

# DOES PROFITABILITY MATTER IN THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL AND FIRM VALUE?

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## DOES PROFITABILITY MATTER IN THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL AND FIRM VALUE?

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### Abstract

A study of intellectual capital was conducted to determine whether it can predict firm value by moderated ROA. This study is a quantitative study using secondary data from 240 observational datasets. Purposive sampling selection with company criteria in the LQ-45 index is used as a selection method consecutively from 2017 to 2021. The method of data analysis was panel data regression and Moderated Regression Analysis. The best estimation model used is the Fixed Effect model. We find that intellectual capital to predict the firm value. We also investigated that value-added capital employed and structural capital value added had a significant effect on firm value. In contrast, value-added human capital had no effect on firm value. We prove that profitability moderates the relationship between intellectual capital and firm value. The findings reveal that intellectual capital is an important determinant of a firm's value, thus the company of the LQ-45 index in developing economies like Indonesia needs to enhance their intellectual potential. Therefore, companies must stimulate the growth of capital employed and the efficiency of structural capital for enhanced firm value by strengthening ROA performance. This allows managers to allocate resources to critical knowledge assets for intellectual capital that can be turned into a sustainable competitive advantage.

**Keywords:** Firm Value; Intellectual Capital; Profitability

**JEL Classification:** D22, G23, G32

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## INTRODUCTION

A company's high value will attract potential investors and be a sign of high returns for shareholders. Enterprise value also affects stakeholders' perceptions of a company's assets and can be used to predict shareholder well-being. Furthermore, firm value is necessary to be noticed by investors, because not only describes the current condition of the company, but it is also projecting the company's visions and prospects in the future. One of the causes of the decline in firm value is because the company's priority is optimizing tangible assets rather than intangible assets. Even though intangible assets are difficult to measure because there is no clear standard to assess the size of assets (Nadeem et al., 2019; Nuryaman, 2015).

Firm value can be measured using several formulas, one of which is using Tobin's Q ratio. Tobin's Q ratio is a measuring tool that defines the value of the firm that reflects both tangible assets and intangible assets (Berzkalne & Zelgalve, 2014). Tobin's Q indicates the efficiency and effectiveness of a firm in using all resources in terms of assets. The higher the value of Tobin's Q, the greater the impact it will have on market confidence and the level of the future success of the company (Andreeva et al., 2021). To maintain the sustainability of the firm value, the company must have a competitive advantage to win the competition in the globalization era. One of the company's competitive advantages is intellectual capital. Companies must be able to adapt to business concepts based on knowledge (knowledge-based business). The need for knowledge-based business to develop existing capabilities within each company. It includes not only tangible assets but also intangible assets that can represent future value-added. The main focus of the company in increasing competitive advantage lies not in a large number of workers but in the added value obtained from various things that do not have a

physical form. This is why companies need to manage and use intangible assets such as intellectual capital to compete with other businesses and increase firm value (Secundo et al., 2017).

Thus, the ability to create long-term competitive advantage and value is based on effective integration rather than tangible asset (Al-Musali & Ismail, 2014). IC is an intangible asset owned by a company such as the competence and expertise of human resources (Naushad, 2019). Meanwhile Andreeva et al. (2021) and Olarewaju & Msomi (2021) say IC is a knowledge-based company asset in the form of innovation, skills, and experience that can be utilized by companies to support company activities. Bontis et al. (2000) state that there are 3 main elements of IC, which are capital employed (VACA), human capital (VAHU), and structural capital (STVA).

