Journal of MANAGEMENT & MUAMALAH
Jurnal Pengurusan dan Muamalah e-ISSN: 2180-1681

UNIVERSITI ISLAM SELANGOR
PENERBIT UIS

Vol.14, No. 1 (2024) eISSN 2180-1681
https://doi.org/10.53840/jmm.v14i1.165

The Impact of Green Intellectual Capital on Financial Performance: Case of Indonesian Manufacturing Industry During Pandemic

Nunik Nurmalasari[1], Nuzi Laturrohman[1], Estu Widarwati[1*] & E. Wityasminingsih[2]

[1] STIE Sutaatmadja, Kabupaten Subang, Jawa Barat 41211, Indonesia
[2] Politeknik Piksi Ganesha Bandung, Kota Bandung, Jawa Barat 40274, Indonesia

**Corresponding author: estu.widarwati@stiesa.ac.id*

ABSTRACT

The financial performance is an important signal to investors about the sustainability of the company in its industry. Optimizing the company's resources is the key to being competitive, especially in times of crisis, including pandemics. The company's intangible assets such as intellectual capital and unique resources can increase the company's competitive advantage. Then, the implementation of green business concepts encourages companies to focus on creating green programs supported by human resources intellectual thinking namely Green Intellectual Capital. The purpose of this study is to examine whether there is a relationship between green intellectual capital proxied by Value Added Capital Employed (VACA), Value Added Human Capital (VAHU), Structural Capital Value Added (STVA), and the firm's financial performance as proxied using Return on Asset (ROA) and Return on Equity (ROE). The sample used was 15 manufacturing companies listed in the Indonesia Exchange in 2020-2021. The data were analyzed descriptively and the panel data regression was used to test the hypotheses as well as the robustness test for the research model. The finding indicated that there is an influence between VACA and VAHU on ROA and ROE. The company could improve its performance in both normal and abnormal periods by managing its intellectual assets, especially Value Added Capital Employed and Value Added Human Capital.

Keywords: Green Intellectual Capital, Financial Performance, Value Added Capital Employed, Value Added Human Capital, Structural Capital Value Added

Received:
Nov 15, 2023

Accepted:
Jan 19, 2024

Online Published:
June 27, 2024

INTRODUCTION

The level of performance is an important signal to investors about the sustainability of the company in its industry. The issue of performance caught the attention of researchers when the abnormal economic period of the pandemic yesterday occurred. The economic slowdown due to restrictions on all activities including trade and business caused the company to

experience a decline in transactions and revenue. Companies that can optimize resources through the accuracy of their strategy development tend to survive and even have added value as well as accelerate the recovery of their performance. In Indonesia's manufacturing context, its financial performance improved during the period 2020-2021 and it became an important basis for the recovery of the industry's performance. The company maintains the uniqueness of its strategy so that it is not easily imitated by other competitors in the same industry, then a company recognizes that competitiveness lies not only in tangible assets, but can also lie in intangibles such as technology, innovation in managing organizations, human resources owned, and information systems to enhance their competitive competence (Ginesti et al., 2018).

Optimization of the company's resources is the key to competitiveness, especially in times of crisis including pandemics, and resources in the form of intangible assets in the form of intellectual capital are other characteristics that can encourage the company's competitive advantage. Intellectual capital is a concept related to the modern economy in which it has a value contained in the monitoring and identification of intangible assets within a company that can affect the performance of the company in its management (Todericiu & Stăniţ, 2015).

The demand for the application of green concepts in business encourages companies to focus on creating green programs supported by the intellectual thinking of Human Resources in the form of Green Intellectual Capital. At this time, some companies are aware of the importance of paying attention to the green concept in the business process, so the implemented green intellectual capital (GIC) becomes one strategy to maintain investor confidence regarding the company's reputation. This is important for accelerating business recovery after the economic crisis caused by the pandemic.

Green Intellectual Capital (GIC) is the integration of environmental concepts into Intellectual Capital (IC) to compensate for previous inadequacy to environmental problems. Green Intellectual Capital (GIC) reflects the intangible assets of companies including knowledge, wisdom, experience, and innovation in the field of environmental protection (Chen, 2008). The company's activities may impact to the existence of greater environmental damage and the critical of green concept from management needed due to investor's trust. Green intellectual capital (GIC) is one of the company's resources that is explored to help develop the green concept and become a company's prevention that will undoubtedly reduce the costs that could be incurred if not taken precautionary measures. Therefore, Green Intellectual Capital (GIC) is the right way to address the environmental problems posed by companies. According to Chandra & Augustine (2019) paying attention to the environment means the company has already been able to see a step ahead and that every activity carried out for the business process of the company must necessarily require the support of the environment.

