THE EFFECTS OF GREEN STRATEGY AND ECO-EFFICIENCY ON FIRM VALUE WITH INTELLECTUAL CAPITAL AS A MODERATOR VARIABLE

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Abstract

This study aims to analyze the effects of *green strategy* and *eco-efficiency* on firm value with *intellectual capital* as a moderator variable. The data used in this study are secondary data obtained from the Indonesia Stock Exchange.

The samples taken are manufacturing companies listed on the Indonesia Stock Exchange in 2017-2019, with a sampling method using *purposive sampling*. This study uses multiple regression analysis as the data processing technique. The population in this study are all manufacturing companies listed on the Indonesia Stock Exchange in 2017-2019.

The results of testing the hypothesis of this study showed that the *green strategy* has prominent positive effects on the firm value. Furthermore, this research found that *intellectual capital* could reinforce the positive effect of *green strategies* and *eco-efficiency* on firm value.

Keywords: Firm value, *Green strategy*, *Eco-efficiency*, *Intellectual capital*.

INTRODUCTION

According to Sudan (2015), profit maximization is considered unsuitable as guideline for decision-making in the financial sector. It is because profit maximization is short-term oriented, ignoring risk factors and social responsibility. Considering that the goal is unsuitable, the finance experts formulate the company's goal of maximizing the value of the company.

Husnan (2015) states that a company's value is the price prospective buyers are willing to pay if the company is sold. The higher the value of the company, the higher the level of prosperity achieved by shareholders.

Currently, companies are not only responsible for the single bottom line; the firm value reflects in economic conditions. However, the company must be responsible for the triple bottom lines, including economic, social, and environmental (Lako, 2015). It is because economic conditions are not enough to guarantee the firm value to grow sustainably. A way for a company to develop sustainably is to balance its economic performance with its social and ecological performance.

Green consumers and producers will grow significantly. The company should also consider green competition in their business strategy (De Boer et al., 2017). There is an expectation growing in the community to build companies to take the initiative in business processes to adjust to the *eco-efficiency* concept. This concept defines efficiency

that includes aspects of natural resources and energy or a production process that minimizes the use of raw materials, water, and energy as well as the environmental impacts per unit of product (Ministry of Environment of the Republic of Indonesia, 2003).

On the contrary, in October 2019, Indonesia was ranked 7th as the most polluted country in the world (www.airvisual.com). In early 2021, a few forests and land fires occur in areas in Indonesia, including Central Kalimantan, North Sumatra, Riau, and many more that have caused several cities in Indonesia to declare danger status for air pollution (www.kompas.com).

The efforts made by the Ministry of Environment in responding to environmental issues have been carried out for a long time, that is, by launching the Company Performances Rating Assessment Program (PROPER) in 2002. The purpose of PROPER is to encourage corporate governance in environmental management through information instruments. The best environmental performance appraisal rating (gold) can explain the firm value better than other ratings (green, blue, red, and black). The company can use these ratings as the basis for making decisions which carry out by both internal and external parties.

Moreover, the environmental topic is a topic that needs to be studied and researched, considering there are still negative environmental impacts in Indonesia from the activities of companies that are not yet aware of the importance of innovation that emphasizes environmental aspects. The application of the *eco-efficiency* concept can add value to a company and increase the efficiency of the price of a product by considering the company's environmental impact. This research is a combination of research that discuss the effect of *green strategy* on firm value (e.g., Soewarno et al., 2019 and Dewi and Rahmianingsih., 2020) and research that discuss the effect of *eco-efficiency* on firm value (e.g., Dewi and Rahmianingsih., 2020; Panggau and Septiani 2017; Ayiyanti and Isbanah 2019; and Rais et al., 2020). This research adds *intellectual capital* as a moderator variable because in several previous researches were found that *intellectual capital* affects firm value both as an independent variable and as a moderator variable (e.gg., Sari et al., 2019; Achyani et al., 2020; and Wibowo et al., 2020).

