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International Conference on Sustainability
(6th Sustainability Practitioner Conference)

SDGS ON CORPORATE: WHAT ARE THE

NEW CHALLENGES AND OPPORTUNITIES IN NEW NORMAL?

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THEME:
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Welcoming Remarks from

Dr. Ali Darwin, Ak., M.Sc., CSRA

Bismillahirahmanirahaim, Assalamulaikum Wr Wb.

- The Honorable Dr. Airlangga Hartarto, Coordination Minister for Economic Affairs of the Republic of Indonesia
- Prof. Dr. Dian Agustia, Dean Faculty of Economics and Business of Universitas Airlangga
- Prof. Eko Ganis Sukoharsono, Ph.D. Chairman of Institute of Certified Sustainability Practitioners
- Distinguished Speakers and Moderators
- Ladies and Gentlemen,

Good Morning.
I am delighted to welcome all participants, to this 6th Sustainability Practitioner Conference. I saw some attendees from overseas; Singapore, Malaysia, Bangladesh, the Philippines and others. This Conference is a prelude to the Asia Sustainability Reporting Rating (ASRRAT) ceremony, which will be held tomorrow, on 17 November 2021, in Jakarta. In total, 45 companies are participating in the ASRRAT 2021, including 3 companies from overseas. The objective of ASRRAT is, to increase the quality of sustainability reporting, to meet GRI Standards. The annual ASRRAT event has been organized by NCSR, for the last 17 years.

Ladies and gentlemen,
In addition to ASRRAT, NCSR has also been working in collaboration with certain universities in Indonesia, to host the Sustainability Practitioner Conference, over the last 6 years. This is an international conference that was created in order to digest sustainability issues. It is, therefore, one of the notable actions on sustainability, that is conducted by academia.

We have to recognize that we still need much greater collaboration between business, government, and academia in addressing sustainability issues. In this regard, let's welcome the good news from Glasgow, Scotland. After two weeks of talks, the government leaders from almost 200 countries, including Indonesia, have finally agreed to ramp up their carbon-cutting commitments, phase out some fossil fuels and increase aid to poor countries on the front lines of climate change.

And another piece of good news coming out of Glasgow is that the IFRS– the body responsible for international accounting standards – will soon form an International Sustainability Standards Board (ISSB), to create a single set of standards for sustainability disclosure requirements for businesses.

Ladies and Gentlemen:
The COVID-19 pandemic has reminded us of the vital part that academia has to play, in tackling society's greatest challenges. Higher education institutions have the capacity for finding and offering solutions to the challenges facing global society in this time of climate crisis.

The demand for more education and awareness around subjects like sustainability management and reporting, sustainable finance, social responsibility, stakeholder engagement, social return on investment, and ESG keeps growing exponentially. Higher education now has to equip more professionals for corporate sustainability departments with the knowledge needed to meet the demands of the times.

Ladies and Gentlemen:
I offer our thanks to the Faculty of Economics and Business of Universitas Airlangga for hosting this conference
In closing, I would like to offer our thanks and appreciation to all the speakers, moderators, and participants for taking the time to attend this conference. We also thank all members of the Conference Committee and all other individuals who have worked so hard to prepare this conference.

Enjoy the Conference,
Stay safe, stay healthy.
Thank You.

Welcoming Remarks from

Prof. Eko Ganis Sukoharsono, SE, MCOM (ACCY), MCOM-HONS, CA, PH.D

Assalamualaikum warahmatullahi wabarakatuh,

His excellency of Minister of Research and Technology,
Prof Bambang Brodjonegoro, or his representative.
Our honorable Dean of FEB UNAIR,
Prof. Dr. Dian Agustia, SE., M.Si., Ak, thank you and honor being with you, I am impressed with your exceptional welcoming speech.
Our honorable Director of NCSR,
Dr. Ali Darwin, he is always inspired us to move up and be good at sustainability.
Our honorable Speakers:
Prof. Lee Moerman (University of Wollongong, Australia)
Prof. Jeffrey Hales (Chair of SASB Standards Board)
Nadia Anridho, Ph.D. (Lecturer of FEB UNAIR) Africa
Our respectable Presenters,
ICSP committees and members distinguished guests, ladies, and gentlemen.

First of all, nothing can be said, except thank Allah SWT who has been giving us some mercies and guidance's so we can attend and gather in this virtual place in a good condition and hopefully we are here in a happy situation.

Distinguished guests, ladies, and gentlemen, our topic today is the SDGs on corporations. What are the new challenges and opportunities in the new normal? It is very important to be discussed and solved. SDGs nowadays are increasingly embraced by companies as a useful reporting framework for their sustainability business effort. And I think that it is a good thing to witness a lot of companies are aware that our planet is facing massive economic, social, and environmental changes.