Furthermore, Green Intellectual Capital (GIC) plays a leading role in the company by focusing on sustainability, through knowledge transfer by regulations, technology, and best practices, and initiating the sustainability goals believed by the company. The component of green intellectual capital can be classified into three components, green human capital, green structural capital, and green relationship capital. The practice of green intellectual capital has not yet been widely introduced in Indonesia. The phenomenon of green intellectual capital began to emerge in Indonesia after the existence of report regulation on intangible assets. Intangible assets are non-monetary assets that can be identified and have no physical form, and are owned for use in production or delivery of joint services, rented to others, parties, or for administrative purposes.

The GIC's research is linked to the important recognition of intellectual capital and it increase attention from academics and practitioners due to its advantage for corporate financial and market performance sustainability (Serenko & Bontis, 2013). Previous research from Vio and Hexana (2019) found that green intellectual capital has an impact on the financial performance of companies. The results of research conducted by Ginesti et al. (2018) which is an analysis of the impact of intellectual capital on the performance of unlisted companies based on the assessment of the Italian Competition Authority (ICA) in Italy, reveals a positive relationship between the component of intellectually capital and the financial performance of the company. This is reinforced by the research of Chaudhry et al. (2016) states that there is an influence of the Green Intellectual Capital Index on the financial performance of companies. Chen et al. (2005) studied the relationship between intellectual capital and corporate performance in public companies listed on the Taiwan Stock Exchange that found the intellectual capital influences the market value and financial performance.

Meanwhile, Firer and Mitchell Williams (2003) studied the relationship of intellectual capital to company performance and their results show that Capital Employed (CEE) and Human Employed (HCE) have a negative impact on productivity. In contrast, Ramadhani and Amin (2023) found that green capital structures and green relational capital have positive significant impact on the company's performance. Therefore, the study focuses on testing the impact of green intellectual capital on financial performance. The findings of this research are expected to be used for further research to further develop and the information provided in this research relates to financial performance and green intellectual capital and can provide new insights and insights. In addition, this research is expected to be a reference and consideration for investors in the decision-making process to make investments so that companies can be judged from financial and non-financial factors.

LITERATURE RESEARCH

Firm Performance

In the era of globalization, a company must compete to create something different and important to society, and capital is measured not only from the financial side but also from the side where the company has intellectual capital that can think and develop the company in a better direction. Thus, the company can improve its performance by using existing resources and capital. Fahy and Smithee (1999) stated that the company's resources can provide a competitive advantage that is divided into three categories: tangible, intangible, and capacity of human resources. The Resources Based View (RBV) approach states that companies can have a persistent competitive advantage and gain superior profits by owning or controlling both tangible and intangible strategic assets. Hariyanto and Narsa (2018) revealed that RBV theory can also be used to improve an organization's performance by taking into account changes and potential challenges. The company would outperform if the company had good resources as described in this theory.

The company's competitive advantage is important as the information signals that an investor needs to determine an investment decision. The company provides information because of the information asymmetry between the company and external parties because the company or manager has more information about the company's condition than the external party. The theory of legitimacy approach encourages companies to ensure that their activities and performance are acceptable to the community. The reports on corporate social and environmental responsibility activities presented in sustainability reports can be used as evidence that the company has implemented social responsibility. When an organization

makes a social contribution, its existence and the activities carried out obtain the company's reputation. Legitimation is a system that is oriented toward the benefit of society, government, individuals, and community groups. The theory of legitimacy states that companies operate in accordance with the norms and rules applicable in society. As long as there is no violation of social norms and values by the company, then the company will continue to receive support from society (Khafid & Aniktia, 2015).

Green Intellectual Capital

Intangible assets are one of the company's assets that include all processes such as trademarks, patent rights, and logos considered by modern accounting methods. The increased asset value is distributed on assets, generally intangible resulting from the company's organizational functions, employees' efficiency processes, and customer relationships. Intellectual capital is developed from the creation, of new knowledge and innovation, as well as applications that present knowledge on issues and concerns that are enhanced between employees and customers, and the packaging, process, and transmission of knowledge. According to (Brinker, 1998), the three categories of intangible assets are *structural capital* an infrastructure that supports human capital in the intellectual capital component; *Human capital* that the ability of employees to deliver solutions to customers, to innovate and renew, and also to include the dynamics of an intelligent organization (explorers) in a changing competitive environment, creativity, and innovation. Then *Customer capital* is relationships with customers and other companies.