This research use secondary data from companies annual report for periods 2017-2019. The hypotheses are tested with regression analysis. This research found that *intellectual capital* could reinforce the positive effect of *green strategies* and *eco-efficiency* on firm value. This research using intellectual capital as contingent factor on the influence of eco efficiency and green strategy on firm values. This research use manufacturing companies as a sample with the reason that manufacturing companies have a potential negative impact to the environment from their production process. Thus, how manufacturing companies implementing eco efficiency and green strategy is an interest topic to be investigated.

LITERATURE REVIEW AND HYPOTHESIS

Stakeholder Theory

According to Freeman (1994), stakeholder theory is a theory that describes to which party the company is responsible. A company is not an entity that only operates for its own interest but must be able to provide benefits to its stakeholders as well. Thus, the existence of a company is greatly influenced by the support provided by the

company's stakeholders. The stakeholder theory is used to help company management to better understand the company's negative impacts due to the company's production process, so that companies can minimize these impacts to continue and do not interfere with stakeholders in carrying out activities.

Stakeholder theory in the instrumental approach explains that stakeholders are very influential in increasing the value of the company. With stakeholders, the company's image can be good or bad reflected from the stakeholders' perspectives (Lindawati & Puspita, 2015).

Legitimacy Theory

In accordance with Lindbolm (1994), legitimacy is a condition where the value system of an entity is equal with the social system of society. Thus, an entity must consider social norms because conformity with social norms can make the company more legitimate.

Legitimacy theory is related to the variable of firm value because legitimacy theory is used to explain the motivation, strategy, disclosure, and response of companies to particular events or crises in social and environmental issues (Mousa and Hassan, 2015). Therefore, if the firm value conforms society's expectations regarding environmental issues, then the company has obtained the legitimacy of an environmental organization.

This theory is also related to the variable of the *green strategy* disclosure because by complying with the norms that apply in this society, the company will have a high level of confidence and become better so that circumstantially the company can increase *goodwill* (intangible assets) and improve firm value which is an essential factor for the company to *going concern* or survive. In conclusion, by complying with the norms and rules that exist and apply in society, it is a good and positive thing that companies can do to increase their firm value, and potential investors will be more interested in investing in the companies that care about the environment and corporate sustainability.

Signalling Theory

Signalling theory developed by Ross (1997) states that company executives who have better information about their company will be encouraged to convey that information to potential investors to increase the company's stock price. Signalling theory states that if the company is good at conveying performance information, it will generate a positive signal to investors and potentially increase the company's stock price (Utomo et al., 2020).

The Signalling theory is related to *green strategy* and *eco-efficiency* variables because environmental performances factors consisting of green and *eco-efficiency* strategies can give good signals that attract investors. After all, it is a manifestation of transparency and corporate responsibility towards the environment. It can also show the company's performance in managing its resources and waste effectively, creating long-term performance sustainability. Furthermore, disclosure of the company's *green strategy* and *eco-efficiency* is suspected as a signal that can affect the firm value, which will improve the company's reputation so that the firm value can increase as well.

Green Strategy

Future companies are not only responsible for the economy and environment, but also solve human rights, ethics, and social participation issues (Hens et al., 2018). The

drastic impacts of climate change have created awareness for governments, companies, and societies (Chan 2005; Foley and Olabi 2017; Campiglio et al., 2018).

Currently, companies should implement green innovations to reduce the impacts of the production process on the environment. Green innovation refers to innovation that emphasizes waste reduction, pollution prevention, and the implementation of environmental management systems (Eiadat et al., 2008). The fundamental strategy of continuous innovation is critical to coping with external pressures, such as customers, competitors, and regulators (Porter and Van der Linde, 1995). Therefore, companies need to implement green innovation to satisfy those stakeholders (Lin et al., 2014). Green innovation is expected to reduce pollution, energy productivity, waste reduction, recycling, replacement of limited resources with sustainable resources.

Green strategy is a strategy that companies have undertaken to implement green innovation to achieve competitive advantages, meet market needs and stakeholder expectations (Song and Yu, 2018).

