

The Components of Intellectual Capital and Firm Performance: An Investigation of Indonesian Banking Companies

Agustina Dian Putri Manurung¹, Isfenti Sadalia², Syahyunan³

¹Department of Magister of Management Science, Universitas Sumatera Utara, Indonesia

²Department of Magister of Management Science, Universitas Sumatera Utara, Indonesia

³Department of Magister of Management Science, Universitas Sumatera Utara, Indonesia.

Abstract

This paper investigates whether intellectual capital components (capital employed, human capital, structural capital) have meaningful information on firm performance. 39 listed Indonesian banking companies make up the full sample, which was chosen between 2017 and 2021 based on a number of factors. This study is quantitative, employing panel data regression as the research model and E-Views as the testing tool. Additionally, we discovered a strong detrimental impact of VACA on firm performance as well as a big favorable impact of VAHU. However, we were unable to demonstrate the impact of STVA on firm performance in our study. Based on our research, we advise managers to enhance their management of the company's financial resources and its people resources, both of which will benefit the business in the long run.

Keyword: capital employed; firm performance; human capital; intellectual capital; structural capital

1. Introduction

After the industrial revolution 4.0, industry 5.0 is now upon us, requiring us to make significant changes in a number of different areas. According to Wernerfelt's resource-based view, businesses can achieve strong financial performance and competitive advantage by owning, managing, and employing crucial strategic assets (tangible and intangible assets) (Dekrita, 2021).

Business actors now understand that competition lies not only in their financial capabilities but also in their information system capabilities, innovation, and management of their resources (physical resources and human resources) (Todingbua, 2022). This resource is often referred to as intellectual capital. According to Bukh et al., intellectual capital refers to knowledge resources in the form of staff members, clients, procedures, or technology that may be employed in the process of generating value for the business (Priatna & Limakrisna, 2021).

In 2021, the OJK in Indonesia published a new regulation emphasizing the value of intellectual capital for all banks. Chapter IV, Article 23, of POJK Number 12/POJK.03/2021 contains this law. The effectiveness of human capital, capital employed, and structural capital all have an impact on measuring intellectual capital (Silalahi, 2021). The average value of the three parts of intellectual capital between 2017 and 2021 is as follows:

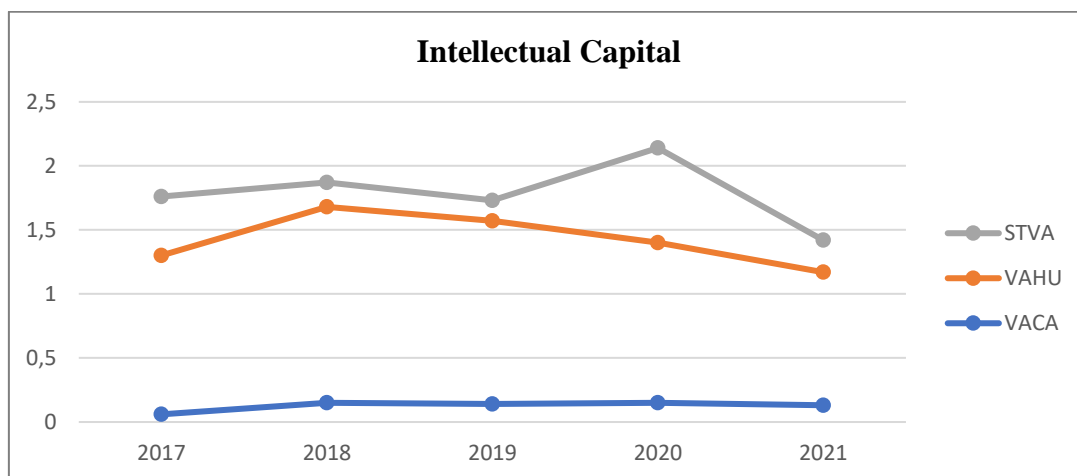


Figure 1. Each Component of Intellectual Capital's Average Value

According to the three components of intellectual capital shown in Figure 1, there has been a drop in intellectual capital in Indonesian banking, particularly in terms of human capital (VAHU) and structural capital (STVA). The presence of intellectual capital enables organizations to develop additional value in order to improve company performance, and if company performance improves, the market will respond by boosting company value (Putri & Miftah, 2021). The drop in the value of intellectual capital in Figure 1 implies that the corporation has not been successful in managing and exploiting corporate resources. If this pattern continues, the company's performance will suffer.