Intellectual capital is the total reserve of knowledge, information, technology, intellectual property rights, experience, organizational learning and competence, team communication systems, customer relationships, and brands that create value for the company (Stewart, 1997). Intellectual Capital can create value or competitive profit, to its objectives excellently. It is key to the company's knowledge of its competitive advantage and useful information in a package that is formalized, acquired, and produced to obtain a higher added value for the company. Referring to previous research on intellectual capital, this research refers to the construction of green intellectual capital (GIC) that corresponds to its strict development to international environmental regulation and consumer environmental awareness in the world, as the total share of all kinds of intangible assets, knowledge, capabilities and relationships on protection or innovation to the environment at the individual level and organizational level within the company (Chen, 2008).

Green intellectual capital is an intangible asset of a company known as intellective capital, which consists of the skills, talents, competencies, engagement, understanding, and knowledge of employees that lead to the achievement of its goals. Intellectual capital contributes greatly to the success of the company. In the present era, a company cannot ignore the environmental aspects. The company must be able to manage the resources and capital that the company owns to improve the company's financial performance in the eyes of stakeholders. The components of green intellectual capital are divided into three types: green human capital, green structural capital, and green relationship capital (Bontis, 1999). The description of these three elements is Green Human Capital, Green Structural Capital, and Green Relational Capital.

According to Pasban and Nojedeh (2016), human capital is one of the key determinants of intellectual capital in the competitive advantage of organizations that includes competence, attitude, and intellective agility. Green human capital as the final presentation of knowledge, skills, abilities, experience, behaviour, wisdom, creativity, and employee commitment to

environmental protection or green innovation. Green human capital plays an important role in the sustainability of the company. Human resources or competent employees are needed for the sustainability of an enterprise. When environmental issues are considered threats, it is here that competent human resources play a role in turning those threats into opportunities, coupled with the support of management in creating environmental strategies.

Green structural capital is a reserve of corporate capabilities, knowledge management systems, management philosophy, corporate culture, company image, patents, copyrights, and trademarks for environmental protection or green innovation in the company. Green structural capital, if properly managed, can reduce unnecessary energy consumption and help to increase productivity.

In contrast to human capital, where capital is entirely owned by the organization and not taken away by employees (Chen, 2008). It is necessary to generate competence with the help of technology, process, manual, and clean work, and to ensure that competence will remain running within the company when employees leave or retire. Green structural capital is defined as an organization's equity capability, organizational commitment, knowledge management of management systems, reward systems, information technology systems, databases, management mechanisms, operational processes, managerial philosophy, corporate image, patents, copying rights, and trademarks, etc. on environmental protection or innovation within a company.

Relational Capital is an equity relationship based on cooperation or communication with other companies, institutions, Research Centre, and customers, measured by the intensity of cooperation between local communities. On the other hand, Relational Capital is defined as seeking strong ratings in terms of the level of understanding, trust, relationships, and collaboration between working partners, suppliers, as well as distributors. Green Relational Capital is the interactive stake of a company in relationships with customers, suppliers, network members, and partners about the company's environmental management and green innovation, enabling it to create profit and gain a competitive advantage (Chen, (2008).

Green Intellectual Capital and Firm Performance

Recently, companies have realized that the success of the company is not only focused on the physical assets that the company owns but can also be seen from the immaterial assets owned by the company in the way the company pays more attention to the environment around the company, which is often known as green intellectual capital. If the company succeeds in creating a good environment, it will increase the company's competitive advantage. Companies must be able to manage the resources and capital owned by the company to improve the company's financial performance in the eyes of stakeholders. Green intellectual capital is a way to deal with environmental protection trends, so companies that run their companies with a green intellectual capital strategy will have more value and can create competitive advantages for both the company and the environment around the company. Green intellectual capital is very important to implement in a company because this strategy will make the company better at managing the environment, reducing costs, and improving the company's image. Kusumawati and Dewi (2022) researched the influence of green intellectual capital on the financial performance of manufacturing companies listed on the Indonesian stock exchange in 2015-2019. The results of the study say that the Green Intellectual Capital has a significant positive impact on financial performance.