Eco-Efficiency

According to the World Business Council for Sustainable Development, *eco-efficiency* can be achieved by providing satisfactory services with competitive products for consumer needs and reducing their environmental impacts (WBCSD, 2000). According to Dewi and Rahmianingsih (2020), *eco-efficiency* is an ecological resource used to meet human needs. The concept of *eco-efficiency* can be a benchmark for companies in carrying out the concept of environmental management, where companies use the *eco-efficiency* concept when the company already has ISO 14001 certificate on environmental management (Rais et al., 2020). ISO 14001 can also be used as a tool to fulfill internal and external objectives such as convincing employees and stakeholders about environmental issues.

Intellectual Capital

Stewart (1997) in Sari et al. (2019) defines *intellectual capital* as intellectual elements, such as information, knowledge, and experience that can improve welfare. The company welfare is related to the increase in profits that can be obtained if the company can manage its resources optimally. Good resource management has an impact on increasing employee capabilities. The related measurement of *intellectual capital* is known as *Value Added Intellectual capital* (VAIC^{TM}), developed by Pulic 1998. VAIC consists of three (3) primary elements, namely *value added capital employed* (VACA), *value added human capital* (VAHU), and *value added structural capital* (STVA). The VAIC model is widely used because the numbers used in these calculations are easy to find in financial statements.

Firm Value

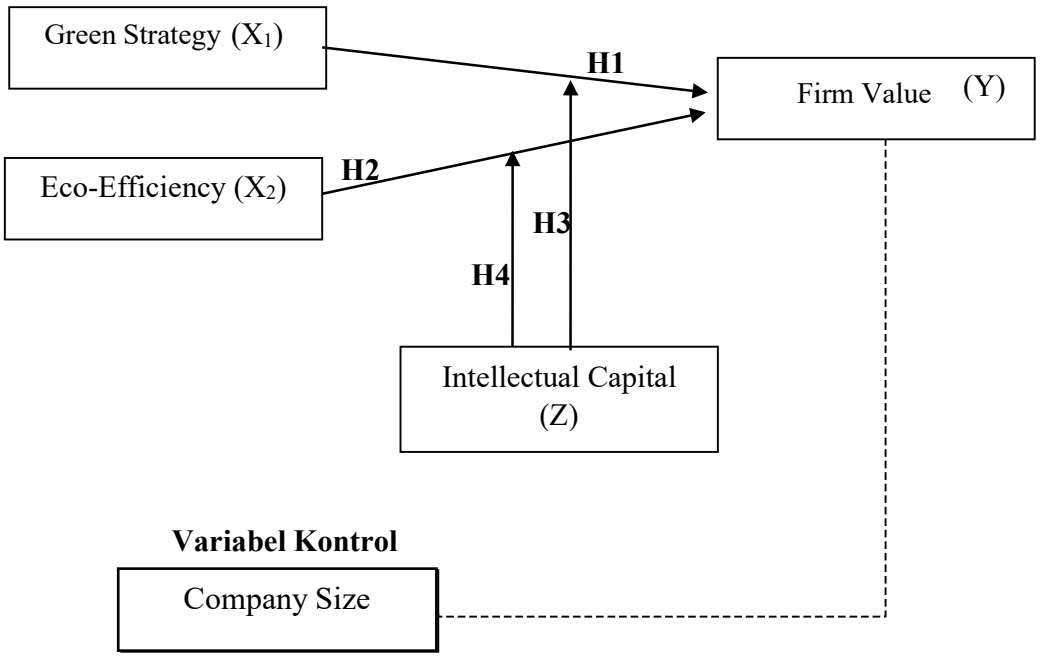
According to Salvatore (2005:8) in Aviyanti and Isbanah (2019), firm value is investors' view towards the company's stock price. The firm value is seen from the price of the shares owned by the company. When the share price increases, the firm value increases as well.

The firm value is the price that prospective buyers are willing to pay if the company is sold; the greater the value of a company, the more prosperous the company's owner is. To optimize the firm value in the long term, managers require to make decisions that

consider all stakeholders, where managers will be assessed for their performance based on their success in achieving goals (Dewi and Rahmianingsih 2020).

Therefore, maximizing the firm value becomes very important for a corporate entity. By optimizing the firm value or the market price of the company's common stock, the company also maximizes the prosperity of the company's shareholders, which is the company's primary goal. So, maximizing the firm value is the primary goal of a company.