Previous studies have proven that IC effects firm value. Research by Farooq et al. (2022) reveals that substantiates the significant role of human capital, structural capital, and capital employed efficiency in protecting industrial investment in China, India, and Pakistan. This means that IC is considered by investors in making investment decisions, so there is an opportunity to create value for the firm. Similarly, IC management is the effective identification, measurement, disclosure, and reporting of knowledge assets in order to gain a competitive advantage. This implies that IC is not viewed as a bundle of resources, but if managed properly, a resource that can create value for the organization (Secundo et al., 2017; Ur Rehman et al., 2022). Initializing firm value is meant to utilize all the potential of the company, both employees (human capital), physical assets (physical capital), and structural capital. If the company manages these potentials properly, it will create value that can encourage the company's financial performance to the benefit of investors (Ozkan et al., 2017; Nadeem et al., 2019;

29 Shahzad et al., 2022). However, this result contradicts the study conducted by Castro et al. (2021) and Zhicheng et al. (2016) proved that VAIC has no effect on firm value, structural capital has no effect on firm value (Ni et al., 2021; Nimtrakoon, 2015; Utami, 2018), capital employed does not effect on firm value (Al-Musali & Ismail, 2014), and human capital does not effect on firm value (Li & Zhao, 2018). In this respect, there are limitations of the model in explaining dissimilar behavior where it is not expected that this does not take into account the causes that make intellectual capital a good predictor for some models but not for others. The difference in investment effect, is measured in monetary terms. This is why IC in some ways has no effect on firm value.

The direct effect of IC on firm value may have been moderated by the resulting ROA of the company. Singla (2020) and Osazuwa, & Che-Ahmad (2016) find that ROA increase the firm's market to book-value. In resource-based theory, the availability of intellectual capital encourages the firm's ability to optimize resources for value creation. The company has intellectual resources that can have a competitive advantage and be able to direct the company to obtain a financial performance (Bayraktaroglu et al., 2019; Maji & Goswami, 2017; Nadeem, 2018). Companies can use their IC to generate new or unanticipated revenue streams, thereby increasing profitability and the firm's value (Ozkan et al., 2017; Singla, 2020). This supports the signaling theory about the importance of information released for the company's investment decisions. Information as an announcement will provide a signal for investors to take investment steps. The information given is therefore a description, a record, or a good description of past, present, and future conditions. The good news about intellectual capital also effects the company's good financial performance. Therefore, a company's financial performance can be used as an indicator for potential investors

to identify the firm's value. Hence, the inclusion of this variable (ROA) provides important insights for IC and firm's value research, as these may have a mediating or moderating effect.

Previous studies were mostly conducted on high-tech companies, healthcare industry, companies with large resource capacity, and other investment industries. However, this research was conducted on companies listed on the Indonesia Stock Exchange (IDX) with L-Q45 stock index. The L-Q45 stock index is 45 shares of listed companies selected based on considerations of liquidity and market capitalization, with predetermined criteria. The stocks that are included in this index are definitely being actively traded and have fairly good fundamentals so that they have a high market value. This paper attempts to fill the literature gap by investigating the IC components that enhances firm value with probable ROA as moderating for LQ-45 Index companies in Indonesia.

## LITERATURE REVIEW

### Agency Theory

Agency theory explains the alignment between principals (investors) and agents (managers). According to Jensen & Meckling (1976), agency theory describes the separation of roles that occurs between agents and principals, which can lead to agency conflicts. Agency conflicts can affect the downturn of the business and can affect the level of trust of the principal in managing the business. Inter-agency conflicts can be minimized through a supervisory mechanism (Duff, 2018). This agency conflict can also be related to the achievement of firm value. The increase in firm value is due to the cooperation between management, shareholders, and stakeholders in making financial decisions to maximize their working capital. If the behavior between the manager and the principal is appropriate, then the agency problem does not occur. The incorporation

of the interests of both sides often creates problems. In the concept Theory of the Firm (Jensen & Meckling, 1976), agency problems cause the firm value is not achieved so that it cannot maximize shareholder wealth.

