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The Effects of Intellectual Capital on Financial Performance in Banking Industries during COVID-19 Pandemic (Evidence from Indonesia)

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Abstract

Intellectual capital is becoming more influential in a competitive business environment, especially during the acceleration of digitalization transformation caused by the Coronavirus disease (COVID-19) pandemic. This study aims to examine the influence of intellectual capital and its components (HC, SC, and RC) on financial performance in profitability (ROA and ROE) and market attraction(MBV) of the banking industry in Indonesia during the COVID-19 pandemic. The study employs Ordinary Least Square (OLS) method to analyze data panel regression consisting of 50 samples from the Indonesia Stock Exchange ranging from 2020 to 2021. The results indicate that intellectual capital has positive and significant effects on company profitability. However, there is no support for interactions between intellectual capital and market attractiveness during the COVID-19 pandemic in Indonesia. Human capital efficiency (HCE) and capital employed efficiency (CEE) have the highest effect on company profitability. This study answers Soetanto and Lim's (2019) call to examine the Indonesian banking sector, while previous research on intellectual capital in financial performance primarily focused on the manufacturing sector. This research also enriches intellectual capital literature on the Covid-19 pandemic, especially in Indonesia.

Keywords
Intellectual capital, Profitability, Market attractiveness, COVID-19 pandemic, Banking industry

1. Introduction

In this 4.0 digital era, all human activities have been facilitated and supported by sophisticated technology. The evolution of digitalization has altered all aspects of people's daily lives, including the financial division. Wang et al. (2021) stated that the prevalence of innovation and technology in the financial sector is undeniable. One apparent impact is the use of data to improve product quality which data can be utilized as a bank asset to design a predictive analysis using today's technological sophistication. Research by Kimand Davidson (2004) reveals that high levels of Information Technology (IT) banks tend to lessen salary costs and improve market share and profitability. With that said, the efficient usage of IT strategy can enhance the bank's competitive advantage. The impact of IT continues to influence bank performance in this modern era where technology is essential in the banking industry, especially in dynamic scenarios. Roy and Thangaraj's (2020) research outcome indicate that prudent spending on technology will boost sales, grow employee efficiency, decrease operating costs and build a cordial competitive environment within the banks.

The spread of the Corona Virus Disease 2019 (COVID-19) pandemic throughout the world also has an impact on accelerating digital optimization. Consequently, the banking industry must adapt to the transition of new partnerships or collaborations in the digital economy ecosystem by modifying business models and technologies accordant to customer demands. Companies must be able to take advantage of their capabilities and assets to respond to this need. This feat is achievable by optimizing the intellectual capital owned by the company. Stewart (1994) defines *intellectual capital* as intangible resources in the form of knowledge available to the company that ultimately brings future economic benefits by developing innovation and competitive advantage in the company's field of business. One study found that "Intangible resources such as R&D, relationships, skills, and innovation capacity, increasingly represent the foundation of competitive advantage of firms and superior business performance" (Lev et al., 2005). Therefore, good management of intangible assets and integrating these assets into the company's strategy will result in a more

competitive and innovative market. In addition, intangible assets management provides dexterity for companies to react to environmental changes (Castro et al., 2021).

Research by Soetanto and Liem (2019) finds that intellectual capital has a significant and positive effect on Indonesian companies throughout all industries except the banking and financial industry. This effect becomes more pronounced, especially in structural capital efficiency and capital employed efficiency to enhance profitability. The team also found an insignificant relationship to market attractiveness as the second independent variable. Weqar et al. (2020) further investigated the intellectual capital in 30 prominent companies in the Indian market and found that intellectual capital has a positive relationship with financial performance. This study also concludes that capital employed, and human capital efficiency were the vital elements. The influence of intellectual capital on financial performance strengthened with Rehman et al. (2021) research on banking industries. Rehman et al. (2021) also contribute to expanding intellectual capital awareness with research conducted on Islamic banks in Middle Asia, South Asia, and Southeast Asia. Their finding is consistent with Soetanto and Liem (2019) and Weqar et al. (2020), where intellectual capital has a significant and positive relationship with financial performance but focuses on structural and relational capital efficiency. Recently Xu et al. (2022) also participated in this study topic by studying Chinese and Pakistan banks during Pandemic COVID-19. Their study finds that intellectual capital still has a significant and positive effect on Chinese and Pakistan banks' profitability even during a pandemic. The top contributor is human capital efficiency. Based on previous research, it can conclude that intellectual capital is the company's asset drive to optimize financial performance in various industries. From the previous study, the researchers want to examine the effects of intellectual capital in Indonesia, especially in banking. industries due to the limited research of it. Does intellectual capital still can drive financial performance in the COVID-19 pandemic and can help banking industries survive in the new normal era? This study simultaneously expands on Soetanto and Liem (2019) and Xu et al. (2022) study by covering the banking industry in Indonesia during COVID-19. Concurrently this study satisfies one of Rehman et al. (2021) limitations by using samples of conventional banks in Indonesia. This study delivers an empirical contribution to the advancement of intellectual capital literature in Indonesia, especially in the banking industry during the pandemic. In praxis, this research contributes to the company's survival and excellence during the pandemic.