Conceptual Framework



Hypothesis Development

The Effect of Green Strategy on Firm Value

According to Dewi dan Rahmianingsih (2020), if the company can create an economic and environmental balance, then the company's sustainability will be achieved. Creating value for stakeholders requires managers to optimize their financial performance, social performance, and environmental performance. High levels of productivity and innovation in a company can help achieve and maintain the Firm Value itself. *Green strategy* is one of the keys for companies to create a competitive advantage if it is carried out regularly and applied to its own business processes. According to Dewi dan Rahmianingsih (2020), green innovation can also be used as a tool for marketing activities in increasing market share. In research conducted by Soewarno *et al.* (2019) and Soebarjo & Rokhyadi (2014), the green innovation strategy provides a positive signal for Firm Value. Therefore, from the explanation above, the following hypothesis can be obtained:

H_1: Green Strategy has a significant positive effect on Firm Value.

The Effect of *Eco-Efficiency* on Firm Value

Panggau and Septiani (2017) stated that business people who have implemented *eco-efficiency* in their company's operating activities have several advantages, such as the improvement of the image of the company itself, the increasing of their stock prices, and having a more excellent firm value than companies that do not implement *eco-efficiency*. According to Dewi and Rahmianingsih (2020), eco-efficiency is a concept that encourages companies to develop their level of environmental performance, or at least equivalent to economic performance. This effort can reduce environmental impact and excessive consumption of resources. The results of this study state that *eco-efficiency* has an influence on financial performances. It is stated in the researches by Panggau dan Septiani (2017), Avianti dan Isbanah (2019); dan Rais *et al.,* (2020) that for the stakeholders, *eco-efficiency* is a positive signal to increase the value of the company ultimately. Based on the explanation above, the hypothesis is formulated as follows:

H_2 : *Eco-Efficiency* has a significant positive effect on Firm Value

The Effect of Green Strategy and *Eco-Efficiency* on Firm Value Moderated by *Intellectual Capital*

According to Achyani et al. (2020), *intellectual capital* is the total value of a company that describes the company's *intangible assets* that are sourced from three pillars, namely human capital, structural capital, and customer capital. With the existence of *added value* and increasing the competitive superiority of the company's business, *intellectual capital* is said to have an impact on the value of the company. Based on *knowledge-based theory*, if a company can utilize *intellectual capital* to improve company performance, then the value will increase. It is stated in the researches by Sari et al., (20) and Wibowo et al., (2020), *intellectual capital* can provide a positive signal for firm value. The characteristic of the *intellectual capital* variable in this study is a *quasi moderator*, namely a variable that can be an independent variable and simultaneously also a moderating variable. The high firm value makes investors choose to invest their capital in the company. With the management and utilization of *intellectual capital*, the company's financial performance will be high, resulting in a competitive advantage and added value for the company. Based on the explanation above, the hypothesis is formulated as follows:

H_3 : *Intellectual Capital* strengthens the effect of Green Strategy on Firm Value

H_4 : *Intellectual Capital* strengthens the effect of *Eco-Efficiency* on Firm Value

RESEARCH METHODS

Operational Definitions of Variables

The following are the variables used in this study, including:

Dependent Variable

The dependent variable in this study is Firm Value. The measurement of Firm Value can be proxied using Tobin's Q. The ratio of Tobin's Q can be calculated using the

formula of Chung and Pruitt (1994)'s version, which refers to the research of Rais *et al.* (2020) the formulation of the formula is as follows:

$$Q = \frac{MVE + DEBT}{TA}$$

Classifications:
Q = Tobin's Q
MVE = Market Value of Equity (closing price x number of circulated stocks)
DEBT = Book value of total debt [(current liabilities – current assets) + inventory book value + long-term debt]
TA = Total Assets

Independent Variables

The independent variables used in this study are Green Strategy and *Eco-Efficiency.*

Green Strategy

Referring to the research by Soewarno et al. (2019), the measurement of green strategy uses the *scoring* method, which uses 4 (four) green items, namely vision, mission, value, and strategy related to green strategy.

