

How Can the Dimensions of Intellectual Capital Enhance Sustainability Performance? Evidence of Indonesia

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ABSTRACT

The aim of this research is to examine the extent to which the dimensions of intellectual capital can enhance sustainability performance in Indonesian manufacturing companies. This study utilized data from 174 manufacturing companies listed on the Indonesia Stock Exchange during the period of 2019-2021. The research employed the Multiple Linear Regression analysis method to analyze the data. The dimensions used to assess intellectual capital were Human Capital Efficiency, Structural Capital Efficiency, and Capital Employed Efficiency. Exploratory factor analysis was conducted to determine the impact of intellectual capital dimensions on sustainability performance. The research findings indicate that in the context of sustainability performance, the dimensions of intellectual capital, specifically human capital and capital employed, have a significant and positive impact. In other words, factors related to human resources and effective capital utilization make important contributions to achieving better sustainability performance. However, it should be noted that in the study, structural capital was not found to have a significant impact comparable to the other dimensions on sustainability performance. This suggests that the assessment and measurement of structural capital in companies may need to be improved or further developed to be more aligned with the measured aspects of sustainability performance..

Keywords: Capital Employed Efficiency, Human Capital Efficiency, Structural Capital Efficiency, Sustainability Performance



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INTRODUCTION

The current global economic activities are increasingly regarded as unsustainable due to the numerous negative impacts they generate (Büyüközkan & Karabulut, 2018). This is evident in the increasing environmental impact of the manufacturing industry. Specifically in Indonesia, it was reported that the country experienced a 4.13% growth in carbon emissions in 2019. The manufacturing industry is recognized as the second-largest contributor to emissions after the energy production industry, which has become a primary concern for academics and practitioners. This phenomenon highlights the need for serious actions to reduce the negative impacts of the

manufacturing industry on the environment, as industries often overlook the negative consequences on the environment and society while converting resources into products and services for financial gain. This can involve excessive use of natural resources, environmental pollution, labor exploitation, or social inequality. Therefore, it is crucial for organizations to go beyond a sole focus on financial aspects and adopt a strong commitment to business sustainability (Suki, Suki, Sharif, Afshan, & Rexhepi, 2022).

Business sustainability involves a strategy that integrates social, economic, and environmental principles into the business model. Companies that operate sustainably prioritize and implement environmental principles and responsible social behavior in every business decision, integrating them into their business strategies (Ogotu, El Archi, & Dávid, 2023). On a broader scale, social, environmental, and economic demands are considered the key pillars of sustainable development. Business sustainability is desired not only for ethical and moral reasons but also due to historical necessity. In the era of globalization and increasing competition, companies cannot overlook the importance of social and environmental aspects, which should be given equal priority as financial aspects. Meeting economic, social, and environmental goals can bring numerous benefits and enhance a company's competitiveness (Gross-Golacka, Kusterka-Jefmańska, & Jefmański, 2020; Yusliza et al., 2020). Companies that comply with the Global Reporting Initiative (GRI) in disclosing their sustainability performance have greater advantages (Yang, Zeng, & Xu, 2021). This is because these companies can reduce production costs, have greater opportunities to secure contracts or win tenders, especially from developed countries and environmentally-conscious local organizations. Additionally, they can avoid fines related to hazardous waste disposal and are preferred by financial institutions that prioritize sustainability.

Recently, literature has highlighted the potential of Intellectual Capital in addressing social and environmental challenges, consistently defining the role of organizations in the ecosystem of society. (Tonial, Cassol, Selig, & Giugliani, 2019). Mertins and Orth (2012) It states that intangible resources such as Intellectual Capital play a crucial role in the development of sustainable businesses. Previous researchers have argued that it is important for companies to effectively harness knowledge to achieve sustainability management and enhance their innovation capabilities. As a result, the management of Intellectual Capital has become increasingly important for forward-thinking companies. Previous studies have consistently shown a relationship between the contribution of Intellectual Capital and the financial performance of an organization. However, despite providing valuable insights, there is currently limited research specifically investigating whether Intellectual Capital also has a positive impact on non-financial performance, such as sustainability performance. (Lestari & Adhariani, 2022). The objective of this research is to examine the extent to which the impact of intellectual capital dimensions can enhance sustainability performance in manufacturing companies, as stated by Gross-Golacka et al. (2020) that Intellectual Capital is considered a valuable asset for a company and is key to achieving business sustainability. By presenting a number of practices related to Intellectual Capital and its dimensions, this research aims to contribute empirical evidence that the dimensions of Intellectual Capital can have a significant impact and improvement on the sustainability performance of companies.