Gilbert claimed that the most suitable way to measure banking performance is to measure banks' ability to produce profits from the many operations they engage in (Syofyan, 2003).

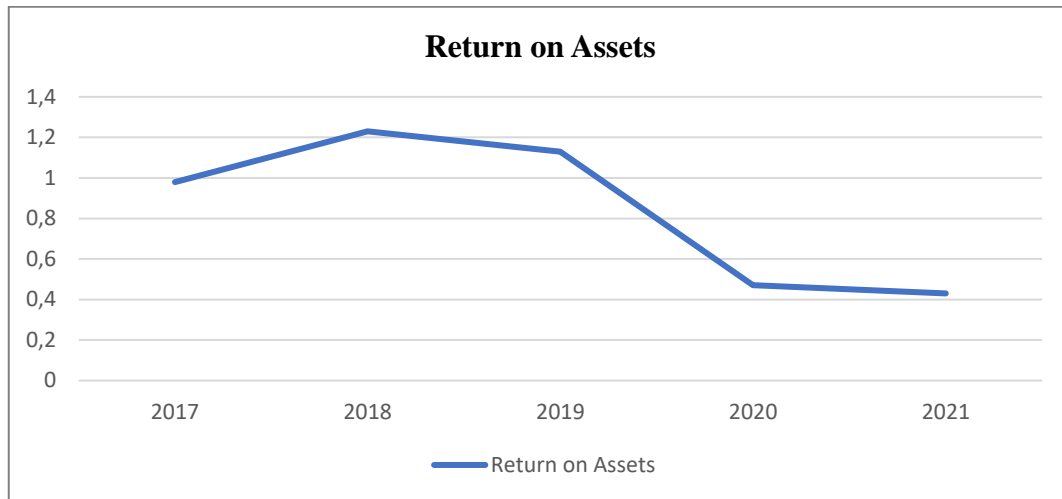


Figure 2. Average Value of Return on Assets

Measuring the success of the banking industry can be done using a profitability proxy (return on assets), which might represent the company's aims. According to Bank Indonesia Regulation Number 6/9/PBI/2004, the best criteria for banking return on assets is 1.5%.

According to Figure 2, there has been a decrease in corporate performance as assessed by return on assets between 2019 and 2021. This implies a decline in the company's ability to earn profits from its overall assets. Essentially, the higher the return on assets ratio, the better the company's success; conversely, the lower the return on assets ratio, the worse the company's performance.

According to this study, one of the causes of diminishing firm performance is a drop in intellectual capital. As a result, the purpose of this study is to discover and assess the impact of each component of intellectual capital on firm performance. It is intended that by doing this research, management will be able to better manage their resources.

2. Literature Review

2.1 Related Research

According to the resource-based view theory, resources must be unique and uncommon, non-replaceable, and ultimately beneficial to the organization in order to be considered a source of sustained competitive advantage. Intellectual capital may have both beneficial and negative effects on a company's success, according to theoretical study done by many researcher up to this point. Research was done in the Turkish banking industry by Usiu (2022) on the relationship between intellectual capital and firm performance. According to this study's conclusions, having intellectual capital enables firms to create additional value and boost business performance. Surjandari & Minanari (2019) carried out another study to investigate

the impact of three intellectual capital components on company performance (human resource efficiency, physical capital efficiency, and capital structure efficiency). They came to the conclusion that SCVA had a positive impact on company performance, but VAHU and VACA had no impact. Pratama et al. (2019) did research on ASEAN companies in the same year to examine the link between intellectual capital and business performance. They were successful in identifying a positive and significant association between the two.