1.1 Objectives

This study aims to examine the effect of intellectual capital on financial performance in the banking industry in Indonesia, especially during the COVID-19 pandemic. The banking industry was selected as this study sample because it engages in the service sector, where most of its functional activities often involve interaction with consumers. The emergence of the COVID-19 pandemic has caused limitations in public mobilization or physical activity. Accordingly, it will affect the banking industry's function to a certain degree. Various studies have shown a positive and significant relationship between intellectual capital and profitability, so this study wanted to observe if this affinity changed during the COVID-19 pandemic for the banking industry in Indonesia. In addition to profitability (ROA and ROE), the financial performance in this study also includes market attractiveness (MBV) as the second variable, similar to the previous studies mentioned (Soetanto and Liem, 2019; Weqar et al., 2020; Rehman et al., 2021).

2. Literature Review and Hypothesis Development

2.1 Profitability and Market Attractiveness

Financial performance is one of the tools to measure a company's success, where it shows the company's efficiency and effectiveness in managing its resources to gain profit. In addition, financial performance provides necessary data for company value calculation using financial ratios (Abdel-Basset et al., 2020). The popular method of company worth appraisal is Return on Assets (ROA) and Return on Equity (ROE) for company profitability and Market to Book Value (MBV) for the attractiveness of investment in a company (Weqar et al., 2020). By measuring financial performance, Hirdinis (2019) stated that companies with good performance would increase the company value and indicate to stakeholders that the company has good prospects. Lukman and Tanuwijaya (2021) also support these statements by finding that financial performance and intellectual capital have a significant and positive relationship to firm value in the banking industry sector.

2.2 Intellectual Capital

The role of intellectual capital has developed along with the changing times. Stewart (1997) defines intellectual capital as all intelligent material, knowledge, experience, intellectual property, and information owned by a company to create wealth that can provide a competitive advantage. In this modern era, intellectual capital not exclusively creates wealth

and provides competitive advantages but also increases market trust, develops innovation within a company, and prolongs the sustainability of company business operations (Alvino et al., 2020). Although intellectual capital is also referred to as an intangible asset owned by a company. Of the various types of intangible assets, Stewart (1997) classifies *intellectual capital* into three main components, namely human capital (HC), structural capital (SC), and relational capital (RC). In brief, Stewart (1997) defines each element of intellectual capital as follows. Human capital is the cumulative knowledge and capability of company personnel. Structural capital is the core system of a company that distinguishes one company from another, such as company values, culture, management, and policies. Finally, relational capital is all relationships that a company owns, including all its internal and related external parties. Each brief explanation of intellectual capital elements signifies that intellectual capital is a substantial consolidated component of various intangible assets that is vital for every company to achieve its goals and gain a competitive advantage.

Pulic (1998) responds to the increasing awareness of intellectual capital importance by proposing a measurement model for intellectual capital named Value Added Intellectual Coefficient (VAIC), which until now is still considered the most widely used intellectual capital evaluation method. To formulate VAIC, one needs to totalize the value of human capital efficiency (HCE), structural capital efficiency (SCE), and capital employed efficiency (CEE). Through years of progression, Ulum et al. (2014) modified further Pulic's (1998) VAIC model by inserting the relational capital (RC) component of intellectual capital to complement the VAIC model. Ulum et al. (2014) calculate the value of marketing, sales, and advertising costs divided by added value to act as relational capital efficiency (RCE) proxy. Researchers Nimtrakoon (2015), Yao et al. (2019), and Xu and Lui (2020) also support this modification where they use the modified model to carry out their research for the reason that this model is more capable of producing an accurate measurement of intellectual capital.

2.3 Intellectual Capital Relationship with Financial Performance

The COVID-19 pandemic that has emerged in all corners of the world has had a significant effect on various sectors of human life. The development of digital technology is also accelerating with the limitations of physical contact. Thus the event has brought both positive and negative impacts depending on the business core of a sector. Based on research by Devi et al. (2020), one of the sectors in Indonesia that experienced a decline in liquidity and profitability ratios during the COVID-19 pandemic was the financial sector. Even with these conditions, Xu et al. (2022) research proves that intellectual capital still has a positive relationship with the banking companies' financial performance (ROA and ROE) in China and Pakistan. Apart from profitability, several researchers also include aspects of market attractiveness (MBV) in analyzing the influence of intellectual capital on overall financial performance. For example, Weqar et al. (2020) and Rehman et al. (2021) found that market attractiveness also has a positive and significant relationship with intellectual capital. On the one hand, some researchers argue otherwise, one of which is Soetanto and Liem (2019). Therefore, in developing a hypothesis, the financial performance variable is divided between the elements of profitability and market attractiveness to ensure this study can provide clear answers to whether Indonesian banking companies during the pandemic were capable improve their market attractiveness through intellectual capital.