The RBV (Resource-Based View) theory explains that Intellectual Capital is key to creating competitive advantage. In the knowledge-based era we are currently in, companies with strong Intellectual Capital will have a competitive edge over their rivals because Intellectual Capital serves as an asset for the organization. Intellectual Capital is vital in creating a sustainable competitive advantage for the company. As part of the company's resources, if managed effectively and efficiently, Intellectual Capital will be more capable of generating advantages in competition and sustainable performance. (Ana, Sulistiyo, & Prasetyo, 2021).

Previous research has been conducted by several researchers who have investigated the impact of Intellectual Capital on sustainability performance, particularly with a focus on issues related to human resources. Intellectual Capital can be seen as a driving factor for sustainable development at

the company level, which needs to be measured and implemented to enhance organizational value. It is considered as a creator of wealth and a driver of financial performance that generates competitive advantage and sustainability in a business context. Moreover, Intellectual Capital and corporate social responsibility (CSR) reporting are interrelated and mutually influenced as they respond to various demands or logics (Massaro, Dumay, Garlatti, & Dal Mas, 2018; Mertins & Orth, 2012; Pedrini, 2007; J. Xu & Wang, 2018; Yusoff, Omar, Zaman, & Samad, 2019).

Literature on Intellectual Capital encompasses various approaches, classifications, and methodologies. Some examples of literature that have extensively discussed the measurement and dimensions of Intellectual Capital include works such as (Edvinsson & Malone, 1997; Ienciu & Matis, 2014; Petty & Guthrie, 2000; Stewart, 1997; Sveiby, 1997). In the study of Intellectual Capital, there are three main dimensions, namely Human Capital, Structural Capital, and Capital Employed (Pulic, 1998). Therefore, in this research, that classification will be used.

Human Capital Efficiency

Human Capital, characterized as the intrinsic knowledge of individuals, is associated with the abilities, skills, experience, creativity, and innovation of employees (Edvinsson & Malone, 1997). In this context, organizations that have developed their human capital well can identify and exploit advantageous business opportunities more quickly and with higher success rates. Another perspective on human capital is that it is a combination of knowledge, skills, innovation, and capabilities of individual employees in carrying out their assigned tasks within a company. Additionally, human capital also encompasses the values, culture, and philosophy of the organization. However, human capital cannot be owned by the company (Bontis, 2001). Modal manusia dianggap sebagai aset tak berwujud yang paling signifikan dan berkontribusi pada peningkatan kepuasan karyawan serta kinerja perusahaan yang lebih baik (Allameh, 2018).

Structural Capital Efficiency

Bontis (2001) states that Structural Capital includes elements such as hardware, software, databases, organizational structures, patents, trademarks and everything else that is an organizational capability that supports employee productivity - in other words, everything that remains in the office when employees come home. Structural capital also involves customer capital, namely the relationships formed with key customers. In contrast to human capital, structural capital can be owned and so can management. However, an additional component in the definition of Structural Capital, which is referred to as culture, and also specifically mentions other components, namely Organizational Processes, Information Systems, and Intellectual Property proposed by (Lima & Antunes, 2011). In addition, structural capital assists organizations in managing processes and systems, which in turn enables the required technological knowledge and becomes organizational capabilities so that they are able to achieve higher sustainable performance (Jardon & Martos, 2012).

Capital Employed Efficiency (CEE)

Capital employed is a term used to refer to the total assets used by a company in the production process. This includes all forms of capital used, both human capital and physical capital such as equipment, buildings, machines, and so on. Capital employed is a concept related to productivity and efficient use of assets in achieving business goals (Pulic, 2004).