Research carried out by Barney et al. (2001) based on the concept of RBV, to create value the company must be able to manage the assets or resources it owns with the maximum to create added value for the company. Green relational capital (VACA) in this case is a capital asset that can improve financial performance. In stakeholder theory, added value will affect the increase in the value of the company. Increased financial performance in financial statements will be one of the attractiveness of the investor's interest in buying shares of the company. Based on the description, then the hypotheses in this research are as follow;

H1a: Green Intellectual capital using VACA influences the financial performance of companies measured by Return on Asset (ROA)

Research conducted by Chen (2008) shows that there is a positive and significant relationship between green relational capital (VACA) and return of equity (ROE). According to Chen (2008), corporate interactive relationships with customers, suppliers, network members, and partners are recommended on top of environmental management and green innovation. This means that the company has physical capital and corporate funds as well as good relationships with work partners and suppliers, so it can improve the company's performance. Based on these findings, the hypothesis of this study is:

H1b: Green Intellectual capital using VACA influences corporate financial performance measured by ROE

Knowledge-based companies and human resources are the main factor in the production of companies because these resources are wealth for companies in carrying out business activities. The RBT theory describes the resources a company has and how it can process and utilize the resources it has. Good human resource management can create added value for the company. Such added value can be seen from the performance generated by the company through financial statements. Research by Muslih and Natali (2020) showed that green human capital (VAHU) has an influence on financial performance. The research was supported by Firer and Williams (2003) who said VAHU had an impact on the financial performance of the company. Based on this study, the hypothesis is:

H1c: Green Intellectual capital using VAHU influences the financial performance of companies measured by ROA

Research conducted by Chen et al. (2005) shows that there is a positive and significant relationship between green human capital (VAHU) and ROE. According to Chen et al. (2005), the knowledge of employees, their expertise, abilities, experience, behaviour, wisdom, creativity, and commitment, and the like about environmental protection and green innovation can help companies in gaining a competitive advantage. Based on this study, the hypothesis is:

H1d: Green Intellectual Capital Using VAHU Influences on Corporate Financial Performance Measured by ROE

Structural capital is knowledge within an organization that is independent of people or, in other words, can be understood as an awareness that remains within the organization even though employees leave the organization. According Vio and Hexana (2019), green structural capital (STVA) demonstrates the ability of companies in managing structural capital such as technology, information systems, as well as the intellectual property of the company. in the theory of RBT, companies are able to meet the needs of routine processes and structures that support the efforts of employees to produce business performance and optimal intellective performance will also improve the company's performance. Research by Baroroh (2014)

shows that STVA has a positive impact on the financial performance of the company. Based on this finding, the hypothesis of this study:

H1e: Green Intellectual Capital using STVA influences the financial performance of companies measured by ROA

Research of Chen et al. (2005) finds that there is a positive and committed relationship between green structural capital (STVA) and ROE. Reserve organizational capabilities, organizational commitments, knowledge management systems, managerial philosophy, organizational culture, corporate image, patents, copyrights, and trademarks towards environmental protection or green innovation within an enterprise. Based on this study, the hypothesis of this study:

H1f: Green Intellectual Capital using STVA influences the financial performance of companies measured by ROE

METHODOLOGY

The unit of analysis in this study is the manufacturing company listed in the Indonesia Stock Exchange with secondary data used, i.e. documentation of the company's data according to the needs of the variables studied. A total sample of 15 companies entered the proper category during the 2020-2021 period.

Table 1
Sample Based on Industry

Number	Industry	Number of Companies	Number of Observations	Percentage (%)
1	Basic Material	7	14	46%
2	Industrial	1	2	7
2	Consumer Cylical	1	2	7
3	Consumer Non-Cylical	1	2	7
4	Healthy	5	10	33
	Total	15	30	100

Our samples include some industry such as healthy sector, basic material sector, primary, and the non-primary sectors. There are 15 manufacturing companies in 2020-2021 were sampled in this study as shown in Table 2 below.