Variabel	Indikator
Green Strategy	1. The company chooses the product material that produces the least pollution to carry out product development or design, 2. The company chooses materials from products that consume the least amount of energy and resources to carry out product development or design, 3. The company uses the least amount of material (*reduce*) for products in product development or design, 4. The company carefully uses whether the product is easy to *recycle*, *reused*, and easily *decomposed* to carry out product development or design (Chen et al., 2006).

Each indicator is given a value of 1 (one) if it is fulfilled and 0 (zero) if it is not fulfilled. Of all the total items that have been given a score and then divided by four, it will describe the overall value.

Eco-Efficiency

Eco-efficiency is measured by giving a value of 1 for *eco-efficient* companies and 0 for *non-eco-efficient* companies. In this study, the company can be said to be an *eco-efficiency* company if the company has an ISO 14001 certification.

Moderator Variable

The moderator variable used in this study is *Intellectual Capital* as measured by the *value added intellectual capital* (VAIC) method. VAIC™ measures organizational intellectual property used as BPI (*Business Performance Indicator*) designed by Pulic (1998) referring to the research of Sari *et al* (2019). VAIC™ is the result of the sum of the previous 3 components, namely: VACA, VAHU, and STVA, which is prorated by the formula:

$$\text{VAIC™} = \text{VACA} + \text{VAHU} + \text{STVA}$$

Clarifications:
VAIC™ = Value added Intellectual Capital
VACA = Value added capital employed
VAHU = Value added human capital
STVA = Value added structural capital

Control Variable

In this study, Firm Size is used as a control variable. Firm Size is the scale of a company that can be seen from the size of total assets, log size, stock market value and others. The size of a company can affect the ability to bear the risks that may arise from the risks that will be faced (Pratama, *et al*. 2016). Referring to the research of Dewi and Rahmianingsih (2020) in this study, company research is measured in the Log of total assets, which is formulated by:

$$Size = L(n)\ Total\ aset$$

Research Samples

The type of data used in this study is secondary data taken from financial reports and company annual reports from the period 2017-2019. The method of determining the sample in this study used the *purposive sampling* technique. The sample selection was based on the following criteria: (a) Manufacturing companies listed on the Indonesia Stock Exchange (IDX) in 2017-2019; (b) Manufacturing companies that published annual reports or sustainability reports that can be downloaded through the IDX website or the websites of each company during the 2017-2019 period in a row; (c) Companies that took part in *Penilaian Peringkat Kinerja Perusahaan dalam Pengelolaan Lingkungan* (PROPER) from the Ministry of Environment in 2017-2019.

ANALYSIS AND DISCUSSIONS

Descriptive Statistics

The results of descriptive statistics test on all variables can be seen in the following Table 1:

Table 1. Descriptive Statistics Test Results

Variabel	N	Minimum	Maximum	Mean	Std. Deviation
TOBINSQ	69	0.28	11.90	2.0029	2.40865
SH	69	0.00	1.00	0.4981	0.42513

IC	69	-1.87	8.52	2.9566	1.84496
SZ	69	13.97	18.39	15.7287	1.31756

Source: Processed with SPSS 25.0

Based on table 1 above, the results of the descriptive statistics analysis are as follows:

1. Based on the results of the descriptive statistics above, it can be seen that the minimum value for the Firm Value ratio is 0.28 which is owned by PT. Kabelindo Murni Tbk in 2018 and the maximum value of 11.90 owned by PT. Multi Bintang Indonesia Tbk in 2018. The average value is 2.0029 and the standard deviation is 2.40865.
2. Based on the results of descriptive statistics, the data shows that the minimum value for the Green Strategy ratio is 0 which is owned by 8 sample companies, one of which is PT. Wilmar Cahaya Indonesia Tbk in 2017 to 2019 and PT. Indal Aluminum Industry Tbk in 2017 and 2018. Then the maximum value, which is 1, is shown from 9 companies, one of which is Indofood CBP Sukses Makmur Tbk for 3 consecutive years and PT Industri Jamu Dan Farmasi Sido Muncul Tbk in 2018 and 2019. The average value is 0.0.4891 and the standard deviation is 0.42753.
3. Based on the results of the descriptive statistics above, it can be seen that the minimum value for the *Intellectual Capital* ratio is -1.87 which is owned by PT Solusi Bangun Indonesia Tbk in 2018 and the maximum value of 8.52 is owned by PT. Multi Bintang Indonesia Tbk in 2017. The average value is 2.9566 and the standard deviation is 1.84496.
4. Based on the results of the descriptive statistics above, it can be seen that the minimum value for Firm Size is 13.97 which is owned by PT. Wilmar Cahaya Indonesia Tbk in 2018 and the maximum value of 18.39 owned by Indofood Sukses Makmur Tbk. Pusat Data Kontan in 2018. The average value is 15.7287 and the standard deviation is 1.31756.