Based on the description above, there are 3 hypotheses proposed in this study as follows:

H1 : Human Capital Efficiency has a significant impact on the company's sustainability performance

H2 : Structural Capital Efficiency has a significant impact on the company's sustainability performance

H3 : Capital Employed Efficiency (CEE) has a significant impact on the company's sustainability performance

METHODS

Data and Samples

Data was collected from manufacturing companies for the 2019-2021 period which were listed on the Indonesia Stock Exchange, which is a financial report database for calculating independent variables and control variables. The ESG score, which reflects environmental, social and corporate governance performance, is comprehensively generated based on the Global Reporting Initiative (GRI) standards. In addition, to ensure the robustness and reliability of the data, we also use accurate and up-to-date information regarding company performance, which can be obtained through proper data issued by the Ministry of Environment and Forestry. The companies included in the research sample are companies that regularly report financial statements during the observation period. Companies listed on the Indonesian stock exchange in 2019 were excluded from the research sample. A total of 174 manufacturing companies are included in the sample criteria.

Variables and Methodology

The research analysis method used in this study is Multiple Linear Regression. Here's our empirical model to test the hypothesis of the relationship between Intellectual Capital and Sustainability Performance:

$$ESG_{it} = \alpha + \beta_1 HC_{it} + \beta_2 SC_{it} + \beta_3 CE_{it} + \beta_4 IC_{it} + \beta_5 XiSize_{it} + \beta_6 XiROA_{it} + \beta_7 XiLev_{it} + \beta_8 XiSales_{it} + \beta_9 Covid_{it} + \varepsilon$$

In this context, the companies and their respective years can be represented by using the subscript "i" for the company and the subscript "t" for the year. The independent variable is Intellectual Capital and its dimensions, and the dependent variable is the ESG score, Xi indicates the control variable used in this study.

Independent Variable

Pulic developed the Value Added Intellectual Coefficient (VAICTM) method starting in 1997. This method is designed to provide information about the efficiency of value creation from both physical assets and non-physical assets owned by companies. VAICTM is used as a tool to measure the performance of a company's Intellectual Capital. This approach is relatively simple and possible to do, because it uses the accounts contained in the company's financial statements as the basis (Ulum, 2013).

Dependent Variable

The main variable in our research focus is the ESG score which is based on the Global Reporting Initiative (GRI) standards. This ESG score is used as a central measure in our research to evaluate company performance in the environmental, social, and corporate governance areas.

Variabel Kontrol

In this study, the control variables used included company size, return on assets, leverage, and sales growth (Bae, El Ghoul, Gong, & Guedhami, 2021; Clarkson, Overell, & Chapple, 2011; Liu et al., 2015) these variables were chosen because they have the potential to affect sustainability performance. This research was conducted during the Covid-19 pandemic period, where companies reporting the impact of Covid-19 in their annual reports will be assessed using a dummy variable. This dummy variable indicates whether the company is affected (value 1) or not affected (value 0) by the Covid-19 pandemic.

Table 1. Variable Definitions

	Variabel	Definisi
Independen	HCE	value added dibagi total salaries and wages.
	SCE	structural capital dibagi value added
	CEE	value added dibagi book value of the net assets of company

Dependen Control	ESG	ESG Score
	Size	The natural logarithm of total assets
	ROA	Net income before extraordinary items/preferred dividends, divided by total assets.
	Lev	Total debts divided by total assets
	Sales growth	The amount of sales for this period is reduced by the previous period, dividing by the sales for the previous period
	Covid-19	affected (score 1) or not affected (score 0)

RESULTS AND DISCUSSION

Descriptive analysis

Table 2 displays descriptive statistics regarding the dimensions of Intellectual Capital (human capital, structural capital, employed capital) and sustainability performance for the 2019–2021 period. The average sustainability performance score is 0.19 out of 0.67 with a standard deviation (SD) of 0.08. The maximum sustainability performance score is 0.67, while the minimum is 0.10. This shows that the data disclosed by the sample companies has a low value, indicating that the sample companies are still inadequate in disclosing sustainability reporting. In addition, the Intellectual Capital dimension, namely human capital, shows an average value of 2.34 out of 10.36 with a standard deviation (SD) of 1.94. The maximum human capital score is 10.36 and the minimum value is -20.08. this shows significant variation in the level of human capital among the observed samples. Structural capital shows an average value of 0.63 out of 8.81 with a standard deviation (SD) of 0.72. maximum score of 8.81 and minimum -1.58 for structural capital. This shows significant variation in capital structure scores among the observed data, with some firms having very high scores and some firms having low or even negative scores. For capital employe, the average is 0.16 out of 0.91 with a standard deviation (SD) of 0.72. The maximum capital employe score is 0.91, while the minimum is -1.58. this suggests a significant difference in employee capital scores between the maximum and minimum values indicating a large variation in employee capital among the observed companies. Some companies may have high levels of employee capital, while others may have low levels of employee capital.