Table 2
Sample of Manufacturing Companies

Number	List Sample	Industry
1	Astra Internasional Tbk.	Industrial
2	Astra Otoparts Tbk	Consumer Cylical
3	Barito Pacific Tbk	Basic Material
4	Chandra Asri Petrochemical Tbk	Basic Material
5	Gunung Raja Paksi Tbk	Basic Material
6	Indocement Tunggal Prakarsa Tbk	Basic Material
7	Herbal Medicine and Pharmaceutical Industry Sido Muncul Tbk	Health
8	Kalbe Farma Tbk	
9	Kimia Farma Tbk	
10	Phapros Tbk	
11	Merck Tbk	
12	Semen Indonesia (Persero) Tbk	Basic Material

13	Solusi Bangun Indonesia Tbk	Basic Material
14	Steel Pipe Industry of Indonesia Tbk	Basic Material
15	Unilever Indonesia Tbk	Consumer Non-Cylical

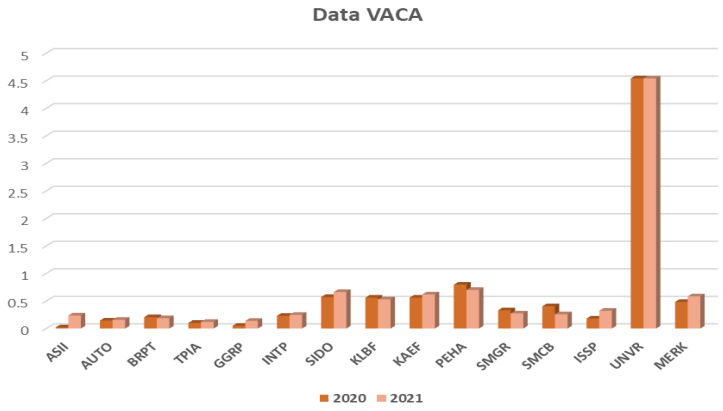
The independent variable in this study is Green Intellectual Capital which is measured with three indicators namely relational capital (VACA), human capital (VAHU), and structure capital (STVA) as well as Value Added Intellectual Coefficient (VAIC). The dependent variable is firm performance measured by Return on Asset (ROA) and Return on Equity (ROE). The data is analyzed descriptively to describe the trend of Green Intellectual Capital and performance in Indonesian's manufacturing industries, then processed by pre-testing the quality of data through the testing of classical assumptions. A regression data panel is applied in testing the hypothesis and also a paired-t Test is used to examine the differences between Green Intellectual Capital and firm performance between 2020-2021. A robustness check is performed for the testing of the hypothesis as well as the strength test of the research model.

FINDINGS AND DISCUSSIONS

Descriptive Analysis of Green Intellectual Capital and Financial Performance

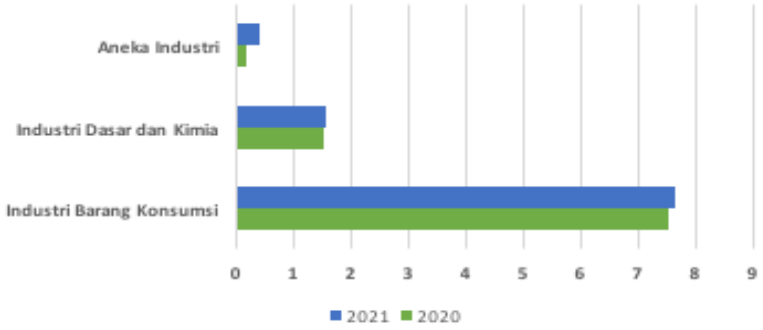
Green intellectual capital is an intangible asset of a company known as intellective capital, which consists of the skills, talents, competencies, engagement, understanding, and knowledge of employees that lead to the achievement of its goals. In this study, green intellectual capital is measured using three compensators of green intellectual capital itself, namely green human capital, green structural capital, and green relationship capital (Bontis, 1999).

Figure 1
VACA of Samples in Indonesia Manufacturing Industry in 2020-2021



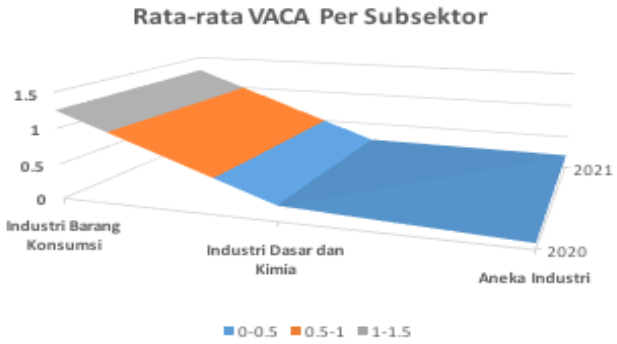
Based on figure 1, shows that the highest VACA data is in companies with UNVR codes with a value of 4,5442 in 2020, while for 2021 it was 4,542. This is because the company with the UNVR code has a good relationship with work partners and suppliers. For companies with the lowest VACA score, there are companies with TPIA codes with a value of 0.1036 in 2020 and 0.1206 in 2021. The average value for 2020-2021 shows that if there are companies that have experienced an increase.