Meanwhile, research continues to indicate the negative link between intellectual capital and firm performance. The study's findings on manufacturing enterprises in Indonesia were successful in demonstrating that VACA, a component of intellectual capital, had a negative impact on business performance (Endri, 2018). Other researchers managed to discover that SCE (structural capital efficiency) has a negative and significant effect on company performance when researching the influence of the three components of intellectual capital on the Saudi Stock Exchange (TADAUWL) (Buallay, 2017). Last but not least, studies on banking on the Indonesian stock exchange in Indonesia revealed a significant and negative association between intellectual capital and company performance (Crisnandani et al., 1992).

However, several researches have found that intellectual capital has no effect on firm performance. Puyra & Ratnadi (2021) failed to demonstrate the impact of intellectual capital on corporate performance in their study of Indonesian banking. Similarly, research on the Jakarta Islamic Index found no relationship between intellectual capital and corporate success (Prasojo & Hadinata, 2020). This is because not all companies fully disclose their intellectual capital components. The company has established and improved each skill in the hopes that users (relevant managers) will apply these competencies to improve company performance, which will ultimately boost the company's competitive edge. However, many managers have not maximized these competencies in accomplishing organizational goals.

2.2 Objective

This study aims to explore the connection between corporate performance in Indonesian banking and intellectual capital. This study is organized as follows: Based on the previously mentioned literature review, a hypothesis is constructed in the following section of Part 2. The research methodologies and data are presented in Section 3. Section 4 and Section 5 reports on the study's findings and discussion, and Section 6 provides the overall study's conclusion.

The following hypotheses have been created to test this research:

H₁: VACA, as a component of intellectual capital, has a positive and significant impact on firm performance.

H₂: VAHU, as a component of intellectual capital, has a positive and significant impact on firm performance.

H₃: STVA, as a component of intellectual capital, has a positive and significant impact on firm performance.

3. Material and Method

3.1 Design Study

All Indonesian banks that are listed on the Indonesian Stock Exchange make up the study's population. Purposive sampling was used in this study to choose the sample, and the following criteria were used: 1) banks listed on the Indonesian Stock Exchange; 2) banks that went public

before 2017; 3) banks that publish financial reports for 2017-2021; and 4) banks that issue shares between 2017 and 2021. Based on these sampling parameters, 39 banks were identified as meeting the criterion. The total amount of observation data in this study is 195, with 5 years of observation, namely 2017-2021. This is a panel data regression study, and the data will be processed using E-views software.

3.2 Data Analysis

This study examines the hypothesis regarding the impact of the independent variable (intellectual capital component) on company performance using panel data regression analytic methodologies and E-views software. Panel data in econometrics is the outcome of combining time series and cross section data with the following model:

$$ROA_{i,t} = \beta_0 + \beta_1 VACA_{i,t} + \beta_2 VAHU_{i,t} + \beta_3 STVA_{i,t} + \epsilon_{i,t}$$