Table 2. Descriptive analysis

	ESG	HCE	SCE	CEE	SIZE	ROA	LEV	SALES_ GRO	COVID_1 9
Mean	0.194643	2.342899	0.637447	0.164063	14.64619	0.023270	2.968231	0.049576	0.666027
Median	0.176923	1.976375	0.563179	0.150670	14.42523	0.025399	0.873934	0.017236	1.000000
Maximum	0.670330	10.36762	8.811284	0.914650	19.72172	0.607168	786.9680	8.370875	1.000000
Minimum	0.109890	-20.08892	-1.584347	-0.849495	11.23333	-1.049837	-30.15344	-1.000000	0.000000
Std. Dev.	0.082699	1.941659	0.728555	0.154435	1.610374	0.120570	34.90750	0.566133	0.472084
Skewness	2.158339	-2.464435	6.619403	-0.426427	0.571030	-2.225247	21.86839	9.709526	-0.704055
Kurtosis	9.050614	40.14262	65.08874	10.29097	3.138424	24.70078	490.4545	133.6179	1.495694
Observations	522	522	522	522	522	522	522	522	522

To verify the validity of the data and models used in this study, diagnostic tests were performed on normality, endogeneity, multicollinearity, and heteroscedasticity. Residual plots were analyzed to check for the presence of linearity and heteroscedasticity. To check for any apparent non-linearity, the necessary transformations (usually logarithmic transformations) are performed on the dependent variable and the main explanatory variable to establish linearity. In all these cases, the logarithmic transformation proved to be effective in correcting the non-linearity in the relationship. The normal

residual plots for all models show no significant violation of the normality assumption, which confirms that the regression residuals are normally distributed in all models used in this study. The variance inflation factor (VIF) value for each variable does not exceed 2, while a VIF value above 2 can cause multicollinearity problems. Therefore, it can be concluded that there is no multicollinearity problem in all models used in this study.

Table 3. Effect dimensi Intellectual Capital terhadap sustainability

Variable	Dependent (ESG)	Variabel
C	-3.4966 0.0005	
HCE	1.9593 0.0506**	
SCE	-0.8083 0.4193	
CEE	2.7466 0.0062***	
Size	8.3073 0.0000***	
ROA	-2,5145 0.0122***	
Lev	0.1835 0.8544	
Sales growth	-0.29766 0.7661	
Covid-19	-3.4966 0.0005***	
Observations	522	
R-Squared	0.1699	
Adjusted R-Squared	0.1569	
Prob F-Statistic	0.0000	

Note: *** = 1% significance level; ** = 5% significance level; * = 10% significance level. Model: ESG as a dependent variable

The results in table 3 show a significant relationship between the dimensions of Intellectual Capital and sustainability performance. Not all of the Intellectual Capital dimensions have a significant effect on sustainability performance which is proxied by the ESG score. The results showed that Human Capital with a t count of 1.9593 and a sig. 0.0506 has a significant impact on the company's sustainability performance. These findings concretely support the first hypothesis (H1) which states that Human Capital plays an important role in achieving sustainable performance. Structural capital shows the sig value. of 0.4193 which means there is no significant impact on sustainability performance so H2 is rejected. Capital Employe as a dimension of Intellectual Capital shows a t value of 2.7466 with a sig. of 0.0062 so that this indicates that there is a significant impact between the Capital Employer and the variable being measured, namely sustainability performance in this study. Therefore, it can be concluded that the third hypothesis (H3) is accepted based on these findings.

It is known that the adjusted R-Square (adj-R2) score in the research model shows a value of 15%. This shows that the human capital and capital employe variables can explain 14% of the variation in sustainability performance. The Prob value (F-statistic) in the research model is significant at the 0.0000 level. This indicates that all variables together have an effect on sustainability performance. The control variables used in this study are company size, ROA, Leverage, Sales Growth, Covid-19 Pandemic. 3 of the total control variables, namely company size, ROA, and the Covid-19 pandemic, actually provide evidence of having an impact on sustainability performance.

