve. Stakeholders are employees, suppliers, customers, local communities, governments, environmental groups, and communities. As stakeholder theory, companies must try to carry out operations properly and correctly to meet stakeholder needs; if these are fulfilled, the company will succeed (McAbee, 2021). Analyzing the relationship between companies and groups or individuals that influence each other, the stakeholder theory comprises three perspectives (Parmar et al., 2010). From a stakeholder theory, companies are a set of groups that have an interest in business ventures. The first perspective is about how managers, employees, customers, suppliers, shareholders, bondholders, banks, and communities interact to create value. The second perspective refers to effective stakeholder relationship management that helps companies to survive in competition and develop sustainable management. This theory is also a moral effort that relates to values, choices, and potential harm and benefits for groups and individuals. As the third perspective, management focuses attention on the value-added creation through the alignment of stakeholder relationships.

Resources Based Theory

The resources-based theory convinces companies must manage and utilize their resources to achieve a competitive advantage. According to Bridoux (2004), the resource-based theory (RBT) defines four attributes, i.e. rare, high value, not easily replaceable, and not easy to imitate to accomplish a competitive advantage. In addition, a company's competitive advantage can also be obtained from the ability of a company to manage and utilize the right combination of resources (Fitriasari and Sari, 2019).

Signaling Theory

Signaling theory is a management action to provide instructions for investors regarding the company's performance and how management can demonstrate the company's prospects (Brightman and Houston, 2006:39). The signal is in the form of information about the activities carried out by management following the contract with the company's owner. The form of management responsibility is in published financial reports. While the financial information provides signals for investors that can be used for investment decision-making. Furthermore, the annual report contains relevant information for the report's users. The report presents accounting and non-accounting information. If the disclosure of financial information has a positive impact on the increasing stock prices, the disclosure shows a positive signal and vice versa.

Intellectual Capital

In the literature, intellectual capital is considered intangible that encompass knowledge value, skills, ideas ownership, and business training of employees. These are not found in the statement of financial position. Indeed, the economic value is not only in the form of company products but also intangible assets (Nguyen and Doan, 2020). Therefore, research about the influence of intellectual capital on company performance is important because companies are commonly unaware of their intangible asset.

Intellectual capital is the accumulation of performance from three components: human capital, structural capital, and customer capital, which are expected to provide added value. Human Capital (HC) combines knowledge, skills, the ability to innovate and complete tasks to create

value. If the company can empower human capital properly and appropriately, it can support improving the company's financial performance. Structural Capital (SC) is the company's ability to carry out routine company work and support the infrastructure of human capital. Employees who meet the categories of market needs can support company operational systems, information technology, trademarks and patents, and training improvement of employee competence. Then, Customer Capital (CC) refers to a relationship of a company with suppliers, customers, the government, and the surrounding community (Sawarjuwono and Kadir, 2003). The customer capital shows the company's ability to identify market needs so that good relationship between the company and external parties.

Value Added Intellectual Coefficient (VAIC^{TM})

Pulic (1999) developed the Value Added Intellectual Coefficient (VAIC^{TM}) method to provide information about the value creation efficiency of the company's tangible and intangible assets. The VAIC^{TM} is an effective indicator to measure the intellectual capital factor that includes three components. The first component is Value Added Capital Employed (VACE). This refers to financial capital, which is the total capital available to acquire fixed assets and current assets. The component shows the company's ability to operate resources in the form of capital assets. If the financial capital is managed properly, it can improve the company's financial performance. The second component is Value Added Human Capital (VAHU). This component measures the efficiency of the value-added human capital of which Value Added (VA) and Human Capital (HC) show the ability of HC in creating firm value; in turn, the VA resulted in the new wealth period. The last component is Structural Capital Value Added (STVA), which shows the company's ability to fulfill the company's production process to produce optimal intellectual performance and overall business performance.

Financial Performance

Sudiyatno et al. (2021) state that the company's performance represents the policies and management activities during a particular period. The performance can be proxied into two measurements: Return on Assets (ROA) and Return on Equity (ROE). Measurement of company performance generally applies a financial ratio analysis approach. While the size of the company's performance depends not only on the efficiency of the company but also on financial stability. Furthermore, financial performance is used in making investment decisions. Companies with good performance will get a positive response from investors who are willing to buy shares at a higher price. So the higher the company's financial performance, the higher the market price of the company's shares. In general, the firm value is the market price of the company's shares that lead prospective investors in the future (Uzliawati et al., 2018).

Firm Value

Puspita and Wahyudi (2021) state that Tobin's Q is a proxy for measuring company performance from the company value that represents management performance in managing company assets. The value of Tobin's Q designates the condition of investment opportunities made by the company for the company's growth potentiality (Tobin, 1969). The value of Tobin's Q is obtained from the sum of the market value of all outstanding stock and the market value of all debt divided by the value of all capital in production assets (replacement value of all production capacity). Thus Tobin's Q can be used to measure the company's performance in terms of the potential market value.