In general, all researchers still agree that intellectual capital positively influences overall financial performance, even though market attractiveness has minority support. Xu and Lui (2020) and Rehman et al. (2021), found that company intellectual capital has a positive and significant impact on the market attractiveness (MBV) along with profitability (ROA and ROE). Alvino et al. (2020) state that efficient intellectual capital management can be recognized as a strategic resource to improve organizational performance and processes. Only with such management can a new business gain the advantages of intellectual capital. The research of Nimtrakoon (2015) and Lukman and Tanuwijaya (2021) also found the same conclusion, where intellectual capital has a positive relationship to financial performance, which leads to an increase in company value or company performance, especially in the banking industry sector. With the support of experts, the formulation of the hypothesis is as follows:

Hypothesis 1. Intellectual capital (MVAIC) has a positive effect on the profitability (ROA and ROE) of the banking industry in Indonesia

Hypothesis 2. Intellectual capital (MVAIC) has a positive effect on the market attractiveness (MBV) of the banking industry in Indonesia.

- Human Capital (HCE)

In running a business, a company needs to manage and develop its human resources to stay updated with the trends. According to Stovel and Bontis (2002), human capital is human resources that have the ability in the form of knowledge, experience, innovation, and capability to carry out their duties in achieving company goals efficiently and effectively. The parable of human capital is the limbs of a human body, which, if used correctly, will lead the company to a successful business it undertakes. The development of human capital would create a competitive advantage and generate profits in the company

Based on the research of Weqar et al. (2020) conducted on Indian companies, human capital has a positive relationship with overall financial performance (in this study, profitability and market attractiveness). Companies with high human capital values are capable generate more profits, so they are valued more highly in the market. Xu et al. (2022) strengthen the result by examining the impact of intellectual capital on banking profitability in China and Pakistan during the pandemic. They stated that human capital is the only effective component in generating profits in the samples, even during a pandemic outbreak. Other supporting research from Chowdhury et al. (2018), and Hamdan (2018) conclude that efficient organizational human capital improves the financial performance of business organizations because it is the most vital source of economic growth. In terms of market attractiveness, Bayraktaroglu et al. (2019) and Maditinos et al. (2011) found HCE as the only predictor of MB hence proving the effect HCE has on market attractiveness. In this regard, the human capital component proves to be capable of improving the company's financial performance because the capabilities possessed by employees encourage organizational development, so the formulation of the hypothesis is as follows:

Hypothesis 1(a). Human capital (HCE) has a positive effect on the profitability (ROA and ROE) of the banking industry in Indonesia

Hypothesis 2(a). Human capital (HCE) has a positive effect on the market attractiveness (MBV) of the banking industry in Indonesia

- Structural Capital (SCE)

As important as human capital, structural capital is the basic foundation of a company that gives it unique characteristics from one company to another. If human capital is a member of the company's movement, then structural capital is a corporate body that unites all personnel and aspects of the company to achieve common goals. Structural capital contains knowledge that always exists in the company and is non-human, such as company routines, procedures, systems, culture, and databases (Salim and Karyawati, 2013). According to Bontis et al. (2000), structural capital arises from organizational processes and values that can reflect the company's external and internal focus and add value to its renewal and development for the future. Companies that have good structural capital would be able to support human resources to continue to grow without being limited by failure.

Soetanto and Liem's research (2019) found that structural capital has a positive and significant relationship with the profitability of companies in Indonesia. Rehman et al. (2021) supports the finding that structural capital acts as one of the main factors in improving the performance of Islamic banks. Therefore, investing in bank hierarchies and structures that promote innovation and development will play an essential key in bank profitability growth. Weqar et al. (2020) also found the same conclusion, where companies utilize their structural capital to generate higher company profitability. Furthermore, Smriti and Das's findings (2018) support that SCE is a significant contributor to financial performance, especially in sales growth and company market value. From previous research above, structural capital can improve the company's financial performance because investment in the company's structure will increase the company's profitability, so the formulation of the hypothesis is as follows:

Hypothesis 1(b). Structural capital (SCE) has a positive effect on the profitability (ROA and ROE) of the banking industry in Indonesia