Table 2. Frequency Table

	Dummy = 1		**Dummy = 0**	
	N	**%**	**N**	**%**
ECO	**53**	**76,8**	**16**	**23,2**

Source: Processed with SPSS 25.0

1. If the company has ISO 14001 certification, it is represented by number 1 and companies that do not have ISO 14001 certification are represented by number 0. From a total of 69 samples, 53 data were obtained that had ISO 14001 certification with a percentage of 76.8%, while for sample data that did not have ISO 14001 certification, 16 data were obtained with a percentage of 23.2%.

Hypothesis Testing

After fulfilling the classical assumptions, the results of hypothesis testing are presented as follows:

Table 3. Hypothesis Test Results

Variable	Prediction	B	T	Sig	Sig 1 tailed	Decision	Conclusion
(Constant)		7.088	2.800	0.007			
SH	+	1.338	3.363	0.008	0.004	Positive Influence	H1 is Accepted
ECO	+	2.709	3.176	0.002	0.001	Positive Influence	H2 is Accepted
SHIC	+	1.091	5.017	0.000	0.000	Positive Influence	H3 is Accepted
ECOIC	+	1.238	3.991	0.000	0.000	Positive Influence	H4 is Accepted
UP	+	0.605	3.244	0.002	0.001	Positive Influence	

Adjusted R^2 = 0,672
F Value = 28,887 (sig 0,00)

Based on the results of the regression analysis in the table, the following regression equation can be obtained:

FV = 7.089 + 1.338 SH + 2.709 ECO + 1.091 SHIC + 1.238 ECOIC + 0.25

Partial test results are as follows:

1. Based on the results of the t test (partial) on the multiple linear regression model, it obtained a t value of 3,363 with a significance of the Green Strategy variable of 0.004 <0.05 (significance level of 5%). The results of this study show that the sig value is below the level of 0.05, so it can be interpreted that H1 is accepted, which means "Green Strategy has a significant positive effect on Firm Value."
2. Based on the results of the t test (partial) on the multiple linear regression model, it obtained a t value of 3.176 with a significance of the *Eco-Efficiency* variable of 0.001 < 0.05 (significance level of 5%). The results of this study show a positive direction with an *unstandardized coefficient* beta of 2,708. So it can be concluded that H2 is accepted, which means "*Eco-Efficiency* has a significant positive effect on Firm Value."
3. Based on the results of t test (partial) on the MRA regression model, it shows that the Disclosure of Green Strategy to the Firm Value with *Intellectual Capital* moderation obtained a t value of 5.017 with the significance of the moderation variable of Disclosure of Green Strategy and *Intellectual Capital* of 0.000 <0.05 (significance level 5%). The results of this study show a positive direction with an *unstandardized coefficient* beta of 0.273. So it can be concluded that H3 is accepted, which means "the existence of *Intellectual Capital* can moderate the Disclosure of Green Strategy on Firm Value."
4. Based on the results of t test (partial) on the MRA regression model, it showed that *Eco-Efficiency* on Company Value with *Intellectual Capital* moderation obtained a t value of 3,991 with the significance moderation variable of *Eco-Efficiency* and *Intellectual Capital* of 0.000 <0.05 (significance level 5%). The results of this study show a negative direction with an *unstandardized coefficient* beta of -1.238. So it

can be concluded that H4 is acceptable, which means "the existence of *Intellectual Capital* can moderate the Disclosure of *Eco-Efficiency* on Firm Value."