Conceptual Framework

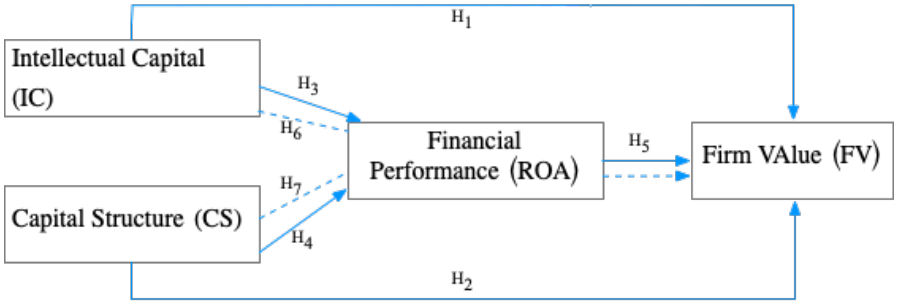

Figure 1
Conceptual Framework

Hypothesis Development

The Effect of Intellectual Capital on Firm Value

In the past, the success of economic development depended heavily on the utilization of intangible assets such as land, natural resources, equipment, and others that could add value. Today, there is a paradigm shift with the development of information systems. The current success of economic development depends on the ability to apply knowledge. Chen et al. (2005) find that investors are willing to pay a higher price for firm shares with healthier intellectual power. Stakeholders will certainly appreciate companies that can create added value to fulfill stakeholders' interests. In brief, the price paid by investors shows the value of a company. This research is in line with the research of Firer and Williams (2003) that intellectual capital has a positive influence on firm performance and value. As the arguments above, the research hypothesis is formulated as follow:

H_1: Intellectual capital has a positive effect on firm value

The Effect of Intellectual Capital on Financial Performance

Intellectual capital consists of information, knowledge, intellectual property, experience, and relationships to achieve the company's success. Ozan et al. (2017) analyze the relationship between intellectual capital and financial performance using a sample of 44 Turkish banks from 2005 to 2014. Intellectual capital is measured using the M-VAIC methodology, while ROA is considered an indicator of the company's financial performance. The result shows a positive relationship.

Another research by Asyik (2021) aims to examine the effect of Intellectual Capital as proxied by Human Capital (HC), Structural Capital (SC), and Customer Capital (CC) on the company's financial performance. The results show that Human Capital has a positive effect on financial performance. Human resources are innovation sources and knowledge capabilities to solve company problems. The research implicates that intellectual capital (Human Capital, Structural Capital, and Employee Capital) is needed by companies to improve welfare in the future. As the arguments above, the research hypothesis is formulated as follow:

H_3: Intellectual capital has a positive effect on financial performance

The Effect of Capital Sructure on Financial Performance

The coefficient of self-financing and firm performance indicates opposite relationships. The negative relationship occurs when the coefficient of self-financing or the ratio of calculated equity to total capital is reduced, but the company's financial performance increases. Octavina

et al. (2018) state that the perspective of Pecking Order Theory determines company benefits from the usage of liabilities, not as the main resource of company funds. Based on the Pecking Order Theory, the relationship between the profit level or company profitability and the level of debt has a negative direction. It can be interpreted if profitability increases, then its debt level will decrease. On the contrary, if profitability decreases, then the level of debt will increase. As the arguments above, the research hypothesis is formulated as follow:

H_4: Capital structure has a negative effect on financial performance

The Effect of Financial Performance on Firm Value

The company's financial performance can be perceived through the profitability ratios. The better the company's financial performance, the better the ability to earn profits. The respectable profitability ratio will give a positive signal that the company has a decent ability to generate profits for investors. The profit is reflected in the share price that will also increase. In turn, the profit can improve the shareholders' welfare. This condition is in line with the research by Nafasati and Hilal (2021) that the company's financial performance affects firm value.

Moreover, Nawaiseh (2017) examines the impact of financial performance on firm value in Jordanian industries listed on the Amman Financial Market (AFM). The research finds a significant effect of financial performance on a firm. The research also recommends that company management, stakeholders, and investors consider employing appropriate indicators in analyzing financial performance. As the arguments above, the research hypothesis is formulated as follow:

H_5: Financial performance has a positive effect on firm value

The Effect of Intellectual Capital on Firm Value through Financial Performance

Value creation is conducted by optimizing intellectual capital components consisting of human capital, customer capital, and structural capital. Referring to stakeholder theory, company activities are perceived to form value creation. In other words, when resources are managed effectively and efficiently, the company's performance is perceived higher to attract investors' positive responses. Moreover, Belkaoui (2003) argues that the firm's investment in intellectual capital has resulted from the different increases between market value and book value. The investor will provide a positive response to companies with upright intellectual capital. In addition, if intellectual capital is a resource that elevates competitive advantages, then intellectual capital contributes to the acquisition of financial performance that can ultimately surge the firm value (Chen et al., 2005). As the above argument, the research hypothesis is formulated as follow:

H_6: Intellectual capital positively affects firm value through financial performance

The Effect of Capital Structure on Firm Value through Financial Performance

Capital structure has been considered essential along with the growing public knowledge about the capital market and potential investors. The availability of funds from those who are making investments becomes an important factor for a company's capital structure. On the other side, the investors will observe the capital structure and make various analyses on whether or not to invest in a firm. Such conditions cannot be separated from the risks that the investors will face and the income that investors will receive. Therefore, the theory of capital structure suggests a change in the firm's value. The theory also clarifies that the firm's funding policy will maximize the firm value. The capital structure should meet the optimal category by optimizing the balance between risk and return obtained which ultimately maximizes the company's stock

price (Nini et al., 2020). Thus profitability can mediate the impact of capital structure on the company's value. As the above argument, the research hypothesis is formulated as follow:
H_7: Capital structure positively affects firm value through financial performance

Research Method

Research Design and Population Description

This study was quantitative that used secondary data from financial statements of manufacturing companies listed on the Indonesia Stock Exchange (IDX). Sampling techniques were purposive sampling techniques to the population with particular criteria: (a) manufacturing companies registered in IDX from 2015 to 2020; (b) companies reporting positive profits from 2015 to 2020; and (c) companies with complete data according to research variables. This study obtained 66 manufacturing companies as samples with 396 times of observations for 6 years.

Variables dan Oprational Definitions

Independent Variables

1. *Intellectual Capital (IC).* The intangible assets include resources, capabilities, and competencies to drive company performance and create value. Pulic (1999) proxied intellectual capital using VAICTM, which is designed to provide information about the value creation of intangible assets with the following steps:
   - **Calculating *Value Added* (VA): VA = OUT – IN**

Description:
Value Added (VA): The difference between output and input, Output (OUT): Total sales and other income, and Input (IN): Expenses and costs (other than employee expenses).