Hypothesis 2(b). Structural capital (SCE) has a positive effect on the market attractiveness (MBV) of the banking industry in Indonesia

- Relational Capital (RCE)

Relational capital focuses on the company's relationship with its external parties in contrast to human capital and structural capital, which focuses on its internal parties. In running a business, companies certainly need to establish good relationships with their stakeholders to keep business operations smoothly (Serrat, 2017). According to Oppong and Pattanayak (2019), relational capital is the knowledge embedded in the company's relationships with shareholders, suppliers, industry associations, and other stakeholders to create value in the market. In the banking industry, relational

capital is a capital that requires daily management for the bank to operate serving its customers. The research of Rochmadhona et al. (2018) mentions that one of the necessary capabilities of bank companies to remain sustainable lies in their ability to acquire customers.

Research by Rehman et al. (2021), which focuses on Islamic banks, argues that relational capital is the main factor in improving the banks' performance besides structural capital. They found that RCE had a positive and significant relationship with profitability and market valuation, respectively represented by ROA and Tobin's q. A bank with unique resources and strong relationships will help the bank build a competitive advantage and generate high bank value. Support from Xu and Wang's (2018) research on manufacturing companies in South Korea found that relational capital is a component that has a positive and most significant effect compared to other intellectual capital components tested on the company's financial performance and sustainable growth. Thus, companies, especially banks, must maintain close relationships with their suppliers and customers to build a reputation and maintain customer loyalty. In this regard, the relational capital component improves the company's financial performance. This statement is true because, through close relationships with stakeholders, the company can improve its reputation and loyalty so that its business activities can be sustainable. Based on this discussion, the formulation of the hypothesis is as follows:
Hypothesis 1(c). Relational capital (RCE) has a positive effect on the profitability (ROA and ROE) of the banking industry in Indonesia
Hypothesis 2(c). Relational capital (RCE) has a positive effect on the market attractiveness (MBV) of the banking industry in Indonesia

- Capital Employed (CEE)

In contrast to the intellectual capital component, capital employed usually means company tangible assets used to generate profits. Unlike the intellectual capital component, capital employed long before Stewart (1997) popularized intellectual capital has become the primary source to determine a business's level of success. Pulic (2004) explains that capital employed is still needed to achieve efficient value-creating resources, meaning companies could not rely solely on intellectual capital to create value. Accordingly, intellectual capital and capital employed enrich one another by combining usage to produce competitive, efficient, and sustainable value-creation resources.

Soetanto and Liem (2019) and Weqar et al. (2020) concluded that the capital employed efficiency with one of three components of intellectual capital as the most prominent component affecting overall financial performance. In both cases, employed capital influences overall company financial performance to the same extent as one of the components of intellectual capital. Moreover, Firer and Williams (2003) and Smriti and Das (2018) find that both South Africa and India emphasize physical capital assets in increasing their market valuation rather than intellectual capital. Thus, it supports employed capital as tangible assets hold a vital role in measuring intellectual capital. Based on this discussion, the formulation of the hypothesis is as follows:
Hypothesis 1(d). Capital used (CEE) has a positive effect on the profitability (ROA and ROE) of the banking industry in Indonesia
Hypothesis 2(d). Capital used (CEE) has a positive effect on the market attractiveness (MBV) of the banking industry in Indonesia

3. Methodology

3.1 Data Collection

This study uses 50 data from Indonesian banking companies. The data was taken when the COVID-19 pandemic occurred in Indonesia, from 2020 until 2021. The data sources are from the Indonesian Stock Exchange, Yahoo Finance, and the sample-owned website. This study uses purposive sampling, one of the non-random sampling techniques where researchers determine samples by establishing unique characteristics following the purpose of the study. This type of sampling can describe the best subject that provides the information desired by the researcher (Turner, 2020).

3.2 Dependent Variables

Dependent variables are the main interest of the study or factors that apply in investigations (Sekaran, 2006). Following previous intellectual capital research, two ratio indicators represent financial performance, namely, the

profitability ratio consisting of Return on Assets (ROA) and Return on Equity (ROE) and the market ratio consisting of Market to Book Value (MBV) (Weqar et al., 2020).