The *Adjusted R Squere* value of 0.672 indicates that 67.2% of the Firm Value variable can be explained by the variables Green Strategy, *Eco-Efficiency*, *Intellectual Capital* as a moderation variable and Firm Size as a control variable, while the remaining 25% is explained by other variables outside the model of this research.

The value of Test F is 28,887 and the significance level is less than 0.05, which is 0.000. Thus it can be concluded that collectively in the equation the variables Green Strategy, *Eco-Efficiency, Intellectual Capital* as a moderation variable and Firm Size as a control variable on Firm Value.

Discussion of Research Results

The results of this study indicate that H1 is accepted, which means that the Green Strategy has a significant positive effect on firm value. This means that the higher the value of green strategy disclosure, the higher the value of the company. The results of this study are in line with research conducted by Soewarno *et al* (2019), Dewi and Rahmianingsih (2020) which states that a high level of productivity and innovation in a company can help achieve and maintain the value of the company itself. *Green innovation* is one of the keys for companies to create a competitive advantage if it is carried out regularly and applied to the company's own business processes.

The results of this study indicate that H2 is accepted, which means that *eco-efficiency* has a significant positive effect on firm value. This means that the higher the value of *eco-efficiency* it will increase the value of the company. ISO 14001 can help companies or business people to be more effective because it saves work time and costs in running their business. The results of this study are in line with the research results conducted by Dewi and Rahmianingsih (2020), Rais *et al.* (2020), Aviyanti and Isbanah (2019) and also Panggau and Septiani (2017) which state that *eco-efficiency* affects firm value because *eco-efficiency* is a concept that encourages companies to develop their level of environmental performance, or at least equivalent to economic performance.

The results of this study indicate that H3 is accepted, which means the presence of *intellectual capital* can moderate the Green Strategy Disclosure on firm value. This means that the presence of *intellectual capital* can moderate a green strategy on firm value. The results of this study are in line with the research of Septiani and Panggau (2019) *intellectual capital* affects the firm value. These results are in accordance with *stakeholder* theory which states that the management of all company resources in the form of *physical capital, human capital*, and *structural capital* will encourage the formation of added value for the company, added value in the form of intellectual capital can attract investors to invest so that firm value will increase.

The results of this study show that H4 is accepted, which means that the existence of *intellectual capital* can moderate *eco-efficiency* on firm value. Companies that express *eco-efficiency* make the firm value increase when the *intellectual capital* of the company is high and companies that express *eco-efficiency* also make the firm calue increase when the *intellectual capital* of the company is low.

CONCLUSION, LIMITATIONS, AND SUGGESTION

Conclusion

Based on the results of analysis and hypothesis testing, the following conclusions can be drawn:

1. *Green strategy* has a positive influence on Firm Value.
2. *Eco-efficiency* has a positive influence on Firm Value.
3. *Intellectual capital* strengthens the influence of moderating *green strategy* on Firm Value.
4. *Intellectual capital* strengthens the influence of moderating *Eco-efficiency* on Firm Value.

Limitations

This study has a few limitations as follows:

1. *Eco-efficiency* measurement in this study still uses *dummy* variables; having or not having ISO 14001, the measurement becomes less measuring the company's efforts in implementing *eco-efficiency* in more detail.
2. The sample in this study is limited to companies listed on the PROPER and BEI indices. Therefore, the sample uses in this study is less representative of all manufacturing companies from the total manufacturing companies listed on the BEI.
3. In research data processing found *outlier* data that causes sample reduction.

Implications

Based on the results of previous research and discussion, several implications can be drawn as follows:

1. This research is expected to provide implications for the literature. The results of this study can contribute to increasing knowledge in the field of sustainability accounting, especially regarding the effect of *green strategy* and *eco-efficiency* on firm value with *intellectual capital* as a moderator variable.
2. This research is expected to provide implications for the company. The results of this study are expected to contribute to evaluation materials for companies in increasing their firm value.

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