### Signaling Theory

Basically, signaling theory is a theory that explains the reasons why companies have the urge to provide financial statement information to outside investors. This action is taken by the company's management to provide proper direction for investors. Especially about how to manage the company's prospects in the future (Spence, 1973). Companies that have the potential for large profits tend to avoid selling shares. The relevance of Signaling Theory with financial performance information is that the wide range of disclosure of corporate information provides a significant positive signal to shareholders and stakeholders. The higher the transparency of information on corporate financial performance, the higher the confidence of stakeholders and shareholders to decide on capital investment. This trust is evidenced by the creation of stock value. With a high level of confidence, investors will certainly react positively to the company in increasing stock price movements Grinblatt & Hwang (1989). Therefore, the level of disclosure made by the company effects the movement of stock prices which in turn effects the trading volume activity. Changes in stock prices will definitely effect the growth of the company's stock returns, thereby increasing the price book value and market value that reflects the firm's value (Baldenius & Meng, 2010, Komara et al., 2020).

### Defining Intellectual Capital and Effect of Intellectual Capital on Firm Value

The company's IC can be defined as the combination of all the unique assets that can create opportunities for the company to have a competitive advantage over

competitors, such as employees' skills and abilities. IC is a non-monetary and non-physical resource, an intangible asset that is controlled by any or all of the entities and contributes to the creation of firm's value (Bontis et al., 2000; Singla, 2020; Sydler et al., 2014). Initially, intellectual capital was defined as the power of knowledge, application expertise, management technology, customer relations, and professional skills that provide a competitive edge in the market. Furthermore, IC measurement can be expanded to include all value creation activities undertaken by employees, managers, stakeholders, and shareholders related to the company.

Pulic (2004) suggesting IC measurements into 3 elements as follows: value-added human capital (VAHU), value-added capital employed (VACA), and structural capital value-added (STVA). Human capital is the personal knowledge of an organization's in the form of capability, creativity, innovation, loyalty, and competence owned by its employees (Nuryaman, 2015). Bontis et al. (2000) argued that employees develop IC through their skills, attitudes, and cognitive abilities. Capability refers to skill and knowledge, while attitude refers to the component of behavior that affects an employee's performance. Capital employed is part of the IC component, if managed properly, this strategy can create a competitive advantage that improves overall business performance. The capital used reflects the efficiency of the value created by the physical component. VACA describes the relative value creation of a firm's capital (Bontis et al., 2000; Singla, 2020). Structural capital is an intellectual property that remains when employees leave the company. STVA is created by accumulating and maintaining the knowledge possessed by the company. Capital assets include intangible assets including patents, license, and trademarks (Shahzad et al., 2022; Sydler et al., 2014).

Companies that have good performance have their interests for investors. Good IC management shows that the company can develop capabilities and encourage employees to create innovations. Employees who have innovation create company productivity, this can also increase the firm value so that the company has competitiveness (Andreeva et al., 2021). The results of the research of Al-Omouh et al. (2021), Ozkan et al. (2017), and Tiwari (2021) show that IC has a positive effects on firm value. The higher the intellectual capital, tend to have higher firm's value. Based on the concept and empirical results, we formulate the following hypotheses:

H<sub>1</sub>: intellectual capital has a positive effects on firm value

### Defining Profitability and Effect of Profitability on Firm Value

Profitability refers to the company's ability to generate profits over a certain period. Profitability ratios will show the ability of a company to generate profits during a certain period at the level of sales, assets, and shares. Profitability is proxied by ROA which explains that the company is able to utilize assets into returns. This ratio can measure the level of effectiveness and efficiency of an company (Che-Ahmad & Osazuwa, 2015). The increasing ROA indicates that the effectiveness of management performance increases in managing the company's assets to generate net income. ROA growth indicates that the company's prospects are getting better. Investors perceive this as a positive signal for the company to increase investor confidence and provide added firm value. Research conducted by Singla (2020) shows the positive effect of profitability on firm value as proxied by Tobin's Q. Other studies also prove that profitability has a positive effect on firm value (Che-Ahmad & Osazuwa, 2015). The higher the ROA, tend to have higher firm's value. Based on

the concept and empirical results, we formulate the following hypotheses:

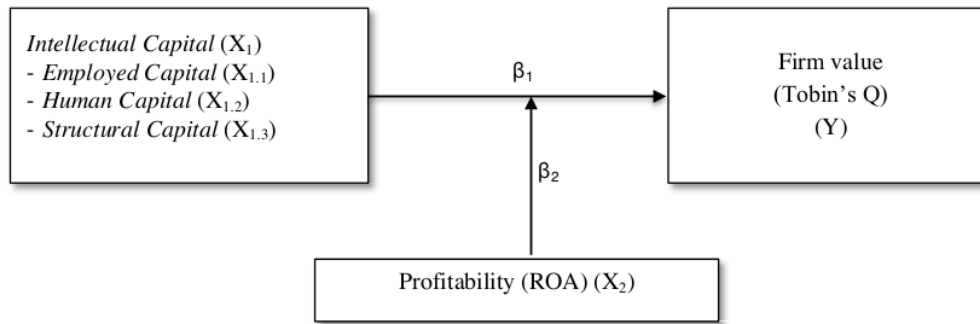
H<sub>2</sub>: profitability has a positive effects firm value

### Effect of Intellectual Capital on Firm value through Profitability

The effect of financial performance on firm value is a description of the performance of a company. Good performance will encourage investors to invest in the company which will then increase the stock price and firm value. Likewise, profitability also affects firm value. The better the performance of the IC will increase the profitability and firm value. This study uses profitability as a proxy for ROA to moderate the influence between IC and firm value. This is supported by research that states that IC affects firm value by moderating profitability (Ni et al., 2021; Al-Omouh et al., 2021; Che-Ahmad & Osazuwa, 2015; Sardo & Serrasqueiro, 2017; Singla, 2020). Based on the concept and empirical results, the research hypotheses are:

H<sub>3</sub>: profitability positively moderates the effect of intellectual capital on firm value.

Based on empirical theory and hypothesis development, the research model is depicted in Figure 1. Based on Figure 1, intellectual capital (IC) is measured using the method developed by Pulic (1997). There is value-added intellectual capital (VAIC) with components of capital employed (VACA), human capital (VAHU), and structural capital (STVA). This study uses moderating variables to determine the strength or weakness of the influence of intellectual capital on firm value. The moderating variable in this study is profitability as proxied by return on assets (ROA), while firm value is proxied by Tobin's Q.



**Figure 1.** IC Research Model on Firm value with Profitability Moderation

## RESEARCH METHODS

This study uses a quantitative approach that focuses on intellectual capital, firm value, and profitability. The secondary data collection technique is documentation by retrieving data from the annual six-month (half-year) 2017-2020 period on the Indonesia Stock Exchange website. The population in this study are companies included in the stock index LQ-45. The sampling technique used is purposive sampling. The sample criteria are companies that are consecutively in the stock index LQ45 during 2017-2020. Based on these criteria, a sample of 30 companies or 240 observations was obtained. The following Table 1 presents the criteria for determining the sample size.

Based on Table 1, the sample size is 30 companies with a period of five years, or 240 observational datasets. The data analysis technique used panel data regression with statistical tools E-views 10. The panel data regression equation model used in this study were:

$$Tobin's\ Q = \alpha + \beta_1 VAIC + \beta_2 ROA + \beta_3 VAIC * ROA + e$$

Where, Tobin's Q= firm value; VAIC= value added intellectual capital; ROA= return on assets; VAIC\*ROA= moderating/interaction variable VAIC with ROA,  $\alpha$ = constant;  $\beta_{1,2,3}$ = beta/ regression coefficient; e= residual/error.

The dependent variable is the firm value which is defined as a value that can be used to measure how much interest a company has from the investor's point of view as reflected in the stock price. The firm value is measured using Tobin's Q formula. The independent variable is intellectual capital (IC) which is defined as all resources of expertise, knowledge, and experience related to employee expertise, good relations with customers, technology, and information capacity of the company. The IC is formulated with value-added intellectual capital coefficient (VAIC), which measures the intellectual capital productivity of employees in three key areas, namely, value-added capital employed (VACA) which is the contribution made from each unit of capital employed to the firm value-added, value-added human capital (VAHU) this reflects the added-value that can be created into labor costs. This ratio illustrates the contribution of each rupiah invested in IC to the firm's value-added. Structural value added capital (STVA) measures the amount of structural capital to obtain added value of 1 rupiah, which indicates the success of structural capital in creating firm's value. The moderating variable is profitability as a proxy for ROA, which indicates the company's capability to obtain a rate of return using its total assets.