- **Calculating *Value Added Capital Employed* (VACE)**

VACE shows the contribution of each unit of capital employed to the firm's value-added (Pulic, 1999).

$$\text{VACE} = \frac{\text{VA}}{\text{CE}}$$

Description: Value Added Capital Employed (VACE): Ratio of VA to CE and Capital Employed (CE): Funds available (equity, net income).

- **Calculating *Value Added Human Capital* (VAHU)**

VAHU shows the amount of VA generated with the funds spent on labor. This ratio shows the contribution of each amount of rupiah invested in Human Capital (HC) to Value Added (VA), and the formula for obtaining VAHU is:

$$\text{VAHU} = \frac{\text{VA}}{\text{HC}}$$

Description: Value Added Human Capital (VAHU): Ratio of VA to HC and Human Capital (HC): Labor load

- **Calculating *Structural Capital Value Added* (STVA)**

STVA indicates how successful structural capital is in creating value, and the formula for obtaining STVA is:

$$\text{STVA} = \frac{\text{SC}}{\text{VA}}$$

Keterangan: *Structural Capital Value Added* (STVA): Rasio SC terhadap VA dan *Structural Capital* (SC): VA – HC

- **Calculating *Value Added Intellectual Coefficient* (VAIC^{TM})**

VAIC^{TM} is a method to measure business success and demonstrate the company's ability to value creation. VAIC^{TM} indicates the firm's intellectual ability with three components: VACE, VAHU, and STVA, and then obtains VAIC^{TM} below:

$$VAIC^{TM} = VACE + VAHU + STVA$$

Description: VAIC^{TM}: *Value Added Intellectual Coefficient* of a firm, VACE: *Value Added Capital Employed* Perusahaan, VAHU: *Value Added Human Employed* Perusahaan, dan STVA: *Structural Capital Value Added* of a firm

2. *Capital Structure (CS)*

Shubita and Alsawalhah (2012:1) define capital structure as a combination of liabilities and equity in a firm's operations. The capital structure meets the optimal category to maximize its share price (Brigham and Houston, 2015). Capital structure is measured with Debt to Equity Ratio (DER) with the following formula:

$$DER = \frac{Total\ Debt}{Shareholder's Equity} \text{ x } 100\%$$

Independent Variable: Firm Value

The firm's value is used as a benchmark to meet its long-term and short-term goals. Firm value also measures investors' understanding of issuers through its fair value, which is calculated by the Price to Book Value (PBV) ratio with the following formula:

$$PBV = \frac{\text{Harga per Lembar Saham}}{\text{Nilai Buku Per Saham}} \times 100\%$$

Intervening Variable: Financial Performance

Return on Assets (ROA) measures a firm's ability to earn profits against its total available assets. The higher the ROA, the better the company's condition, so this ratio is essential for management to evaluate the effectiveness and efficiency of firm management and utilize its assets. ROA is calculated as follows:

$$\mathbf{ROA} = \frac{\boldsymbol{Current\ Year\ Earning}}{\textbf{Total Asset}} \mathbf{\times 100\%}$$

Data Analysis Technique

Descriptive Statistics

Descriptive statistics describe the mean, median, standard deviation, minimum, and maximum of the dependent variable of firm value. The independent variables consist of intellectual capital, capital structure, financial performance, and firm value.

Model 1: $PBV_{it} = \beta_0 + \beta_1 VAIC^{TM}_{it} + \beta_2 DER_{it} + \varepsilon_{it}$

Model 2: $ROA_{it} = \beta_0 + \beta_1 VAIC^{TM}_{it} + \beta_2 DER_{it} + \varepsilon_{it}$

Model 3: $PBV_{it} = \beta_0 + \beta_1 ROA_{it} + \varepsilon_{it}$

Classic Assumption Test

Normality Test. Using graph analysis aims to test whether the regression model has a normal distribution or is close to normal (Ghozali, 2013). The normal distribution pattern is fulfilled if the data is spread around the diagonal line.

Multicollinearity Test. It aims to test whether the regression model correlates with the independent variables, and a good model should not correlate with the independent variables. Detecting multicollinearity may use the rules if the Tolerance (TOL) > 0.10 and Variance Inflation Factor (VIF) < 10, then there is no multicollinearity (Ghozali, 2013).

Heteroscedasticity Test. It aims to test whether the regression model has inequality of variance from the residuals of one to another observation. If the residual variance from one observation to another is fixed, heteroscedasticity occurs. If it has a clear pattern, the points will spread above and below 0 on the Y axis, so there is no heteroscedasticity.
Autocorrelation Test. It aims to test whether the regression model correlates with the error period t and t-1 (previous) using the Durbin Watson method (DW Test). The autocorrelation disorder causes the estimation parameter not to have a minimum standard error so that the estimation test can give inaccurate results.

Hypothesis Test
Model Feasibility Test (F Test). If the significant value of the F test is < 0.05, then the research model is feasible to test criteria. On the other hand, this research model is unsuitable if the F test value is> 0.05.
Coefficient of Determination (R^2). This measures how far the model's ability influence the variation of the dependent variable and the coefficient value to determine the relationships between an independent variable and dependent variable. The greater value of R2 shows the better ability of the independent variable on the dependent variable.
Hypothesis Testing (t-Test). The t-test evaluates whether the H1-H7 hypothesis affects the dependent variable with a significance level of =0.05 with the test criteria. If the t-test is significant on a value <0.05, the hypothesis is supported. If the t-test is significant on a value> 0.05, the hypothesis is rejected. It means that the independent variable does not affect the dependent variable.