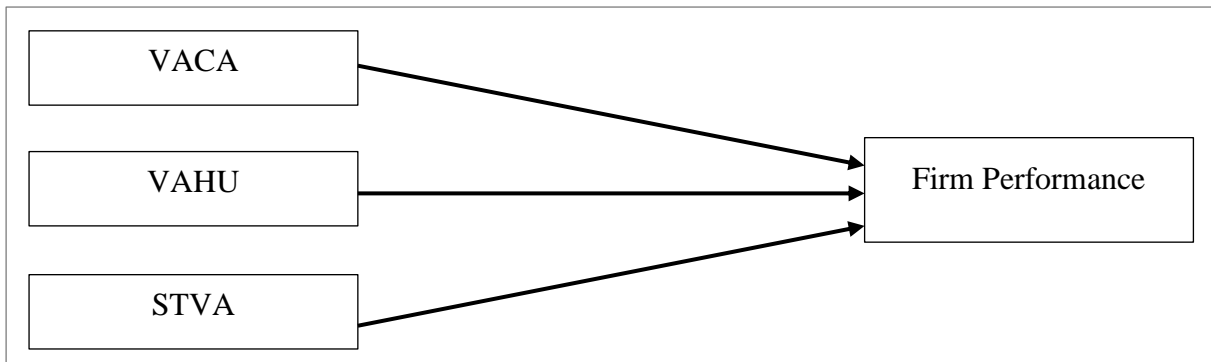


Figure 3. Research Model

4. Result

4.1 Descriptive Analysis

Table 1. Descriptive Statistics

	ROA	STVA	VACA	VAHU
Mean	0.857795	0.359790	0.124646	1.296272
Maximum	6.500000	5.966000	1.691000	4.030000
Minimum	-5.770000	-12.39200	-3.054000	-6.368000
Std. Dev.	2.114994	1.440161	0.300842	1.332906
Observations	195	195	195	195

Source: Data was processed with E-Views (2023)

The research utilizes openly accessible information obtained from the yearly reports of 39 Indonesian baking companies that were listed between 2017 and 2021. Our final unbalanced sample comprises 195 firm-year observations due to missing data throughout this period.

The components of intellectual capital, or the independent variables, are summarized in Tabel 1, along with the descriptive statistic for the dependent variable (ROA). The average ROA is 0.857. The average component intellectual capital is 0.359 for STVA, 0.124 for VACA, and 1.296 for VAHU.

4.2 Selection of Panel Data Models

There are three modeling techniques available for estimating model parameters from panel data: CEM, FEM, and REM. The Chow Test is the first test performed when picking a model from E-Views panel data.

Table 2. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	8.140044	(38,153)	0.0000
Cross-section Chi-square	215.635482	38	0.0000

Source: Data was processed with E-Views (2023)

Since the probability value of the Chi-Square Cross section in Table 2 is $0.000 < 0.05$, the FEM model will be used in this study along with the Hausman test.

Table 3. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	18.013545	3	0.0004

Source: Data was processed with E-Views (2023)

Since the random cross-section probability value in Table 3 is $0.0004 < 0.05$, it can be concluded that FEM will be used in this study to evaluate the research hypothesis.

4.3 Hypothesis Testing with the FEM Model

Table 4. Coefficient of Determination

Cross-section fixed			
R-squared	0.884678	Mean dependent var	0.857795
Adjusted R-squared	0.853774	S.D. dependent var	2.114994
F-statistic	28.62721	Durbin-Watson stat	1.954098
Prob(F-statistic)	0.000000		

Source: Data was processed with E-Views (2023)

The dependent variable, corporate performance, has a data variation that can be explained by the independent variables in this study, the intellectual capital components (VACA, VAHU, and STVA), accounting for 88.46% of the variance. This is indicated by the R-Squared value in Table 4. The remaining 11.54% of data variances in company performance can be explained by other variables not included in this model.

Table 5. Hypothesis test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.304160	0.111202	-2.735211	0.0070
STVA	-0.042894	0.044776	-0.957972	0.3396
VACA	-1.043472	0.276326	-3.776236	0.0002
VAHU	1.008625	0.084775	11.89768	0.0000

Source: Data was processed with E-Views (2023)

Using the information in Table 5, the Fixed Effect Model regression model can be presented as follows:

$$ROA_{i,t} = -1.04VACA_{i,t} + 1.00VAHU_{i,t} - 0.04STVA_{i,t} + [CX=R]$$

With the following interpretation:

- The regression coefficient value for the VACA variable is -1.04. This value shows that if the other independent variables are constant, then every unit of VACA value will be followed by a decrease in company performance of -1.04. Prob value. VACA is $0.00 < 0.05$, which indicates that there is a significant influence between VACA and company performance. The findings of this study, however, contradict the research premise that VACA has a favorable and significant influence on firm performance.
- The regression coefficient value for the VAHU variable is 1.00. This value shows that if the other independent variables are constant, then each unit of VAHU value will be followed by an increase in company performance of 1.00. Prob value. VAHU is $0.00 < 0.05$, which indicates that there is a significant influence between VAHU and company performance. The findings of this study back up the research hypothesis, which claims that there is a favorable and significant relationship between VAHU and firm performance.
- The regression coefficient value for the STVA variable is -0.04. This value shows that if the other independent variables are constant, then each unit of STVA value will be followed by a decrease in company performance of -0.04. Prob value. STVA is $0.33 > 0.05$ which indicates that there is no significant influence between STVA and company performance. This research's hypothesis—that STVA had a favorable and significant impact on firm performance—was rejected by the study's findings.

5. Discussion

5.1 VACA on Firm Performance

The results of this study show that VACA, one of the components of intellectual capital, has a detrimental and substantial effect on company performance. This negative influence suggests that when companies use their capital adequacy (CA) or capital employed (CE), their performance as measured by ROA suffers. This occurred because numerous banks in the research sample had negative coefficient values, indicating that these banks were unable to properly utilize the company's resources (liabilities and equity).

This study's findings are consistent with those of studies Andika & Astini (2022) and Harianja (2015). The findings of this study, however, contradict those of Putri & Nurfauziah

(2019) and Devi et al. (2017), who discovered a favorable and substantial association between VACA and corporate performance.

5.2 VAHU on Firm Performance

According to the results of this study, VAHU has a favorable and significant effect on company performance as one of the components of intellectual capital. This positive influence implies that VAHU's added value as a core component of intellectual capital in the form of human capital will decide the scale of firm performance. Currently, the most pressing issue in banking is the competence of its human resources, as well as the difficulty of satisfying human resource needs, which continue to necessitate a large number of quality human resources. VAHU that is correctly managed will generate positive feedback to any company that uses it.

This findings are consistent with those of studies Gani (2022) and Heryustitriaspatri & Suzan (2019). The findings of this study, however, contradict those of Raphaela & Mulia (2022) and Saragih (2017), who discovered a negative and substantial association between VAHU and firm performance.

5.3 STVA on Firm Performance

The study's conclusions failed to demonstrate that STVA, one of the elements of intellectual capital, significantly and favorably affects corporate performance. These findings indicate that the company does not pay enough attention to the information system, infrastructure, procedures, and management strategies that support employee efforts to produce optimal performance, resulting in an employee's contribution to creating added value that is not optimal, which ultimately does not contribute to improving the company's financial performance.

This findings are consistent with those of studies Siregar & Fajrillah (2020) and Hati & Fansyuri (2019). This, however, contradicts the findings of researchers who discovered a favorable and significant association between STVA and corporate performance (Kurniawati et al., 2020). Furthermore, it contradicts the findings of researchers who discovered a negative and significant association between STVA and corporate performance (Olivia et al., 2021).

6. Conclusion, Implication, and Recommendation

Previous studies on various countries have highlighted the role of intellectual capital in corporate performance. The aim of this research is to examine how the performance of companies in the Banking Indonesia industry is affected by component intellectual capital. This study's sample includes of 39 firms in Indonesia from 2017 to 2021. Intellectual capital in Indonesian banking is comprised of three components: VACA, VAHU, and STVA.

Our empirical results demonstrate that, as determined by ROA, VACA is highly and negatively correlated with business success in Indonesian banking in the present year. We also find that, as measured by ROA, VAHU is positively and highly correlated with corporate performance in Indonesian banking this year. Nonetheless, in the current year, STVA has a minor and detrimental effect on company performance.