**Table 1.** Sample Size Selection

| Population and Sample  | Number of Companies |
|--|---------------------|
| The company is listed on the LQ45 stock index  | 45                  |
| Companies that are not consistently on the LQ45 stock list during 2017-2020                    | (15)                |
| Companies that are consecutively listed in the LQ45 stock index during 2017-2020 (sample size) | 30                  |

## RESULT AND DISCUSSION

### Result

The results of descriptive statistical analysis of the variable value-added intellectual capital coefficient (VAIC), firm value (Tobin's Q), and ROA are presented in the following Table 2. It presents the average firm value is 2.4597, while the standard deviation value is 3.1073 which shows the deviation range of the data from all firm values (Tobin's Q). The minimum value of the VAIC variable is -1.5400 and the maximum value is 4.5000. The mean VAIC value of 1.3960 is greater than the standard deviation of 0.6659. This shows that the VAIC variable is relatively homogeneous. The minimum value of the ROA variable is -1.2400 and the maximum value is 46.6600. The standard deviation of the ROA is 6.5785 and the average value is 5.7222. This shows that the ROA variable varies or is not grouped.

The most appropriate data panel method is determined by using the Chow Test and Hausman Test, which resulted in the best regression model to be selected between the Fixed Effect Model (FEM) and the Random Effect Model (REM). Based on the cross-section F-value and the Chi-square cross-section of 0.0000 where this value is <0.05, so that based on the Chow Test criteria, it can be concluded that the best regression model selected is the Fixed Effect Model compared to the Common Effect Model. Based on the random cross-section value of 0.0000 <0.05, based on the Hausman Test criteria, it can be concluded that the best regression model selected is the Fixed Effect Model compared to the Random Effect Model. In conclusion, the best regression model

chosen is the Fixed Effect Model. The results of hypothesis testing using multiple regression are presented in the following Table 3.

The first hypothesis in this study is the influence of IC has a significant effect on firm value. Based on Table 3, it is known that the probability value of the value-added intellectual capital (VAIC) variable is 0.0157. This value is smaller (<) than the value of = 0.05 with a t-statistic of 4.3623 so the H0 hypothesis is rejected, meaning that the value added intellectual capital (VAIC) variable has a significant effect on firm value (Tobin's Q). Meanwhile, the first hypothesis, which says that IC has a significant effect on firm value is accepted.

Based on Table 3, the VAIC indicators were also tested, where the probability of the value-added capital employed (VACA) variable was 0.0378 with a t-statistic value of 2.0899. This VACA is smaller than (<) the value of = 0.05, meaning that the VACA variable partially has a significant influence on the firm value variable. The probability value-added human capital (VAHU) variable is 0.6943 with a t-statistic value of 0.3935. This VAHU is greater than (>) the value of 0.05, meaning that the VAHU variable partially does not have a significant effect on the firm value variable. Based on Table 3, it is known that the probability value of the structural capital value added (STVA) variable is 0.0446 with a t-statistic value of 2.0204. This STVA is smaller than (<) the value of 0.05 meaning that the STVA variable partially has a significant influence on the firm value variable (Tobin's Q).

The second hypothesis in this study is the effect of profitability (ROA) on firm value. Based on Table 3, it can be seen that



the probability value of the ROA variable is 0.0010. This value is smaller than (<) the value of 0.05 where  $0.0018 < 0.05$  with a t-statistic value of 3.2192. This means that the ROA variable has a significant effect on firm value (Tobin's Q). The second hypothesis which says that profitability (ROA) has a significant effect on firm value is accepted.