Discussion

Human Capital Efficiency and Sustainability Performance

The test results in table 3 show that human capital has a significant impact on sustainability performance. Therefore the more efficient management of human capital, will improve sustainability performance. By optimizing the use of existing human resources, organizations can achieve better results in creating long-term value, increasing productivity and maintaining competitive advantage. Investing in employee development, increasing skills and knowledge, and creating a work environment that supports growth and innovation, will make a positive contribution to the organization's sustainability performance (Chahal & Bakshi, 2015; Hayton, 2005; Pekka-Economou & Hadjidema, 2011).

In particular, in papers Fraguera Formoso, Carral Couce, Iglesias Rodríguez, and CARRICOBÁ (2013) The concept of human capital in the context of Intellectual Capital is on the development of emotional capital that can enable companies to compete by leveraging the full involvement of employees through their emotions and motivations. proposes a series of steps that can be used as a framework for addressing challenges in considering renewable energy sources, effective management of waste and pollution, and achieving more responsible environmental sustainability. In line with research conducted by (Rossi et al., 2016) that human capital has the most significant and positive influence on the company's sustainable growth. Human capital has been identified as one of the main factors driving sustainable growth in companies.

Besides that J. A. F. L. O. Vale, Vale, and Lopes (2022) also stated that human capital is very important for developing corporate sustainability because it can help improve organizational performance in three dimensions (economic, environmental, and social). the importance of the organization in encouraging employee knowledge about waste and residue reduction and the search for sustainable solutions, which have the potential to affect the economic, environmental and social performance of the organization . In the context of RBV, human capital is a valuable and rare asset for an organization, and if managed properly, can provide a competitive advantage in achieving the company's sustainability goals. Thus, the relationship between human capital, waste and residual knowledge, and the economic, environmental, and social performance of organizations is in line with RBV's view of the importance of valuable and unique internal resources in achieving long-term organizational success.

Struktural Capital Efficiency dan Sustainability Performance

The test results in table 3 show that Structural capital does not have a significant impact on sustainability performance. The results of this study are not in line with research conducted by J. Vale, Miranda, Azevedo, and Tavares (2022) which states that there is a significant impact of structural capital on sustainability performance, but other studies have found that the effect of structural capital has no impact on sustainable performance (Bontis, 2001). This can be explained by looking at the nature of the manufacturing industry, where physical capital may become more dominant because business operations are highly related to machinery. So, when a company spends more on increasing its internal structural capital and puts more focus on it, it might affect the productivity of the company, because the company puts less investment in its physical capital like machines (Tarigan, Listijabudhi, Elsy, & Widjaja, 2019). The significance of structural capital is caused by inappropriate evaluation or difficulty in measuring the overall structural capital of the company. In previous research, only human capital was proven statistically significant (Mačerinskienė & Survilaitė, 2019)

Capital Employed Efficiency dan Sustainability Performance

In resource-based theory, there is a belief among academics that capital employed in production and operational processes remains an important resource. It is increasingly seen that capital employed is necessary and a driving force for a company's sustainable growth. This theory shows that companies that are able to manage Intellectual Capital well have a strong competitive advantage and are able to adapt to changes in the ever-changing business environment (Nimtrakoon, 2015). Capital Employed is an important financial foundation for sustainable business development and ensuring its survival in market competition. Efficient use of capital affects not only the achievement of financial goals such as net profit growth, but also the implementation of the company's operational strategy. Only by implementing the right operational policies can a company achieve its business objectives and sustainable growth (Yaseen et al., 2016). In line with research conducted by X. L. Xu, Li, Wu, and Zhang (2021) which states that capital employed as a dimension of Intellectual Capital has a significant positive impact on corporate sustainability and its contribution is considered higher compared to other intellectual dimensions in modern companies.

CONCLUSION

The results of this study indicate that the Intellectual Capital dimension has an important role in improving the company's sustainability performance. The Intellectual Capital dimension, especially Human Capital Efficiency and Capital Employed Efficiency, can make a positive contribution to achieving sustainability goals. Overall, recognizing, managing, and optimizing the Intellectual Capital dimension can provide significant benefits for companies in achieving better Sustainability Performance. The integration of social, economic and environmental principles into business strategy and the adoption of a strong commitment to business sustainability are the keys to improving the company's overall sustainability performance.