Figure 2
VACA's Subsector of Sample Indonesia Manufacturing Industry 2020-2021



The descriptive data shows that the VACA value in the manufacturing companies of the consumer goods industry has experienced a fairly significant increase when compared with the various subsectors of the industry and the basic and chemical industries.

Figure 3
VACA Average per Subsector of Indonesia Manufacturing 2020-2021



The average of VACA for 2020-2021 shows if there are subsectors of manufacturing companies that have increased, there are those that have decreased. The highest average value is the subsector industry of consumer goods at 1,273517. The lowest was for companies with an industrial subsector of 0.19785 by 2020. For the year 2021, the highest value was 1.273517 and the lowest was 0.19785.

Furthermore, the average VAHU value for each company. The average value for 2020-2021 shows that if there are companies that have experienced an increase, there are those that have decreased. The highest average value is the company with the SIDO code of 11.38485. Meanwhile, the lowest is the company with the KAEF code of 1.2392.

Figure 4
VAHU Average of Sample Indonesia Manufacturing Industry 2020-2021

The finding shows that the VAHU value of manufacturing companies in the basic industry and chemical subsector has increased significantly when compared to the various industry subsectors and the consumer goods industry.

Figure 5
VAHU per Subsector of Sample Indonesia Manufacturing Industry 2020-2021

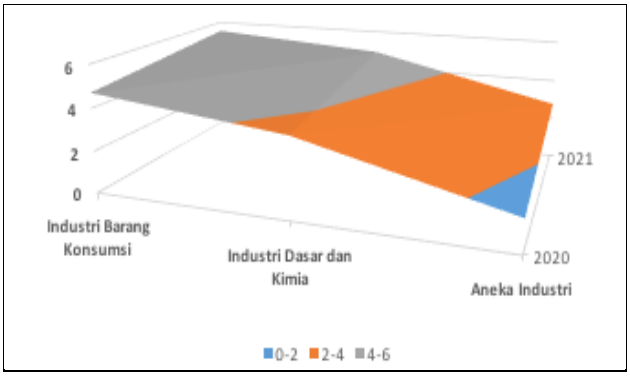


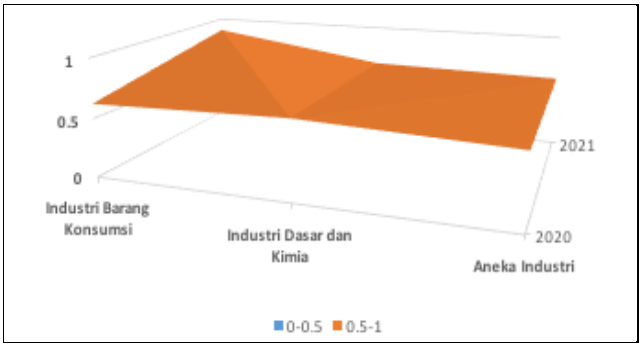
Figure 5 shows the average VAHU value of manufacturing company sub-sector. The average value for 2020-2021 shows that if sub-sectors of manufacturing companies have experienced an increase, those have decreased. The highest average value is the consumer goods industry sub-sector company of 4.70725. As for the lowest, namely companies with various industrial subsectors of 1.49455 in 2020. For 2021 the highest value is 5.4969, the lowest value is 2.7703.

The analysis data show that the average STVA value of each company. The average value for 2020-2021 shows that if companies have increased, those have decreased. The highest average value is a company with a PEHA code of 1,00095. The lowest is the company with a KAEF code of 0.19215.

Figure 6
STVA Average of Sample Indonesia Manufacturing Industry 2020-2021

The STVA value in manufacturing companies in the consumer goods industry subsector has increased significantly when compared to the various industry subsectors and basic and chemical industries. The values of the various industry subsectors, basic industry, chemicals, and consumer goods industry in 2020 are respectively 1.2067, 4.6432, 3.7406. For 2021 it is 1.2297, 4.5049, 5.3077. From 2020 to 2021, all sub-sectors of manufacturing companies will experience an increase.