Moderating Regression Analysis (MRA) involves moderating variables to build a relationship model. The moderating variable ROA plays a role in accompanying the VAIC variable and serves to influence the relationship between the IC variable and the firm value variable (Tobin's Q). The results of the MRA analysis are presented in the following Table 4.

Based on the results of the MRA output in Table 4, the panel data regression equation model used in this study is:

$$Tobin's Q = 1.8477 + 0.1383VAIC + 0.0017ROA + 0.0455VAIC*ROA + e$$

Table 4 shows that the value of the moderating variable shown through VAIC\*ROA has a probability value of 0.0044 with a t-statistic value of 2.8769. This probability value is smaller than (<) the value of 0.05 so it can be concluded that the moderating variable in this study influences the relationship between the VAIC variable and the firm value (Tobin's Q). Hypothesis 3 which says that profitability can moderate the intellectual capital variable on firm value is acceptable.

Table 2. Descriptive Statistics

|              | Tobin's Q | VAIC    | ROA      |
|--------------|-----------|---------|----------|
| Mean         | 2.4597    | 1.3960  | 5.7222   |
| Median       | 1.3750    | 1.3450  | 3.4650   |
| Maximum      | 20.1500   | 4.5000  | 46.6600  |
| Minimum      | 0.5500    | -1.5400 | -1.2400  |
| Std. Dev.    | 3.1073    | 0.6659  | 6.5782   |
| Jarque-Bera  | 3249.74   | 222.76  | 1150.71  |
| Probability  | 0.0000    | 0.0000  | 0.0000   |
| Sum Sq.Dev.  | 2307.68   | 105.98  | 10342.34 |
| Observations | 240       | 240     | 240      |

Table 3. Output Results with Multiple Regression Analysis

| Variable           | Coefficient | Std. Error | t-Statistic | Prob.     |
|--------------------|-------------|------------|-------------|-----------|
| C                  | 1.3384      | 0.3010     | 4.4465      | 0.0000    |
| VAIC               | 0.3974      | 0.1631     | 2.4362      | 0.0157    |
| -VACA              | 0.7336      | 0.3510     | 2.0899      | 0.0378    |
| -VAHU              | 0.0986      | 0.2507     | 0.3935      | 0.6943    |
| -STVA              | 0.5807      | 0.2874     | 2.0204      | 0.0446    |
| ROA                | 0.0989      | 0.0297     | 3.3287      | 0.0010    |
| R-squared          |             |            |             | 0.8135    |
| Adjusted R-squared |             |            |             | 0.7857    |
| Log likelihood     |             |            |             | -410.5926 |
| F-statistic        |             |            |             | 29.2782   |
| Prob(F-statistic)  |             |            |             | 0.0000    |

Dependent Variable: Tobin's Q  
Method: Panel Least Squares  
Periods included: 8  
Cross-sections included: 30  
Total panel (balanced) observations: 240

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**Table 4.** Output Results with Moderating Regression Analysis (MRA)

| Variabel           | Coefficient | Std. Error | t-Statistic | Prob.     |
|--------------------|-------------|------------|-------------|-----------|
| C                  | 1.8477      | 0.3447     | 5.3589      | 0.0000    |
| VAIC               | 0.1383      | 0.1839     | 0.7519      | 0.4529    |
| ROA                | 0.0017      | 0.0446     | 0.0394      | 0.9685    |
| VAIC*ROA           | 0.0455      | 0.0158     | 2.8769      | 0.0044    |
| R-squared          |             |            |             | 0.8207    |
| Adjusted R-squared |             |            |             | 0.7930    |
| Log likelihood     |             |            |             | -405.8879 |
| F-statistic        |             |            |             | 29.614    |
| Prob(F-statistic)  |             |            |             | 0.0000    |