Limitations and Future Research

Research may be limited to a particular context or a specific sample of firms, making generalization of research results difficult. Variations in business practices, legal environment, and cultural factors can influence the relationship between Intellectual Capital and Sustainability Performance. Future research may consider conducting a comparison of the sustainability performance of companies across various industrial sectors and countries to provide deeper insight into how the Intellectual Capital dimension plays a role in various contexts. Comparative studies can help identify best practices and key factors influencing the relationship between Intellectual Capital and Sustainability Performance.

REFERENCES

- Allameh, S. M. (2018). Antecedents and consequences of intellectual capital: The role of social capital, knowledge sharing and innovation. *Journal of Intellectual Capital*.
- Ana, S. R., Sulistiyo, A. B., & Prasetyo, W. (2021). The effect of intellectual capital and good corporate governance on company value mediated by competitive advantage. *Journal of Accounting and Investment*, 22(2), 276-295.
- Bae, K.-H., El Ghoul, S., Gong, Z. J., & Guedhami, O. (2021). Does CSR matter in times of crisis? Evidence from the COVID-19 pandemic. *Journal of Corporate Finance*, 67, 101876.
- Bontis, N. (2001). Assessing knowledge assets: a review of the models used to measure intellectual capital. *International Journal of Management Reviews*, 3(1), 41-60.
- Büyüközkan, G., & Karabulut, Y. (2018). Sustainability performance evaluation: Literature review and future directions. *Journal of environmental management*, 217, 253-267.
- Chahal, H., & Bakshi, P. (2015). Examining intellectual capital and competitive advantage relationship: Role of innovation and organizational learning. *International Journal of Bank Marketing*, 33(3), 376-399. doi: 10.1108/IJBM-07-2013-0069

- Clarkson, P. M., Overell, M. B., & Chapple, L. (2011). Environmental reporting and its relation to corporate environmental performance. *Abacus*, 47(1), 27-60.
- Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital*: HarperBusiness.
- Fraguela Formoso, J. Á., Carral Couce, L., Iglesias Rodríguez, G., & CARRICOBÁ, S. (2013). The path to excellence: A management strategy based on people. *Dyna*, 80(182), 7-14.
- Gross-Gołacka, E., Kusterka-Jefmańska, M., & Jefmański, B. (2020). Can elements of intellectual capital improve business sustainability?—The perspective of managers of SMEs in Poland. *Sustainability*, 12(4), 1545.
- Hayton, J. C. (2005). Competing in the new economy: the effect of intellectual capital on corporate entrepreneurship in high-technology new ventures. *R&D Management*, 35(2), 137-155.
- Ienciu, N. M., & Mătiș, D. (2014). Intellectual capital disclosure of Romanian listed companies *Accounting in Central and Eastern Europe* (Vol. 13, pp. 143-162): Emerald Group Publishing Limited.
- Jardon, C. M., & Martos, M. S. (2012). Intellectual capital as competitive advantage in emerging clusters in Latin America. *Journal of Intellectual Capital*, 13(4), 462-481.
- Lestari, N. I. G., & Adhariani, D. (2022). Can intellectual capital contribute to financial and non-financial performances during normal and crisis situations? *Business Strategy & Development*.
- Lima, J. P. C., & Antunes, M. T. P. (2011). *Reflexões teórico-metodológicas para a proposição de um plano teórico de categorização e classificação do capital intelectual*. Paper presented at the Anais do Congresso Associação Nacional dos Programas de Pós-graduação em Ciências Contábeis.
- Liu, Y., Zhou, Z., Zhang, X., Xu, X., Chen, H., & Xiong, Z. (2015). Net global warming potential and greenhouse gas intensity from the double rice system with integrated soil-crop system management: A three-year field study. *Atmospheric Environment*, 116, 92-101.
- Mačerinskienė, I., & Survilaitė, S. (2019). Company's intellectual capital impact on market value of Baltic countries listed enterprises.
- Massaro, M., Dumay, J., Garlatti, A., & Dal Mas, F. (2018). Practitioners' views on intellectual capital and sustainability: From a performance-based to a worth-based perspective. *Journal of Intellectual Capital*.
- Mertins, K., & Orth, R. (2012). *Intellectual capital and the triple bottom line: overview, concepts and requirements for an integrated sustainability management system*. Paper presented at the 4th European Conference on Intellectual Capital.
- Ogut, H., El Archi, Y., & Dávid, L. D. (2023). Current trends in sustainable organization management: A bibliometric analysis. *Oeconomia Copernicana*, 14(1), 11-45.
- Pedrini, M. (2007). Human capital convergences in intellectual capital and sustainability reports. *Journal of Intellectual Capital*, 8(2), 346-366.
- Pekka-Economou, V., & Hadjidema, S. (2011). Innovative organizational forms that add value to both organizations and community: The case of knowledge management.
- Petty, R., & Guthrie, J. (2000). Intellectual capital literature review: measurement, reporting and management. *Journal of Intellectual Capital*, 1(2), 155-176.
- Pulic, A. (1998). *Measuring the performance of intellectual potential in knowledge economy*. Paper presented at the 2nd McMaster word congress on measuring and managing intellectual capital by the Austrian team for intellectual potential.
- Pulic, A. (2004). Intellectual capital—does it create or destroy value? *Measuring Business Excellence*.
- Stewart, G. (1997). Supply-chain operations reference model (SCOR): the first cross-industry framework for integrated supply-chain management. *Logistics information management*, 10(2), 62-67.
- Suki, N., Suki, N. M., Sharif, A., Afshan, S., & Rexhepi, G. (2022). Importance of green innovation for business sustainability: Identifying the key role of green intellectual capital and green SCM. *Business Strategy and the Environment*.
- Sveiby, K. E. (1997). *The new organizational wealth: Managing & measuring knowledge-based assets*: Berrett-Koehler Publishers.