Path Analysis
Path analysis develops multiple regression analysis to determine the direct and indirect effect between the independent and dependent variables. Path analysis is used when there are intervening variables. In this study, the mediation hypothesis was tested using a procedure developed by Sobel by testing the strength of the indirect impact of Intellectual Capital (IC) and Capital Structure (CS) on Firm Value (FV) through Financial Performance (FP) with the following formula:

$$Sab = \sqrt{b^2Sa^2 + a^2Sb^2 + Sa^2Sb^2}$$
$$Scd = \sqrt{d^2Sc^2 + c^2Sd^2 + Sc^2Sd^2}$$

Description:
a = coefficient IC to FP, b = coefficient FP to FV, Sa = Standard error coefficient a, Sb = Standard coefficient b; c = coefficient CS to FP, d = coefficient FP to FV, Sc = Standard error coefficient c, Sd = Standard coefficient d.

To determine the significant indirect effect, it needs to calculate the t value of the ab coefficient with the following formula:

$$t_{ab} = \frac{ab}{Sab} \qquad t_{cd} = \frac{cd}{Scd}$$

Ghozali (2013) states that the analysis results compare the t-count value with the t-table. If t count > t table with a significance level of 0.05 results 1.96, it means that there is a mediation effect.

Analysis And Discussion

Descriptive Statistics

Descriptive statistics describe the amount of research data, minimum and maximum values, mean values, and standard deviations of research variables. Table 1 presents the results of the descriptive statistics:

Table 1
Testing Result of Descriptive Statistics

	N	*Minimum*	*Maximum*	*Mean*	*Standart Deviation*
VAIC™	396	0,030	5,200	0,631	0,629
DER	396	2,000	65,000	12,147	10,859
ROA	396	0,000	0,920	0,087	0,095
PBV	396	0,040	3,320	0,383	0,292
Valid N (*listwise*)	396				

Source: Financial Statements Listed on BEI 2015-2020 (processed)

Classic Assumption Test

Normality Test. The normal graph of standardized regression residuals shows that the data spread around the diagonal line and follows the direction of the line. The graph fulfills the normal distribution pattern so that the regression models (model 1, model 2, and model 3) meet the normality assumption.

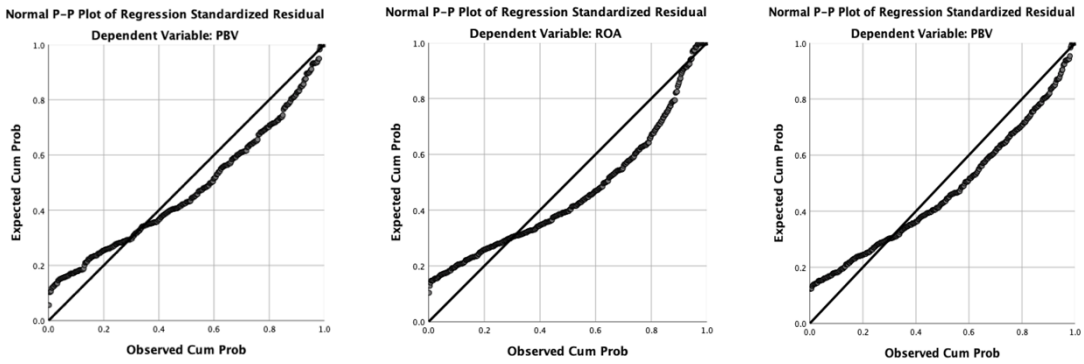

Figure 1
Graph of the normal plot of regression standardized residual
Model 1, 2, dan 3
Source: Financial Statements Listed on BEI 2015-2020 (processed)

Autocorrelation Test. This tests whether the regression model correlates with the standard error in period t and the previous period (t-1). If there is a correlation, there is an error in the autocorrelation, and the regression model is good if there is no autocorrelation. One way to test autocorrelation is using the Durbin-Watson test, which is presented in Table 2 below:

Table 2
Autocorrelation Test Results on Model 1, 2, and 3

Nilai	Model 1	Model 2	Model 3
Durbin-Watson	1,190	0,703	1,186

a. *Predictors*: (*constant*), VAIC™, DER b. *Dependent variable*: PBV	a. *Predictors*: (*constant*), VAIC™, DER b. *Dependent variable*: ROA	a. *Predictors*: (*constant*), ROA b. *Dependent variable*: PBV

Source: Financial Statements Listed on BEI 2015-2020 (processed)

The analysis in Table 2 indicated that Durbin Watson's calculation values of 1.190 (model 1), 0.703 (model 2), and 1.186 (model 3) are between -2 to 2. In conclusion, the regression model in this study did not occur autocorrelation.

Multicollinearity Test. The aim is to test the presence or absence of multicollinearity symptoms by looking at TOL (Tolerance) and VIF (Variance Inflation Factor) values. If the TOL value is >0.1 and VIF <10, then the variable does not occur multicollinearity. The results of the multicollinearity test are presented in Table 3 below:

Table 3
Multicollinearity Test Result on Model 1
Coefficients[a]

Model		Collinearity Statistics			Remarks
		B	Tolerance	VIF	
1	(*Constant*)	0,402			
	VAIC™	0,048	0,922	1,084	No Multicollinearity
	DER	-0,004	0,922	1,084	
	Dependent Variable: PBV				
2	(*Constant*)	0,095			
	VAIC™	0,016	0,922	1,085	No Multicollinearity
	DER	-0,001	0,922	1,085	
	Dependent Variable: ROA				

Source: Financial Statements Listed on BEI 2015-2020 (processed)

Table 3 presents that the tolerance value is > 0.10, and the VIF value is < 10. Accordingly, all independent variables do not have symptoms of multicollinearity.

Heteroscedasticity Test. Figure 2 aims to test whether the regression model has variable inequality from one to another observation residual. Positively, the regression model does not contain heteroscedasticity problems by looking at the pattern of dots on the scatterplot that describes the predicted standardized value. Heteroscedasticity is free on the regression model if the points in the graph form an irregular pattern.