Dependent Variable: Tobin's Q

### 3 Discussion

#### Effect of Intellectual Capital on Firm Value

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The test results show that intellectual capital has a positive effect on firm value in LQ-45 index companies on the Indonesia Stock Exchange. If a company is able to maximize all resources, especially the intellectual capital assets owned, it will help the company in increasing its value. Quality resource management maximizes financial performance and creates added value. In addition, it can attract investors to buy shares of the company. Submission of information about IC to stakeholders and investors can be through IC disclosure (Duff, 2018). IC disclosure offers a number of benefits, including increased corporate transparency, increased trust with stakeholders, and the achievement of long-term goals between companies and investors, which improve the value proposition of the companies. The results of this study are consistent with the research of Farooq et al. (2022); Ozkan et al. (2017); Nadeem et al. (2019); Shahzad et al. (2022); Ur Rehman et al. (2022). Thus, that investor's use information about intellectual capital in making deliberation to invest in order to obtain an expected return in the future.

This test was also undertaken on three IC elements. Intellectual capital is formed from 3 elements, namely value-added capital employed (VACA), value-added human capital (VAHU), and structural capital value added (STVA). The test

results of value-added capital employed (VACA) on firm value show that VACA has a significant effect on increasing firm value. This shows that the physical capital owned by the company can influence investors to invest in the company. This means that the company is able to maximize its capital-employed assets in increasing the firm value. This research is consistent with the research conducted by Nadeem et al. (2019) which states that the value-added capital employed (VACA) affects firm value which is proxied by Tobin's Q. The results of this study are contradictory to Al-Musali & Ismail (2014) who found that VACA does not affect firm value.

The value-added human capital (VAHU) test results prove that VAHU has no significant effect on firm value. This shows that human capital assets such as sources of knowledge, skills, and competencies in a company are not considered by investors in making investments. The results of this study support the research of Li & Zhao (2018).

The results of the structural capital value added (STVA) test prove that STVA has a significant effect on firm value. The company must maximize every capability it has to fulfill routine processes by involving its structure in supporting employee activities so that it can produce optimal overall business performance such as the company's operational system, organizational culture, and company philosophy. One of the objectives of

optimizing structural capital assets is to influence investors to invest in the company. This study is consistent with the research of Hejazi et al. (2016) which says that there is an influence of structural capital on firm value, the results of which are contradictory to Ni et al. (2021), Nimtrakoon (2015), and Utami (2018), where structural capital does not affect firm value.

### Effect of Profitability on Firm Value

This study indicates that profitability has an effect on firm value in LQ-45 index companies on the Indonesia Stock Exchange. ROA indicates the company's capability in managing asset resources properly. The increase in ROA reflects an improve in rate of return and investment in earnings assets thereby enhancing share prices and the firm's value. High profitability provides a positive signal that the company is in a gainful condition for investors. This is an attraction for investors to buy shares of the company. High demand for the share will enhance the firm's value because investors evaluate the stock price higher than the book value of the stock on the balance sheet.

When a company considers raising the required profit, it spends that profit to support the operations and avoid debt. The high and low ROA affects the firm's value which in turn affects its stock price. However, companies withstand ROA volatility in order to tend to have high growth rates. Investors view a positive growth rate as a signal of company growth. Along with the high profitability ratio, management also tends to select to adopt internal funding for corporate funding compared to using external funding obtained from the sale of shares. The phenomenon to use of the company's internal funds can lead to a lower in stock prices and shares outstanding in the capital market (Farooq et al., 2022; Menkveld et al., 2017).

This result is in line with research conducted by Singla (2020) and Che-

ahmad & Osazuwa (2015) revealed that profitability has a positive effect on firm value. This shows that high profitability is an important consideration for investors to invest in a company. The high profitability firm will encourage and provide an overview of the company's prospects in the future.

### Effect of Profitability in Moderating Intellectual Capital on Firm Value

ROA is proven to be can moderate or strengthen the relationship between intellectual capital and firm value. The results of this test are consistent with the research of Singla (2020); Al-Omouh et al. (2021); Che-Ahmad & Osazuwa (2015); Tiwari (2021) which reveal that profitability can to moderate the relationship between intellectual capital and firm value.