- Return on Asset (ROA), measures the profits a company earns from the investment results of its assets. The function of ROA is to explain how efficient the company's management is in using assets to generate revenue (Weygandt et al., 2018). ROA can be calculated by:

$$\text{Return on Asset} = \text{Net Income} / \text{Total Asset}$$

- Return on Equity (ROE), measures a company's profitability against its equity by comparing the business profits with its total equity. The function of ROE is to show how much profit the company earns for the amount of equity invested (Weygandt et al., 2018). ROE can be calculated by:

$$\text{Return on Equity} = \text{Net Income} / \text{Shareholders Equity}$$

- Market to Book Value (MBV), market value signifies the value of a company's issued shares and determines the necessary payment to acquire it at any given time (Chen et al., 2005; Gan et al., 2008; Soetanto et al., 2019). In this study, the MBV ratio substitutes market value because it evaluates a company's current market value relative to its book value. MBV can be calculated by:

$$\text{Market to Book Value} = \text{Market Value} / \text{Book Value}$$
$$\text{Market Value} = \text{Number of Shares x Stock Price at the End of Years}$$
$$\text{Book Value} = \text{Stockholders Equity} - \text{Paid in Capital of Preferred Stocks}$$

3.3 Control Variables

This study uses two variable controls to help authors create more accurate data by limiting the number of factors affecting the dependent variable (Bayer et al., 2018). The variable controls are firm size and leverage.

- Firm Size is the scale of a company's operation, which some scholars determine the value by a natural log of the company's total assets. Firm size can also control the effect of size on wealth creation through economies of scale, bargaining power, and monopoly (Ghosh et al., 2009). Based on previous research, Weqar et al. (2020) firm size can be calculated using the formula:

$$\text{Firms Size} = \text{Log}(\text{Total Asset})$$

- Leverage aims to know the company's ability to pay its operational debt with the company's equity (Rehman et al., 2021). Following Rehman et al. (2021) research, this study's leverage was calculated using debt to equity ratio. This leverage can be calculated using the formula:

$$\text{Debt to Equity Ratio} = \text{Total Liabilities} / \text{Total Equity}$$

3.4 Independent Variables

Independent variables are the variables that affect dependent variables either positively or negatively (Sekaran, 2006). This study uses modified intellectual capital calculations by following previous studies done by Ulum et al. (2014), Nimtrakoon (2015), and Soetanto et al. (2019). Modified VAIC (MVAIC) acts as the proxy for intellectual capital, which is the sum-up of human capital efficiency (HCE), structural capital efficiency (SCE), relational capital efficiency (RCE), and capital employed efficiency (CEE) (Ulum et al., 2014). Based on research from (Ulum et al., 2014; Nimtrakoon, 2015; Soetanto et al., 2019); the MVAIC model can be calculated using the formula:

$$\text{MVAIC} = \text{HCE} + \text{SCE} + \text{RCE} + \text{CEE}$$

The procedure starts with the calculation of value-added (VA) and then continues to each component of intellectual capital as follows:

$$\text{Value Added} = \text{Total Revenues} - \text{Total Expenses}$$

Total revenues obtain from all company operating income in providing products and services. In contrast, total expenses are all expenses (including depreciation and amortization) except employee costs, interests, taxes, and dividends (Chen et al., 2005; Clarke et al., 2011; Nimtrakoon, 2015; Soetanto et al., 2019).

- Human capital efficiency (HCE) shows the capital quantity (VA) the company spends in paying for employee productivity costs or human capital (HC) in short. Said costs obtain from salaries, wages, other remuneration, and training/development costs. A high value of HCE means human resources utilized in the company are more effective in creating company value than a lower value of HCE (Chen et al., 2005; Clarke et al., 2011; Soetanto et al., 2019).

$$\text{Human Capital Efficiency} = \text{Value Added} / \text{Human Capital}$$

- Based on the methods of researchers Clarke et al. (2011) and Joshi et al. (2013), structural capital efficiency (SCE) shows the amount of value-added produced by structural capital (SC). According to Soetanto et al. (2019) research, the calculation of structural capital efficiency and structural capital formulate below.

$$\text{Structural Capital} = \text{Value Added} - \text{Human Capital}$$
$$\text{Structural Capital Efficeiency} = \text{Structural Capital} / \text{Value Added}$$

- Capital employee efficiency (CEE) use to measure a company's tangible assets (physical and financial capital) invested in added value and concurrently measure the efficiency of added value (Clarke et al., 2011; Soetanto and Liem, 2019).

$$\text{Capital Employee} = \text{Total Assets} - \text{Intangible Assets}$$
$$\text{Capital Employee Efficiency} = \text{Value Added} / \text{Capital Employee}$$

- Rational capital efficiency (RCE) represents a company's ability to build relationships with its stakeholders and other external parties. The substitute for relational capital (RC) is marketing, selling, and advertising cost (Soetanto & Liem, 2019).

$$\text{Relational Captial Efficiency} = \text{Relational Capital} / \text{Value Added}$$

3.5 Regression Model

The regression model to test the hypothesis of this study can be developed as follows:
Model 1:

(1) $ROA_{it} = \alpha + \beta_1 MVAIC_{it} + \beta_2 Size_{it} + \beta_3 DER_{it} + \varepsilon_{it}$
(3) $ROE_{it} = \alpha + \beta_1 MVAIC_{it} + \beta_2 Size_{it} + \beta_3 DER_{it} + \varepsilon_{it}$
(5) $MBV_{it} = \alpha + \beta_1 MVAIC_{it} + \beta_2 Size_{it} + \beta_3 DER_{it} + \varepsilon_{it}$

Model 2:

(2) $ROA_{it} = \alpha + \beta_4 HCE_{it} + \beta_5 SCE_{it} + \beta_6 RCE_{it} + \beta_7 CEE_{it} + \beta_2 Size_{it} + \beta_3 DER_{it} + \varepsilon_{it}$
(4) $ROE_{it} = \alpha + \beta_4 HCE_{it} + \beta_5 SCE_{it} + \beta_6 RCE_{it} + \beta_7 CEE_{it} + \beta_2 Size_{it} + \beta_3 DER_{it} + \varepsilon_{it}$
(6) $MBV_{it} = \alpha + \beta_4 HCE_{it} + \beta_5 SCE_{it} + \beta_6 RCE_{it} + \beta_7 CEE_{it} + \beta_2 Size_{it} + \beta_3 DER_{it} + \varepsilon_{it}$

Notes:

α = Constant	i = Bank
β_1 - β_7 = Regression Coefficient	t = Period
ε = Error	

Model 1 will look at the relationship between intellectual capital (MVAIC) to profitability (ROA and ROE) and market value (MBV) of banking companies in Indonesia which will test hypotheses 1 and 2. While model 2 will look at the relationship between intellectual capital component (HCE, SCE, RCE, and CEE) to profitability (ROA and ROE) and market value (MBV) of banking companies in Indonesia, which will test hypothesis 1(a), 1(b), 1(c), and 1(d) along with 2(a), 2(b), 2(c), and 2(d). The gathered data will be input into each model and processed using panel data regression. The reason behind panel data regression usage is that this study wants to form a predictive model on combination data of cross-sectional data and time-series data. In short, the regression analyzes multiple subjects at different times. This study will use Ordinary Least Square (OLS) to estimate the unknown parameters in the panel data regression model (Vishnu & Gupta, 2014).

4. Results and Discussion

4.1 Descriptive Statistic

Table 1 Descriptive Statistic of Variables

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	50	-.089	.033	.00487	.019541
ROE	50	-.392	.209	.04259	.097217
MBV	50	.001	3.083	1.07627	.661415
SIZE	50	6.727	13.204	8.51764	1.532634
DER	50	1.488	17.071	5.83949	3.229532
MVAIC	50	-3.830	6.029	2.65260	1.807406

HCE	50	-3.550	4.938	1.88850	1.324444
SCE	50	-4.548	6.201	.46863	1.258545
CEE	50	-.063	.057	.02469	.019270
RCE	50	-9.839	2.969	.26966	1.562116
Valid N (listwise)	50				

Table 1 shows a variant result related to intellectual capital maximum and minimum value for MVAIC and the component. The study finds Bank Mega Tbk has a maximum value of MVAIC and PT Bank Pembangunan Daerah Banten Tbk has its minimum value. As for the HCE variable, Bank Mega Tbk still holds the maximum value position and PT Bank QNB Indonesia Tbk has the minimum value position. Meanwhile, in the SCE variable case, PT Bank Pembangunan Daerah Banten Tbk has the maximum value position and Bank Artha Graha Internasional Tbk has the minimum value position. Lastly, for the RCE variable, Bank Artha Graha Internasional Tbk holds the maximum value position and PT Bank Pembangunan Daerah Banten Tbk has the minimum value position. In addition to calculating MVAIC, the CEE variable has PT Bank Mestika Dharma Tbk holding the maximum value and PT Bank QNB Indonesia Tbk holding the minimum value position.

In the dependent variable section, Table 1 shows ROA average value is 0.487%, meaning that Indonesian banking companies have an average benefit of 0.487% from their return assets during the pandemic. ROA has PT Bank Mestika Dharma Tbk holds the maximum value while PT Bank QNB Indonesia Tbk holds the minimum value position. ROE average value is 4.259%, meaning that Indonesian banking companies have an average benefit of 4.259% from their return equity during the pandemic. ROE has Bank Mega Tbk holds the maximum value while PT Bank QNB Internasional Tbk holds the minimum value. For the MBV variable, Bank Mega Tbk holds the maximum value position. Meanwhile, PT Bank Maspion Indonesia Tbk owns the minimum value position.

4.2 Results and Discussion

This study uses the Ordinary Least Square (OLS) method. In determining the level of influence of the independent variable on the dependent variable, this study uses the method of Gujarati and Porter (2009). In the Coefficient of Determination Test (R2), if the Adjusted R2 value >70% is said to have a strong influence.