Figure 7
STVA Average per Subsector of Sample Indonesia Manufacturing 2020-2021



The average STVA value per manufacturing company sub-sector. The average value for 2020-2021 shows that if sub-sectors of manufacturing companies have experienced an increase, those have decreased. The highest average value is the consumer goods industry sub-sector company of 0.623433. As for the lowest, namely companies with various industrial subsectors of 0.60335 in 2020. For 2021 the highest value is 0.884617, and the lowest value is 0.61485.

In performance context, it shows the average value of ROA in the consumer goods industry subsector has increased significantly when compared to the various industry subsectors and basic and chemical industries. The values for the various industry subsectors, basic and chemical industries, consumer goods industry in 2020 are 5.2, 18.58, and 81.54, respectively. For 2021 it is 10.7, 31.14, 87.53. From 2020 to 2021, all sub-sectors of manufacturing companies will experience an increase. It is in line with the ROE in the consumer goods industry subsector has increased significantly when compared to the various industry subsectors and basic and chemical industries.

The green intellectual capital data using VACA, VAHU, and STVA measurements show an average value of 0.6260, 4.4029, and 0.6878 respectively when calculated in percent to 62.6%, 440.29%, and 68.78%. While the On Asset Ratio (ROA) shows an average value of 7.8263 when presented it becomes 782.63%. And the magnitude of deviation (standard deviation) for VACA, VAHU, STVA, and ROA are respectively 1.08569, 2.98412, 0.31600, and 9.53079. Green intellectual capital data using VACA, VAHU, and STVA measurements show an average value of 0.6260, 4.4029, and 0.6878 respectively when calculated in percent to 62.6%, 440.29%, and 68.78%. While the Ratio on Equity (ROE) shows an average value of 17.4813 when presented it becomes 1.748.13%. And the magnitude of deviation (standard deviation) for VACA, VAHU, STVA and ROE are 1.08569, 2.98412, 0.31600, and 32.25683 respectively.

DATA ANALYSIS

Regression Results

The table of panel data regression results shows that VACA has a positive and significant effect on ROA and VAHU has a positive and significant effect on ROA, while STVA does not affect ROA. It is in line with the finding of ROE as a financial performance indicator. Based on statistical results, it shows that the average value varies from each manufacturing company that is sampled in this study from variable X, namely green intellectual capital which is proxied using VACA, VAHU, and STVA, and variable Y, namely the company's financial performance which is proxy using ROA and ROE. The study found that the companies were able to manage and utilize their resources and have good company performance, so during the Covid-19 pandemic these companies were able to survive and continue to innovate and strive to carry out company activities to the fullest.

From the results of the average value of the variable X indicators, namely VACA, VAHU, and STVA, and the Y variable indicators, namely ROA and ROE, it can be concluded that companies that have the highest average values of the various indicators are companies that can manage and utilize their resources, have capital assets that can improve financial performance. Improved financial performance in financial reports will be one of the attractions of investors' buying interest in company shares. The company's ability to manage structural capital such as technology, information systems, and company intellectual property, as well as having good company performance, so that during the Covid-19 pandemic these companies were able to survive and continue to innovate and strive to carry out company activities to the fullest.

As for companies that experienced a decrease in the average value of several indicators, this happened because the company had not managed and utilized its human resources to the fullest, lack of management of structural capital such as technology, information systems, or the company's intellectual property. During the COVID-19 pandemic occurred, the company needed to be faster in responding and adapting to pandemic or post-pandemic situations, or some regulations hindered the company's performance which caused a decrease in the average value.

The regression results show that green intellectual capital as measured using VACA and VAHU has a significant effect on financial performance as measured using ROA. In this case, the company can manage and utilize its human resources to the maximum so that it can improve its financial performance. Then, it can be concluded that the hypothesis is accepted. The results of this study are in line with Vio and Hexana (2019). In this case, the VACA

value improves financial performance because VACA focuses on relationships with work partners and suppliers that help improve company performance. Then, it can be concluded that the hypothesis is accepted.