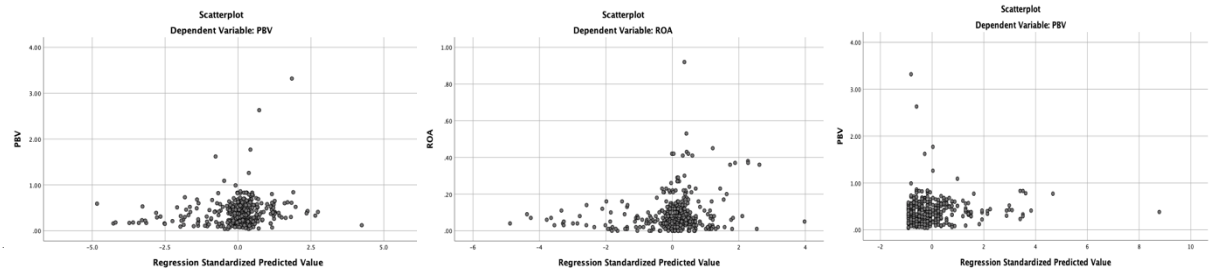

Figure 2
Heteroscedasticity Test Results on Model 1, 2, and 3
Source: Financial Statements Listed on BEI 2015-2020 (processed)

Figure 2 demonstrates that the points on the graph do not form a regular pattern. The distribution of the points spreads above and below the number 0 (zero) on the Y-axis. Therefore, the regression model has no symptoms of heteroscedasticity.

Determinant Coefficient (R2)

The coefficient of determination test determines the magnitude of the independent variable ability in exploring the dependent variable. Then, the results of the coefficient of determination are presented in Table 4 below:

Table 4
Results of the coefficient of determination (R^2) Model 1, 2, and 3

Model	R	R *Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	,359[a]	0,225	0,220	0,489
	a. *Predictors*: (*Constant*), VAIC™, DER b. *Dependent Variable*: PBV			
2	,370[a]	0,229	0,224	0,294
	a. *Predictors*: (*Constant*), VAIC™, DER b. *Dependent Variable*: ROA			
3	,266[a]	0,204	0,202	0,492
	a. *Predictors*: (*Constant*), ROA b. *Dependent Variable*: PBV			

Source: Financial Statements Listed on BEI 2015-2020 (processed)

Table 4 shows the coefficient of determination for the 1 R Square model of 0.225. The intellectual capital indicates the firm value variable (PBV) (VAICTM) and capital structure (DER) variables of 22.5%. Moreover, the 2 R Square model of 0.229 means that the variable intellectual capital explains the ROA variable (VAICTM) and capital structure (DER) of 22.9%, and the 3 R Square model of 0.204, meaning that ROA of 20.4% explains the variable firm value (PBV).

Model Feasibility Test (F Test)

The F test shows whether the model of the influence of the independent variable on the dependent variable is feasible to use. Using a significance level of 0.05, if the significance value is 0.05, the research model is feasible to use. Table 5 presents the results of the F test:

Table 5
F Test Results on Model 1, 2, and 3
ANOVA[a]

	Model	*Sum of Squares*	Df	*Mean Square*	F	*Sig.*
1	*Regression*	0,852	2	0,426	5,085	,007[b]
	Residual	32,820	392	0,084		

	Total	33,672	394			
	a. *Dependent Variable*: PBV					
	b. *Predictors*: (*Constant*), VAIC™, DER					
2	*Regression*	0,102	2	0,051	5,848	,003[b]
	Residual	3,442	393	0,009		
	Total	3,545	395			
	a. *Dependent Variable*: ROA					
	b. *Predictors*: (*Constant*), VAIC™, DER					

Source: Financial Statements Listed on BEI 2015-2020 (processed)

Based on Table 5, the significant F numbers are 0.007 (model 1) and 0.003 (model 2), thus ≤0.05, so it is concluded that the research model is suitable to be used to test the effect of Intellectual Capital (VAIC™) and Capital Structure (CS) on Financial Performance. (ROA) and Firm Value (PBV).

Hypothesis Test (t-Test)

The t-test is used to test the magnitude of the influence of the independent variable on the dependent variable using a significance level of 5%. It is presented in Table 6 as follows:

Tabel 1
Results of Hypothesis Test (t-Test) on Model 1, 2, and 3
Coefficients[a]

	Model	*Standardized Coefficients* Beta	*Sig.*	Remarks
1	(*Constant*)	0,402	0,000	
	VAIC™	0,048	0,045	H_1 Supported
	DER	-0,004	0,003	H_2 Supported
	[a]Dependent Variable: PBV			
2	(*Constant*)	0,095	0,000	
	VAIC™	0,016	0,042	H_3 Supported
	DER	-0,001	0,001	H_4 Supported
	[a]Dependent Variable: ROA			
3	(*Constant*)	0,365	0,000	
	ROA	0,204	0,188	H_5 Not Supported
	[a]Dependent Variable: PBV			

Source: Financial Statements Listed on BEI 2015-2020 (processed)

Hypothesis Test 1 and 2. Based on Table 6, the test of the effect of Intellectual Capital (VAIC™) on Firm Value (PBV) obtained a coefficient value of 1=0.048 and a significance level of 0.045£0.05. Thus, H1 is supported; there is a positive effect of Intellectual Capital (VAIC™) on Firm Value (PBV). In contrast, the test of the effect of Capital Structure (CS) on Firm Value (PBV) obtained a coefficient value of 2=-0.004 and a significance level of 0.003£0.05. Thus H2 is supported, so there is a negative effect of Capital Structure (CS) on Firm Value (PBV).