- Tarigan, J., Listijabudhi, S., Elsy, S., & Widjaja, D. C. (2019). The impacts of intellectual capital on financial performance: an evidence from Indonesian manufacturing in. *Indonesian Journal of Business and Entrepreneurship*, 5(1), 65-76.
- Tonial, G., Cassol, A., Selig, P. M., & Giugliani, E. (2019). Intellectual capital management and sustainability activities in Brazilian organizations: A case study. *Intellectual Capital Management as a Driver of Sustainability: Perspectives for Organizations and Society*, 119-138.
- Ulum, I. (2013). Model pengukuran kinerja intellectual capital dengan iB-VAIC di perbankan syariah. *INFERENSI: Jurnal Penelitian Sosial Keagamaan*, 7(1), 185-206.
- Vale, J., Miranda, R., Azevedo, G., & Tavares, M. C. (2022). The Impact of Sustainable Intellectual Capital on Sustainable Performance: A Case Study. *Sustainability*, 14(8), 4382.
- Vale, J. A. F. L. O., Vale, V. C. F. T., & Lopes, V. S. C. (2022). Intellectual capital efficiency and financial performance in the hotel sector. *International Journal of Learning and Intellectual Capital*, 19(1), 53-71. doi: 10.1504/IJLIC.2022.119276
- Xu, J., & Wang, B. (2018). Intellectual capital, financial performance and companies' sustainable growth: Evidence from the Korean manufacturing industry. *Sustainability*, 10(12), 4651.
- Xu, X. L., Li, J., Wu, D., & Zhang, X. (2021). The intellectual capital efficiency and corporate sustainable growth nexus: comparison from agriculture, tourism and renewable energy sector. *Environment, Development and Sustainability*, 1-19.
- Yang, L., Zeng, H., & Xu, P. (2021). A comparative study of service trade competitiveness for green innovation development using the WWYZ model-based on China and the 26 countries along 'the Belt and Road'. *International Journal of Technology Management*, 85(2-4), 165-189.
- Yusliza, M. Y., Yong, J. Y., Tanveer, M. I., Ramayah, T., Faezah, J. N., & Muhammad, Z. (2020). A structural model of the impact of green intellectual capital on sustainable performance. *Journal of Cleaner Production*, 249, 119334.
- Yusoff, Y. M., Omar, M. K., Zaman, M. D. K., & Samad, S. (2019). Do all elements of green intellectual capital contribute toward business sustainability? Evidence from the Malaysian context using the Partial Least Squares method. *Journal of Cleaner Production*, 234, 626-637.