This study's findings have various managerial implications for Indonesian banks. For starters, banks have managed their human capital in such a way that it has a favorable impact on corporate performance. This finding is crucial and encouraging since it shows how much

intellectual capital affects a company's capacity to operate profitably and effectively. Second, because VAHU considerably and favorably affects Indonesian banking performance as a component of intellectual capital. As a result, expanding and amassing high levels of human resources must be further developed in order for Indonesian banking organizations to be more successful in the future. Banking organizations must constantly improve and perfect this type of intellectual capital to ensure long-term success.

This study examines how intellectual capital affects the performance of businesses. Subsequent studies ought to examine and probe the correlation between intellectual capital and other crucial facets of an organization, like capital structure, robust corporate governance, firm value, and corporate social responsibility. Moreover, only Indonesian financial firms are included in this study. Future empirical research should look into the efficiency of these other firm types as well, as many industries may differ in terms of their current efficiency level and other aspects that could affect the accumulation of intellectual capital.

7. References

- Andika, S., & Astini, D. (2022). Pengaruh Intellectual Capital terhadap Profitabilitas dalam Perspektif Syariah. *JAS (Jurnal Akuntansi Syariah)*, 6(2), 228-244. doi:<https://doi.org/10.46367/jas.v6i2.849>
- Buallay, A. M. (2017). The Relationship Between Intellectual Capital and Firm Performance. *Corporate Governance and Organizational Behavior Review*, 1(1), 32-41. doi:https://doi.org/10.22495/cgobr_v1_i1_p4
- Crisnandani, N., Rahmawati, I. Y., Tubastuvi, N., & Haryanto, T. (2021). The Effect of Intellectual Capital and Good Corporate Governance on Financial Performance in Banking Sector Registered in Indonesia Stock Exchange with Competitive Advantage as Intervening Variables for 2016-2019. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, 5(2), 412-424.
- Dekrita, Y. A. (2021). *Kinerja Keuangan Rumah Sakit Badan Layanan umum Daerah*. Pekalongan: PT. Nasya Expanding Management.
- Devi, B. E., Khairunnisa, & Budiono, E. (2017, January). The Influence of Intellectual Capital on The Company Financial Performance (Case Study on Company of Electronic, Automotive and Components Listed in Indonesian Stock Exchange (IDX) on Period 2011-2015). *Jurnal Akuntansi*, 3(2), 15-26.
- Endri. (2018). Impact of Intellectual Capital and Efficiency to the Profitability of Islamic Banking. *International Journal of Science and Research (IJSR)*, 7(7), 230-237. doi:[10.21275/ART20183394](https://doi.org/10.21275/ART20183394)
- Gani, P. (2022, Januari). Pengaruh Intellectual Capital Terhadap Kinerja Keuangan dan Nilai Perusahaan (Studi Pada Perusahaan Makanan dan Minuman Yang Terdaftar di BEI). *Owner: Riset & Jurnal Akuntansi*, 6(1), 518-529. doi:<https://doi.org/10.33395/owner.v6i1.613>
- Harianja, H. (2015). Analisis Value Added Sebagai Indikator Intellectual Capital Terhadap Kinerja Perbankan Di Indonesia. *Jurnal Ekonomi dan Keuangan*, 2(5), 1-17.

Hati, R. P., & Fansyuri, M. A. (2019, Desember). Intellectual Capital Influence on The Company's Financial Performance (Case study of Sub-sector Hotel companies listed on Indonesia Stock Exchange 2015-2018). *Measurement Jurnal Akuntansi*, 13(2), 93-101.