Hypothesis Test 3 and 4. Based on Table 6, the test of the effect of Intellectual Capital (VAIC™) on Financial Performance (ROA) obtained a coefficient value of 1=0.016 and a significance level of 0.042£0.05. Thus, H3 is supported; there is a positive effect of Intellectual Capital (VAIC™) on Financial Performance (ROA). In contrast, the test of the effect of Capital Structure (CS) on Financial Performance (ROA) obtained a coefficient value of 2=-0.001 and a significance level of 0.001£0.05. Thus, H4 is supported; and there is a negative effect of Capital Structure (CS) on Financial Performance (ROA).

Hypothesis Test 5. Based on Table 6, the results show that there is no effect of Financial Performance (ROA) on Firm Value (PBV) with a coefficient value of 1 = 0.204 and a significance level of 0.188> 0.05. Thus H5 is not supported.

Path Analysis

Path analysis is used to examine the effect of Intellectual Capital (VAIC^{TM}) and Capital Structure (DER) on Firm Value (PBV) through Financial Performance (ROA). The results of the path analysis calculations are presented in Table 7 as follows:

Table 7
Results of Path Analysis

Hypothesis	Variable	*Standardized Coefficients* Beta	*Sig.*	Results
H_6	VAIC^{TM}	0,048	0,045	H_6 Not Supported
	ROA	0,204	0,188	
H_7	CS	-0,004	0,003	H_7 Supported
	ROA	0,204	0,188	

Dependent Variable: PBV
Source: Financial Statements Listed on BEI 2015-2020 (processed)

As a result, the path analysis is described as follow:

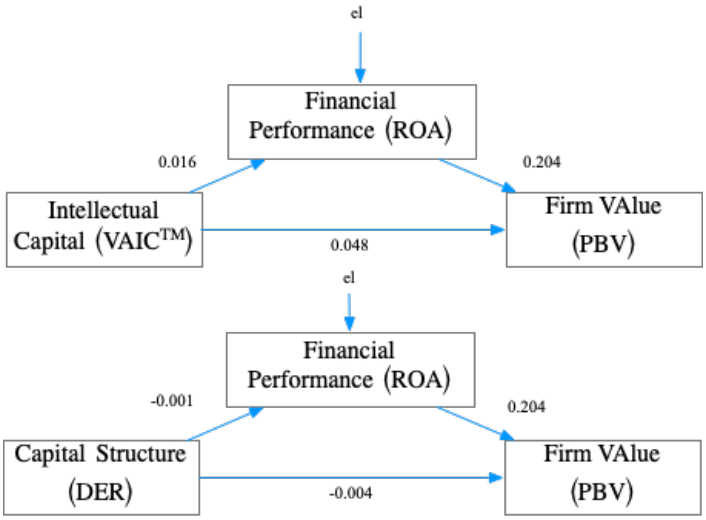

Figure 3
Path Analysis

As the path coefficient value in Figure 3, it can be determined the value of the indirect influence of Intellectual Capital (VAIC^{TM}) on Firm Value (PBV) through Financial Performance (PBV) by shifting the coefficient value of 0.016x0.204=0.003. This value is smaller than the direct influence of Intellectual Capital (VAIC^{TM}) on Firm Value (PBV) of 0.048; it is concluded that H6 is not supported, meaning that intellectual capital cannot increase firm value through financial performance. In addition, the value of the indirect effect of Capital Structure (CS) on Firm Value (PBV) through Financial Performance (PBV) by shifting the coefficient value -0.001x0.204 = -0.0002. This value is greater than the direct effect of Capital Structure (CS) on Firm Value (PBV) of -0.004, concluded H7 is supported, meaning that Capital Structure (CS) can increase firm value through financial performance.

Discussions

The Effect of Intellectual Capital on Firm Value. The test result supported H1 that intellectual capital with a Value Added Intellectual Coefficient (VAIC^{TM}) proxy had a positive effect on Firm Value (PBV) with a significance value of 0.045 <0.05. Intellectual capital is a valuable and skilled resource for ownership of knowledge, both tacit knowledge (hidden knowledge that cannot or is difficult to imitate by others) and explicit knowledge (knowledge that is easily transferred or imitated by others (Christa, 2011). Based on the theory, companies with a sustainable competitive advantage from their superior resources can implement better value creation strategies than competitors (Firer and Williams, 2003; Chen et al., 2005). This research supports Subaida et al. (2018) that the company's unique resources have advantages in the internal environment to form strategies that can increase company value.

The Effect of Capital Structure on Firm Value. The test results supported H2 that the capital structure with the Debt to Equity Ratio (DER) proxy negatively affected Firm Value (PBV) with a significance value of 0.003 <0.05. According to Sihombing (2018), the capital structure theory of the traditional approach view that the optimal capital structure will influence the increasing firm value so that decisions on capital structure are dynamic as the company needs. Pecking order theory states that companies prefer to use internal funding rather than debt. In this study, the firm used internal funds, issued debt, and issued share capital. The results support Safitri (2014) and Oktavina et al. (2018) that capital structure negatively affected firm value, meaning that companies with low capital structures had higher firm values.

The Effect of Intellectual Capital on Financial Performance. The test results supported H3 that intellectual capital with a Value Added Intellectual Coefficient (VAIC^{TM}) proxy had a positive effect on Financial Performance (ROA) with a significance value of 0.042 <0.05. The more efficient the company utilizes its intellectual resources optimally, the more efficient it will provide its added value, as indicated by its financial performance growth. The result is in line with the resource-based theory that a company will compete if it has superior resources and improves its financial performance, as its increasing net profit. The results support Firer and Williams (2003), Chen et al. (2005), Ozan et al. (2017).