The results of this study are in line with the research of Chen (2008). The relationship between VAHU and ROA in the t-test shows a positive number. In this case, the VAHU value increases financial performance because VAHU focuses on the skills and expertise possessed by employees so that it will create good performance, then it can be concluded that the hypothesis is accepted. The results of this study are in line with the research of Baroroh (2014). The relationship between VAHU and ROE in the t-test shows a positive number. In this case, the VAHU value increases financial performance because VAHU focuses on the skills and expertise possessed by employees, and that it will create good performance. Then, it can be concluded that the hypothesis is accepted. The results of this study are in line with the research of Chen et al. (2005).

The relationship between STVA and ROA in the t-test shows a negative number. In this case, the value of STVA decreases financial performance because STVA only focuses on the organizational structure of the company, then it can be concluded that the hypothesis is rejected. The results of this study are not in line with Baroroh (2014). The relationship between STVA and ROE in the t-test shows a negative figure. In this case, the STVA value reduces the financial performance because STVA focuses only on the company's organizational structure. This hypothesis can be rejected. The results of this study are inconsistent with Chen et al. (2005).

Robustness Test

The robustness test can be defined as the ability to reproduce something under different conditions without compensating for unwanted differences in the result obtained. This robustness test is carried out on samples before the adoption of IFRS separately using the original model. The analytical parameter used to evaluate data interpretation is by using the t distribution. If the results of the robustness test show significant and consistent t values with the hypothesis test results, then the modified model used in this study is solid.

In this study, the robustness test was performed using Value Added Intellectual Coefficient (VAIC) which is a test of the overall component of green intellectual capital. VAIC uses the company's financial statements to calculate coefficients in three indicators, namely VACA, VAHU, and STVA. The calculation begins with the ability of the company to create added value, which is considered to be the most objective indicator in the creation of value to measure the company's business success. The results of the robustness test strengthen the finding before that green intellectual capital measured by Value Added Intellectual Coefficient (VAIC) has a significant effect on the financial performance of manufacturing companies in Indonesia both measured by ROA and ROE. Green intellectual capital affects the financial performance of the company consistently, either tested through the three components of green intellectual capital itself or generally unchanged.

CONCLUSION

Based on the results of research on the influence of projected green intellectual capital using VACA, VAHU, and STVA on the performance of companies projected using ROA and ROE. With research objectives on manufacturing companies listed in the IDX in 2020-2021.

From the results of the average value of variable indicators X, i.e. VACA, VAHU and STVA as well as variable indicators Y, e.g. ROA and ROE, it can be concluded that the company that has the highest mean value of these various indicators is the company capable of managing and utilizing the resources it owns, has capital assets that can improve financial performance. Increased financial performance in the financial statements will be one of the attractions of the investor's interest in buying shares of the company. The company's ability to manage structural capital such as technology, information systems, and intellectual property of the company, as well as have a good company performance, and during the pandemic COVID-19 companies can survive and continue to innovate and strive to run the company activities to the maximum.

As for companies that have experienced a decrease in the average value of several indicators, this is because the company has not managed and utilized the human resources it owns to the maximum, lack of structural capital management such as technology, information systems, or the intellectual property of the company. During the COVID-19 pandemic, the company is a little slower in responding and adapting to pandemic or post-pandemic situations, or some regulations hinder the performance of the company causing the occurrence of a decrease in average value.

The variable green intellectual capital has the projected use of VACA and VAHU influence on the financial performance of the company projected using ROA and ROE. Meanwhile, STVA does not influence ROA or ROE. Furthermore, the results of the robustness test lead to the conclusion that the green intellectual capital variable affects the company's financial performance consistently, either tested through the three components of green intellectual capital itself or overall unchanged. This shows that VACA and VAHU have a dominant influence on the company's financial performance. Based on the results of the research showed that green intellectual capital variables using VACA, VAHU, and STVA indicators have an impact on the performance of companies using ROA and ROE indicators. So, in this case, the researched company has a good financial performance and can be a measure for investors who will make investments.

The limitation of this study is the difficulty of finding analytical data. It is because not all companies have all required data. For further research, it is recommended to continue this research further to examine the impact of projected green intellectual capital using VACA, VAHU, and STVA on the performance of companies projected using ROA and ROE on manufacturing companies listed in the BEI period 2020-2021 with different indicators.

ACKNOWLEDGEMENT

Special thanks to the teams of Sekolah Tinggi Ilmu Ekonomi Sutaatmadja Subang that has supported this research and Faculty of Management & Muamalah, Universiti Islam Selangor for the opportunity given to present at the conference. This paper has been enhanced through the constructive comments made by anonymous referee.

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