Profitability is the rate of return obtained from its business activities. Good profitability can attract suppliers to offer goods/services, creditors to extend credit loans, and investors to invest so that the phenomenon can increase stock prices and firm's value. Based on the resource-based theory, if a company can utilize its intellectual capital, it will have a competitive advantage compared to other companies by utilizing its resources. By measuring profitability by using ROA, the utilization of assets and resources managed by the company can be known to the level of efficiency so that the intellectual capital in the company can be managed effectively by minimizing costs to generate profits which can later increase the firm value. Companies that have high profitability will attract investors to invest in companies so that they can increase the company's market value in the investor's insight.

In this study, we examine the role of IC in boosting confidence in investment and whether ROA strengthens the association of intellectual capital with value creation in LQ45 index companies in Indonesia. The statistical results imply that aggregated VAIC has a significant and positive impact on value creation in the LQ-45 index

companies. LQ-45 index companies tend to have higher market capitalization stocks among others. Company managers provide investment confidence by disclosing the soundness of the company's financial performance in terms of higher market capitalization (Farooq et al., 2022). Likewise, the impact of IC on company value creation is interpreted by disaggregated IC into value-added human capital, structural capital value-added, and value-added capital employed. The value added capital employed (VACA) which has a positive and significant impact is argued that the firm has reached maximum capacity in the use of assets to obtain higher profitability (ROA). VACA's positive outlook allows investment managers to invest in long-term projects based on future financial returns (Singla, 2020). A high VACA also indicates that companies by optimizing the use of capital assets effectively encourage a sustainable competitive advantage and achieve a more asset turnover into rate of return. This factor encourages company managers to explore more capital to realize intangible assets in the LQ-45 index companies in Indonesia. Finally, the statistics also indicate a positive correlation between STVA and firm value. The level of enterprise and good management accumulation in the performance of various management activities help to achieve a high ROA for each structural capital base, which positively affects investment decisions.

Accordingly, this study implies that the managers of LQ-45 index companies should continue to strengthen and improve the components of intellectual capital, especially the capacity to effectively manage its capital assets, and intellectual property, in order to retain existing business knowledge and achieve sustainable competitive advantage and ensure sustainable future success. Investors pay special attention to the components of intellectual capital to predict the firm's value and select the best investment opportunities. There is an urgent need for

policymakers and corporate manager's wake up to the need to start disclosure of the IC of firms. Therefore, companies and governments in developing countries should encourage investment in intellectual capital development in order to improve business performance and economic growth. This study can be used as a reference for policy makers in formulating future strategies for intellectual capital development in general and IC development in LQ45 index companies in particular.

## CONCLUSION AND RECOMMENDATION

This study provides conclusive evidence that intellectual capital predicts firm's value, whereas profitability has succeeded in strengthening the association with LQ-45 index companies in Indonesia. Statistical results show that the aggregated VAIC has a significant and positive effect on value creation in the LQ-45 index companies. VAIC information offers increased corporate transparency, sustainable competitive advantages, trust with stakeholders, and the achievement of long-term goals that enhance the firm's value. Capital employed value-added (VACA) and structural capital value-added (STVA) have a positive effect on firm value. The high VACA indicates that a company has enough capacity to effectively manage its capital assets and can derive more returns from such assets (ROA). The high STVA indicates the more optimal overall business performance such as the company's operating system, organizational culture, and company philosophy. Optimization of structural capital assets has an impact on investors to invest in the company. The findings revealed that profitability has a positive effect on firm value. The high ROA indicates an improvement in the rate of return and investment in earnings assets thereby driving up share prices and the firm's value.

Investors need to pay attention to the assets of the company they invest in. IC assets can be an important consideration

because they can help companies increase firm value. So investors need to consider the ability of the resources owned by the company, especially the knowledge, skills, mastery of technology, and the ability to build a network of the company's human resources. Future research needs to consider different types of industrial companies. It is necessary to add control variables which include firm size, debt, and ownership structure.

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