The Effect of Capital Structure on Financial Performance. The test results supported H4 that the capital structure with the Debt to Equity Ratio (DER) proxy had a negative effect on Financial Performance (ROA) with a significance value of 0.001 <0.05. Financial performance plays a significant role for companies to measure and provide finances for a particular period as measured by the Return on Assets (ROA) ratio. A factor that affects the company's financial performance is the capital structure. Referring to the trade-off theory by Modigliani and Miller (1963), debt financing with high interest will reduce the company's income and profitability. This condition occurs when the benefits of debt can no longer cover costs, thereby lowering the company's performance. This research supports Oktavina et al. (2018) that the relationship between debt levels and company profitability is negative.

The Effect of Financial Performance on Firm Value. The test results do not support H5 that financial performance with ROA proxy affects Firm Value (PBV) with a significance value of 0.188> 0.05. Firm value describes the performance of management in managing the company's assets, and financial performance is one of the factors investors consider in determining stock investment decisions. The mean ROA data in descriptive statistics show a low value of 8.7%, which shows that the company cannot use assets to generate profits. This condition will negatively signal that the company cannot generate profits for investors. Research results

support Rohmawati and Shenurti (2019) that financial performance does not affect firm value but does not support Nafasati and Hilal (2021).

The Effect of Intellectual Capital on Firm Value through Financial Performance. The test results did not support H6 that intellectual capital with a Value Added Intellectual Coefficient (VAIC^{TM}) proxy did not affect Firm Value (PBV) through financial performance. The impact absence in H6 was due to investors' understanding of the skilled resources in producing valuable and qualified products, the human resources' critical thinking, and employees' abilities in managing a firm and in establishing relationships with external parties (Kartika and Hatane, 2013).). Intellectual capital owned by the company has been recognized to provide value-added. It is more accurate in measuring a company's performance than accounting profit, which is only a measure of return for shareholders

The Effect of Capital Structure on Firm Value through Financial Performance. The test results supported H7 that the capital structure with the Debt to Equity Ratio (DER) proxy affected Firm Value (PBV) through financial performance. This study supported the agency theory that debt was an efficient way to reduce agency conflict. The consideration of debt raises agency costs; the increasing debt requires a higher interest rate to offset lower liquidity or investment risk. Hence, debt negatively impacted company performance. The results of this study support the trade-off theory and are supported by the research of Nini et al. (2020) that the optimal capital structure by maintaining a balance between risk and return will maximize the company's stock price.

Conclusion

The conclusions of this study were derived into four results. First, intellectual capital and capital structure are components of capital that concern investors. Intellectual capital emphasizes the optimal use of intangible assets and tangible assets. In contrast, the capital structure is based on the pecking order theory that companies prefer to finance internally through retained earnings, the market responds to aspects of financial security. Second, intellectual capital and capital structure are components of capital that optimize the utilization of intellectual resources to provide added value through improving the company's financial performance that is in line with resource-based theory. Third, ROA cannot give a positive signal since the mean of ROA is relatively low at 8.7%. So it does not optimize the use of assets to generate profits. Last, intellectual capital becomes a more accurate performance measurement than accounting profit. In contrast, the capital structure achieves optimization realized by balancing risk and return, affecting the market's positive response.

References

Abhayawansa, S. and Azim, M. (2014). Corporate reporting of intellectual capital: evidence from the Bangladeshi pharmaceutical sector. Asian Review of Accounting, 22 (2), 98-127.

Asyik, N. F. (2021). The optimization of employee stock option plan in achieving financial performance. Reviu Akuntansi dan Keuangan, 11(2), 393-411.

Belkaoui, A. R. (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), 215-226.

Bridoux, F. (2004). A Resource-Based Approach to Performance and Competition: An Overview of The Connections Between Resources and Competition. *Journal of d'Administration et de Gestion*, Universite Chatolique de Louvain, Belgium, pp. 1-21.

Brigham, E. F., and Houston, J. F. (2015). Fundamentals of financial management. India: Cengage Learning, 13th Edition.

Chen, M. C., Cheng, S. J., and Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performances. *Journal of Intellectual Capital*, 6(2), 159-176.

Chowdhury, L. A. M., Rana, T., Akter, M., and Hoque, M. (2018). Impact of intellectual capital on financial performance: Evidence from the Bangladeshi textile sector. *Journal of Accounting & Organizational Change*, 14(4), 429-454. https://doi.org/10.1108/JAOC-11-2017-0109.

Deep, R. and Narwal, K.P. (2014). Intellectual capital and its association with financial performance: A study of Indian textile sector. International Journal of Management and Business Research, 4(1), 43-54.

Firer, S. and Williams, S. M. (2003). Intellectual capital and traditional measures of corporate performance. *Journal of Intellectual Capital*, 4(3), 248-360.

Fitriasari, N. M. A. dan Sari, M. M. R. (2019). Pengaruh Intellectual Capital Pada Nilai Perusahaan Dengan Kinerja Keuangan Sebagai Variabel Intervening. E-Jurnal Akuntansi Universitas Udayana, 26(3), 1717 -1740. DOI: https://doi.org/10.24843/EJA.2019.v26.i03.p02.

Ghozali, I. (2013). *Aplikasi Analisis Multivariate dengan Program SPSS*. Edisi Ketujuh. Semarang: Badan Penerbit Universitas Diponegoro.

Giuliani, M. (2016). Sensemaking, sense giving and sense breaking: The case of intellectual capital measurements. Journal of Intellectual Capital, 17(2), 218-237.

Hermawan, S. and Maf'ulah, A. N. 2014. Pengaruh kinerja keuangan terhadap nilai perusahaan dengan pengungkapan corporate social responsibility sebagai variabel pemoderasi. Jurnal Dinamika Akuntansi, 6(2), 103-118.

McAbee, J. 2021. Understanding Stakeholder Theory. https://www.wrike.com/blog/understanding-stakeholder-theory/.

Modigliani, F., and Miller, M. H. 1963. Corporate income taxes and the cost of capital: a correction. *The American Economic Review*, 53(3), 433-443.