- Heryustitriaputri, A., & Suzan, L. (2019, Desember). Analisis Intellectual Capital dengan Metode Pengukuran Value Added Intellectual Coefficient (VAIC™) terhadap Kinerja Keuangan. *JASA (Jurnal Akuntansi, Audit dan Sistem Informasi Akuntansi)*, 3(3), 283-297.
- Kurniawati, H., Rasyid, R., & Setiawan, F. A. (2020, April). Pengaruh Intellectual Capital dan Ukuran Perusahaan terhadap Kinerja Keuangan Perusahaan. *Jurnal Muara Ilmu Ekonomi dan Bisnis*, 4(1), 64-76.
- Olivia, H., Athar, G. A., Nasution, T. A., & Hidayat, S. (2021, November). Kinerja Keuangan Perbankan Syariah: Tinjauan Dari Intellectual Capital Pada BNI Syariah. *Ekonomi, Keuangan, Investasi dan Syariah (EKUITAS)*, 3(2), 97-103. doi:10.47065/ekuitas.v3i2.1068
- Prasojo, & Hadinata, S. (2020). Intellectual Capital and Firm Performance: Empirical Evidence from the Jakarta Islamic Index. *Journal of Accounting Auditing and Business*, 3(2), 64-75.
- Pratama, B. C., Wibowo, H., & Innayah, M. N. (2019). Intellectual Capital and Firm Performance in ASEAN: The Role of Eesearch and Development. *Journal of Accounting and Investment*, 20(3), 236-250.
- Priatna, D. K., & Limakrisna, N. (2021). *Buku Referensi Intellectual Capital Management Building Your Employee Passion and Happiness*. Yogyakarta: Deepublish.
- Putra, I. N., & Ratnadi, N. M. (2021). Intellectual Capital and Its Disclosure on Firm Value: Evidence of Indonesian Banking Industries. *International Journal of Finance & Banking Studies*, 10(1), 86-95. doi:https://doi.org/10.20525/ijfbs.v10i1.1108
- Putri, A. S., & Miftah, D. (2021). Pengaruh Intellectual Capital, Leverage, Profitabilitas, dan Likuiditas terhadap Nilai Perusahaan. *Jurnal Kajian Akuntansi dan Bisnis Terkini*, 259-277.
- Putri, C. S., & Nurfauziah. (2019, September). Pengaruh Intellectual Capital, Rate of Growth of Intellectual Capital dan Pengungkapannya terhadap Kinerja Keuangan Perusahaan. *INOBI: Jurnal Inovasi Bisnis dan Manajemen Indonesia*, 2(4), 486-504.
- Raphaela, T., & Mulia, W. T. (2022). Pengaruh Modal Intelektual terhadap Kinerja Perusahaan. *Jurnal Ilmiah Mahasiswa Akuntansi*, 11(1), 13-24. doi:10.33508/jima.v11i1.3909
- Saragih, A. E. (2017, Maret). Pengaruh Intellectual Capital (Human Capital, Structural Capital Dan Customer Capital) terhadap Kinerja Perusahaan Manufaktur yang Terdaftar di Bursa Efek Indonesia. *JRAK*, 3(1), 1-24.
- Silalahi, E. M. (2021). *Buku Referensi Intellectual Capital Improve Your Employee Productivity And Performance*. Yogyakarta: Deepublish.
- Siregar, H., & Fajrillah. (2020, Juni). Pengaruh Intellectual Capital terhadap Kinerja Keuangan Perusahaan Di Indonesia. *Literasi Jurnal Bisnis dan Ekonom*, 2(1), 167-173.
- Surjandari, D. A., & Minanari, M. (2019, September). The Effect of Intellectual Capital, Firm Size and Capital Structure on Firm Performance, Evidence from Property Companies in Indonesia. *Jurnal Dinamika Akuntansi*, 11(2), 108-121. doi:https://doi.org/10.15294/jda.v11i2.20270
- Syofyan, S. (2003, April). Keputusan "Go Public" Hubungan dengan Kinerja Bank-Bank Swasta di Indonesia. *Media Riset Bisnis dan Manajemen*, 3(1), 75-97.

Todingbua, M. A. (2022). *Merebut Peluang Melalui Intellectual Capital*. Yogyakarta: Nas Media Pustaka.

Uslu, H. (2022). The Role of Intellectual Capital in Financial Development, Evidence from the Banking Sector of Turkey. *Competitiveness Review*, 32(2), 230-249. doi:<https://doi.org/10.1108/CR-06-2020-0084>