Table 2 Regression Result

	ROA		ROE		MBV	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
N	50		50		50	
Adjusted R^2	0.673	0.942	0.714	0.943	-0.003	0.012
F-Statistic	34.621	134.040	41.800	136.821	0.947	1.096
Significance	0.000[b]	0.000[b]	0.000[b]	0.000[b]	0.426[b]	0.380[b]
(Constant)	-0.033	-0.27	-0.152	-0.119	0.746	0.796
T-tabel	2.01290	2.01669	2.01290	2.01669	2.01290	2.01669
F-Tabel	2,80	2.31	2,80	2.31	2,80	2.31
Model 1	β	*t-stat*	β	*t-stat*	β	*t-stat*
Independent variable						
MVAIC	0.008	8.848	0.041	9.298	0.081	1.448
Control Variable						
SIZE	0.002	1.783	0.005	0.889	0.020	0.295
DER	0.000	1.102	0.008	3.349	-0.009	-0.302
Model 2	β	*t-stat*	β	*t-stat*	β	*t-stat*
Independent variable						
HCE	0.006	5.890	0.025	4.981	0.022	0.159
SCE	-0.002	-2.157	-0.002	-0.421	0.074	0.468
CEE	0.601	8.631	3.100	9.033	9.912	1.017
RCE	-0.001	-0.917	0.001	0.287	-0.23	-0.174
Control Variable						

SIZE	0.000	0.729	-0.002	-0.632	-0.001	-0.013
DER	0.001	3.277	0.009	8.454	-0.005	-0.155

Notes: Indicate significance at 5% level respectively

From Table 2 Regression Result, two regression models explain this research. Model 1 is a model that explains the effect of MVAIC on the bank's financial performance (ROA, ROE, and MBV). While Model 2 is a model that explains the influence of each element of intellectual capital on the financial performance(ROA, ROE, and MBV) of the banking company. T-test results for model 1 in Table 2, MVAIC has a positive effect on ROA and ROE. This is based on the value of "t-stat" being greater than "T-table." However, MVAIC does not affect MBV because the t-stat value is smaller than T-table (1,448<2,01290). In the results of the F test model 1, MVAIC has a positive effect on profitability (ROA and ROE). This is based on the value of F-statistic > F-Table. However, for MBV, the F-Test hypothesis is rejected because the F-statistic value < F-Table. In the Coefficient of Determination Test (Adjusted R Square), it can be concluded that MVAIC has a large enough influence on ROE and has a good effect on ROA. Meanwhile, it hurts MBV. It is so because Adjusted R Square MVAIC to ROA and ROE are 67.3% and 71.4%, while MVAIC to MBV is -0.3%. Thus, it can be said that H1 is accepted as MVAIC affects company profitability (ROA and ROE), and H2 is rejected because MVAIC does not affect market attractiveness (MBV).

In model 2, based on the results of the T-test variable, HCE and CEE have a positive effect on ROA and ROE with t-stat values of ROA (5,890 and 8,631) and ROE (4,981 and 9,033) but do not affect market attractiveness (MBV). Banking companies in Indonesia because of the value of t-stat<T-table (0.159<2.01669 and 1.017<2.01669). On the other hand, SCE and RCE do not significantly affect overall financial performance (ROA, ROE, and MBV) during the COVID-19 pandemic. SCE showed a negative effect on ROA (t-stat = -2.157) and ROE (t-stat = -0.421) and RCE showed a negative effect on ROA (t-stat = -0.917) and MBV (t-stat = -0.174). For the F test, IC elements (HCE, SCE, CEE, and RCE) significantly affect ROA and ROE but do not affect MBV. In the Coefficient of Determination Test (Adjusted R Square), HCE, SCE, CEE, and RCE have a very large influence on ROA and ROE, with Adjusted R Square values of 94.2% and 94.3%, respectively. The same thing happened to HCE, SCE, CEE, and RCE did not sufficiently affect MBV with an Adjusted R Square value of 1.2%. Thus, H1a and H1c were accepted, while H1b and H1d were rejected. H1a and H1c are accepted with the stipulation that HCE and CEE affect profitability (ROA and ROE), and H2a, H2b, H2c, and H2 are rejected.