Muslichah dan Hauteas, O. S. (2019). Pengaruh profitabilitas dan kebijakan dividen terhadap nilai perusahaan dengan struktur modal sebagai variabel mediasi. Jurnal Manajemen dan Keuangan, 8(2), 177-192. **DOI:** https://doi.org/10.33059/jmk.v8i2.

Myers, S. C. (1984). The capital structure puzzle. Journal of Finance, 39, 575-592.

Nafasati, F. and Hilal, M. 2021. Financial Performance on Firm Value With CSR As Moderated Variables. Economics & Business Solutions Journal, 5(1), 1- 12.

Nawaiseh, I. N. M. A. L. 2017. The impact of the financial performance on firm value: Evidence from developing countries. International Journal of Applied Business and Economic Research, 15(16), 329-341.

Nguyen, A. H. and Doan, D. T. (2020). The Impact of Intellectual Capital on Firm Value: Empirical Evidence From Vietnam. International Journal of Financial Research Vol. 11, No. 4; 2020, 74-85. doi:10.5430/ijfr.v11n4p74 URL: https://doi.org/10.5430/ijfr.v11n4p74.

Nurwulandari, A., Wibowo, Y., and Hasanudin. 2021. Effect of Liquidity, Profitability, Firm Size on Firm Value with Capital Structure as Intervening Variable. Atestasi: Jurnal Ilmiah Akuntansi, 4(2), 257-271. https://jurnal.fe.umi.ac.id/index.php/ATESTASI/article/view/835/615.

Pulic. A. 1999. Basic Information on VAIC™. www.vaic-on.net. Diakses tanggal 4 Desember 2020.

Oktavina, M., Manalu, S., and Yuniarti, S. (2018). Pecking order and trade-off theory in capital structure analysis of family firms in Indonesia. Jurnal Keuangan dan Perbankan, 22(1), 73-82. http://jurnal.unmer.ac.id/index.php/jkdp.

Ozkan, N., Cakan, S. and Kayacan, M. (2017). Intellectual capital and financial performance: a study of the Turkish Banking Sector. Borsa Istanbul Review, 17(3), 190-198. https://doi.org/10.1016/j.bir.2016.03.001.

Parmar, B., Freeman, R. E., Harrison, J. S., Wicks, A. C., de Colle, S., and Purnell, L. 2010. The Academy of Management Annals, 3(1): 403-445. DOI:10.1080/19416520.2010.495581.

Priyatama, T., & Pratini, E. (2021). The Effect of Capital Structure, Profitability, Liquidity, and Firm Size on Firm Value (Empirical Study on Infrastructure, Utilities, and Transportation Companies Listed on the Indonesia Stock Exchange for the 2015-2018 Period). Exist: Scientific Journal of Economics and Business, 12(1), 100-106.

Puspita, G. dan Wahyudi, T. (2021). Modal Intelektual *(Intellectual Capital)* dan Nilai Perusahaan Pada Industri Manufaktur. Riset & Jurnal Akuntansi, 5(5), 295-306. DOI : https://doi.org/10.33395/owner.v5i2.416.

Putri, K. I. (2017). Pengaruh kinerja keuangan pada nilai perusahaan dengan good corporate governance sebagai variabel pemoderasi. *E-Jurnal Akuntansi Universitas Udayana*, 2(1), 1-28.

Safitri, O. N., Handayani, S. R., and Nuzula, N. F. (2018). The influence of capital structure and profitability on firm value (a study in retail companies listed in Indonesia Stock Exchange 2010-2013 period). Jurnal Administrasi Bisnis (JAB), 13(2), 1-19. administrasibisnis.studentjournal.ub.ac.id.

Sawarjuwono, T. dan Kadir, A. P. (2003). Intellectual Capital: Perlakuan, Pengukuran dan Pelaporan (Sebuah Library Research). *Jurnal Akuntansi dan Keuangan*, 5(1), 31-51.

Sharma, S. and Dharni, K. (2017). Intellectual capital disclosures in an emerging economy: status and trends. Journal of Intellectual Capital, 18(4), 868-883.

Shubita, M.F. and Alsawalhah, J. M. (2012). The relationship between capital Structure and Profitability. International Journal of Business and Social Science, 3(16), 104-112.

Sinarmata, R. dan Subowo. (2016). Pengaruh intellectual capital terhadap kinerja keuangan dan nilai perusahaan perbankan Indoensia. *Accounting Analysis Journal*, 5(1), 1-9.

Subaida, I., Nurkholis, and Mardiati, E. (2018). Effect of Intellectual Capital and Intellectual Capital Disclosure on Firm Value. Journal of Management (JAM), 16(1), 125-135. *DOI: http://dx.doi.org/ 10.21776/ub.jam.2018.016. 01.15.*

Sudiyatno, B., Puspitasari, E., Nurhayati, I., and Rijanti, T. 2021. The relationship between profitability and firm value: evidence from manufacturing industry in Indonesia. International Journal of Financial Research, 12(3): 466. DOI:10.5430/ijfr.v12n3p466-476.

Sulhan, M. and Pratomo, A. S. 2020. Analysis of The Impact of Financial Performance on Company Value with Corporate Social Responsibility and Good Corporate Governance as Moderating Variables. Management and Economics Journal, 4(2): 163-174.

Tobin, J. (1969). A General Equilibrium Approach to Monetary Theory. Journal of Money, Credit and Banking (February), 1(1), 15- 29. https://doi.org/10.2307/1991374. https://www.jstor.org/stable/1991374.

Uzliawati, L., Yuliana, A., Januarsi, Y., and Santoso, M. I. (2018). Optimization of capital structure and firm value. European Research Studies Journal, 21(2), 705-713. https://doi.org/10.35808/ersj/1034.