This study found that MVAIC affected VAIC. The result is that HCE and CEE are IC components that significantly affect ROA and ROE. The results of this study are the same as those of previous studies (Xu et al., 2022; Weqar et al., 2020; Castro et al., 2020; Soetanto et al., 2019). Companies with a high HC value can generate more profits due to the efficiency of human capital. Previous research stated that efficient and productive human capital improves the financial performance of business organizations in the long term. This result is also in line with Soetanto and Liem (2019), who found that tangible assets (CE) play an important role during this pandemic. In the new normal era, the collaboration of human capital (HC) and tangible asset (CE) is a vital part that a company needs. Digitalization and information technology transformation can be implemented well if the company has efficient HC and CE. This reason strengthens by Maji and Goswami (2016), who says that tangible and intangible assets have a role in achieving optimal company performance. Without employee contributions, the innovation and technology transformation did not happen. CEE is the basic resource and transforming well through employee (HCE) contribution.

Our study found no effect between SCE and RCE on ROA and ROE. This result is similar to Soetanto et al. (2019) but contrary to Weqar et al. (2020). SCE does not affect ROA and ROE. This result means that bank companies in Indonesia do not utilize their structural resources to generate profitability. This situation explains that the company cannot optimize its ability to create value-added. As we know, in emerging markets, physical capital cannot be ruled out as a major contributor to increasing the firm's value creation (Firer and Williams, 2003). Soetanto et al. (2019) also said that physical/financial capital still has a big role than structured capital in Indonesia. On the other hand, RCE does not affect ROA and ROE, which means that banking companies in Indonesia cannot increase profitability from external relations. This result can be explained that during the COVID-19 pandemic, the role of external relations may be less than before the pandemic due to limited access to customers, direct selling, advertising, and other external relations.

Another discussion from the findings is that IC does not affect the market attractiveness during the pandemic. This result shows that the IC component could not encourage market attractiveness. This result is in line with Soetanto et

al. (2019); Weqar et al. (2020), and Castro et al. (2020), which show that IC has a more significant effect on profitability than market ratios. Several reasons can explain this result. First, information on intellectual capital in Indonesia is voluntary (Schiemann et al., 2015). The findings of Soetanto and Liem (2019) also support the statement that the Indonesian Accounting Standards (PSAK 19) prohibit the recognition of intangible assets that do not have a definite future benefit to avoid asymmetric information. Therefore, investors lack information on the value or efficiency of IC investments, causing them to be unable to see the contribution of intellectual capital to value creation in the company. According to Castro et al. (2020), Market value cannot be compared with IC because not all stocks have the same trading level. This reason is also supported by Firer and Williams (2003) by saying, "developing markets place greater trust and value intangible assets than intangible assets (intellectual capital)." However, the company's human resources (HR) still play an essential role in gaining profitability and developing a competitive advantage.

5. Conclusion

This study discusses the relationship between intellectual capital (IC) and its components on financial performance in terms of profitability (ROA and ROE) and market attractiveness (MBV) to banking companies in Indonesia. The contribution of this research is very important for readers and the management of banking companies. The current COVID-19 crisis affects all the world's economies as all corporate resources suffer. Therefore, this study uses two models to examine the impact of IC as a whole and components of IC on profitability ratios and market ratios of bank companies in Indonesia. We are using 50 data obtained from the financial statements of banking companies during COVID-19 (2020-2021). This study also uses bank size and leverage as control variables to provide a strong conclusion.

This study provides insight for the managers of the banking industry by showing the importance of intellectual capital on financial performance during the pandemic. IC has a vital role in increasing company profitability during the pandemic. This is evidenced by IC, which always maintains a positive impact despite facing shocks from unexpected crises such as COVID-19. Good intellectual capital will maintain the bank's performance and competitive advantage, especially in the components of human capital (HC) and capital works (CE). Yarovaya et al. (2021) suggested that bank companies invest more in human resources so that banks' performance improvement and competitive advantage remain optimal even during the COVID-19 period, which causes limited available human resources (HR). Xu et al. (2022) strengthen by suggesting that banking companies investing in HC, such as Human Skills and Competencies, can improve service quality, diversify operations, and improve overall financial efficiency. Bank companies can do several ways to invest in employees (HC) through training and workshops to provide long-term benefits in the future. As the agile industries, banking industries should invest in their tangible assets (CE) and intangible assets like human capital (HC). This is supported by Firer and William (2003), "in developing countries, the role of tangible assets cannot be ruled out as a major contributor in creating corporate value." By investing in HC and CE. Indonesian companies can take advantage of the full potential of HC and CE in creating innovations and transforming technology for consumers during the pandemic, such as contactless transactions, mobile banking digitalization, online customer support, easy access transactions, and other banking products innovation.

This research has a few limitations. First, not all Indonesian banking company data was taken in this research due to the limited of their 2021's financial statement at the end of March (the period that data was taken). Future research can use the entire company and other financial institutions to enrich intellectual capital literature. Second, this study uses data during the pandemic only. Other research can examine the comparison of IC during COVID-19 and in the non-COVID-19 period to expand the discussion about IC.

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