The impact of COVID-19 on sustainable development is really obvious, namely, the increasing number of poverty and hunger, shorten life expectancy, lowering the quality of education, and many others including hindering green programs and climate changes programs. However, these challenges do not mean that they will go on forever. Some positive opportunities can be used to overcome the impact of COVID-19.

Distinguished guests, ladies, and gentlemen, the opportunity are: to develop a sustainable development action plan, taking into account the impact of COVID-19, to create a framework to measure the impact of COVID-19, to develop the concept of circular economic business model, and to sharing economic platforms in global perspective. In addition, it is also possible to develop research to improve business resilience and planning for economic recovery.

With your cooperation in the conference, it is very important to encourage discussion on the relation of SDGs and corporations, that is why the objective of this conference is to find mutual understanding on various aspects of various SDGs corporations, such as sustainability accounting, reporting, public sectors sustainability, climate changes, and it also includes public health.

Distinguished guests, ladies, and gentlemen, finally, I would like to thank Prof. Dr. Dian Agustia the Dean, Dr. Ali Darwin as the chair of NCSR, and Dr. Chaerul as this conference committee and all of the OC members for your collaboration and generous help so that the conference become possible.

That is all, thank you very much and enjoy the conference until the end of the session.
Thank you and Assalamualaikum

Welcoming Remarks from

SPC Committee

On behalf of the Sustainability Practitioner Conference organizing committee, we are delighted to welcome all presenters and participants to the International Conference on Sustainability (6th Sustainability Practitioner Conference 2021) with the grand theme "SDGs on Corporate: What are the challenges and opportunities in New Normal?". The 6th Sustainability Practitioner Conference is organized by the Faculty of Economics and Business, Universitas Airlangga, in collaboration with the National Center for Sustainability Reporting (NCSR), and the Institute of Certified Sustainability Practitioners (ICSP).

The 6th Sustainability Practitioner Conference is a platform for researchers and practitioners to exchange ideas, discover novel opportunities, reacquaint with colleagues, meet new networks and broaden their knowledge in cutting-edge research within sustainability issues, especially in the new normal era after the Covid-19 outbreak. Thus, we have invited three internationally prominent speakers in sustainability areas, as detailed in this program book.

We would like to thank all the authors and participants of the 6th Sustainability Practitioner Conference 2021, NCSR, ICSP, the program committee members, reviewers, and sponsors. Without their effort, the 6th Sustainability Practitioner Conference could not have been taken. We hope all presenters and participants have a pleasant time and find the 6th Sustainability Practitioner Conference 2021 a fruitful event.

Prof. Dr. Dian Agustia SE., M.Si., Ak., CA

Dean of Faculty of Economics and Business Universitas Airlangga

Dr. Dra. Wiwik Supratiwi., MBA., Ak. CA

The 6th SPC 2021 Conference Chair

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Editorial Contact
Department of Accountancy
Faculty of Economics and Business
Universitas Airlangga
Jl. Airlangga 4-6 Surabaya 60286
Indonesia
accountancy.department@feb.unair.ac.id

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01 The Effects of Green Strategy and Eco-Efficiency on Firm Value with Intellectual Capital as a Moderator Variable

Nila Wandasari[1], Deni Darmawati[2]

Department of Accounting, Faculty of Economics and Business, Trisakti University

[1]nilawandasari@gmail.com, [2]deni_darmawati@trisakti.ac.id

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* (VAICTM), 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.

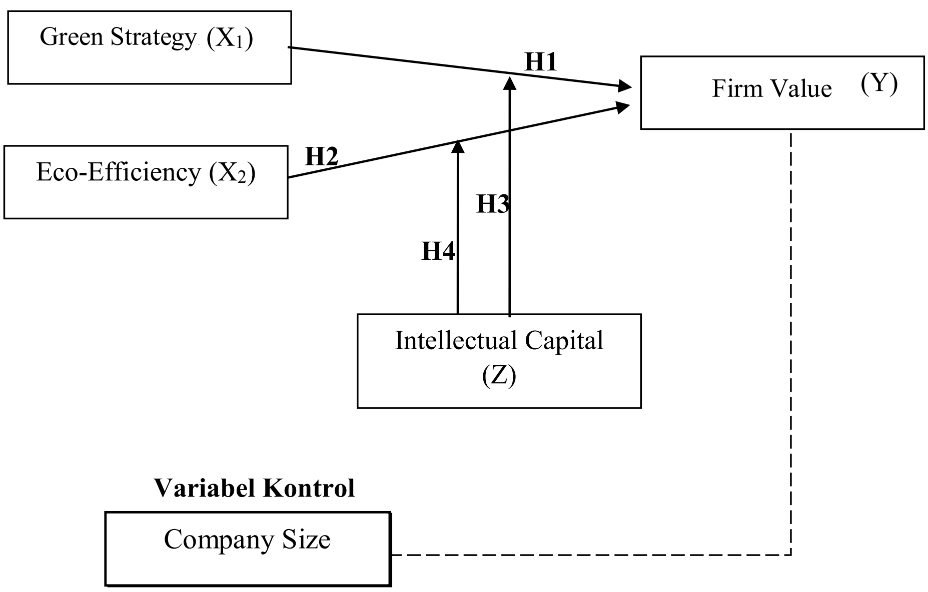
Firm Value

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:

H1: 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:

H2 : *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:

H3 : *Intellectual Capital* strengthens the effect of Green Strategy on Firm Value

H4 : *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 productis 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 R2 = 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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02 The Effect of Environmental Costs, and Environmental Disclosure on Firm Value Moderated by Corporate Governance. Case Study on Mining Companies

Giovany Kurnia Widyawan
Department of Accounting Polytechnic of State Finance STAN
Bintaro Main Street 5th Sector, Bintaro Jaya
South Tangerang, Banten, Indonesia, 15222
Email: 1401170002_giovany@pknstan.ac.id

Sopian
Department of Accounting
Polytechnic of State Finance STAN
Bintaro Main Street 5th Sector, Bintaro Jaya
South Tangerang, Banten, Indonesia, 15222
Email: sopian@pknstan.ac.id

Abstract

Purpose – This study aims to find out the effect of the environmental costs and environmental disclosure toward firm value and the role of corporate governance in moderating these effects. The author wishes to learn more about how Indonesian companies deal with environmental challenges.

Methodology – The analysis was conducted on 29 mining industry companies listed on the IDX and selected using the purposive sampling method with a research period of 2017-2020. This study uses quantitative methods with three models of panel data regression analysis.

Findings – Economic development makes humans exploit natural resources to meet their needs, having an impact on environmental quality degradation. One of the environmental pollutions comes from hazardous and toxic waste produced by the mining industry. Environmental management needs to be measured to minimize the impact of environmental damage to create sustainability. Environmental costs is carried out by companies to manage the environment. In addition, the environmental disclosure is also needed to find out how the company manages the environment. The results show that the environmental costs have a positive effect toward firm value, the environmental disclosure has no effect toward firm value, corporate governance proxied by the proportion of independent commissioners does not moderate the effect of environmental costs and environmental disclosure toward firm value, corporate governance proxied by the number of audit committees weakens the effect of environmental costs toward firm value, but does not moderate the effect of the environmental disclosure toward firm value.

Research limitations – There are several limitations to this study that cannot be ignored. Due to a lack of company data, the number of companies in the population cannot be used as study samples. The method of content analysis used to score the variable index of the company's environmental information disclosure is tied to the issue of researcher subjectivity. The scope of the research is limited due to time restrictions. In corporate governance, only a few proxies are implemented.

Practical implications – From the results of this study, ecoefficiency through environmental costs should be continued by the company, and the obligation to disclose environmental information should be regulated clearly.
Keywords: environmental costs, environmental disclosure, corporate governance, firm value

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I. Introduction

The world economy continues to grow. Although there are fluctuations in the growth rate from year to year, in the long term economic growth cannot be avoided. Based on the Organization for Economic Co-operation and Development (OECD) report in the Tinjauan OECD Terhadap Kebijakan Pertumbuhan Hijau Indonesia 2019, Indonesia's economic performance is the largest in Southeast Asia and ranks 16th globally. Several world crises can cause a contraction in economic growth, but when the crisis is over, the world economy will grow again. In 2020, the Covid-19 pandemic crisis caused the world economy to collapse. world economic growth in 2020 contracted by 3.3% after experiencing an expansion of 2.8% in 2019. Projections in 2021, economic growth will experience an expansion of 6% (IMF, 2021).
Rapid economic development forces humans to exploit natural resources as much as possible to fulfill their needs. The impact of the exploration and exploitation of these natural resources results in a decrease in the quality of the environment. The OECD (2019) stated that in 2016, Indonesia was among the top ten emitters in the world. Greenhouse Gas (GHG) emissions are dominated by forestry emissions from forest and land conversion to agricultural land and logging. In addition to forestry emissions, the energy sector is the largest sector that contributes to GHG emissions. In total, energy accounts for 37% of GHG emissions, or 65% of emissions if forestry emissions are not included. From 2000 to 2016, the amount of emissions generated by the energy sector increased by almost 70%. In air pollution, large forest and peat fires cause pollution peaks in Indonesia as well as Malaysia and Singapore. Nearly 90% of the haze is caused by peat fires and releases three times more particulates than fires on other soil types. Turning to plastic pollution, there is a study that states that Indonesia is one of the largest producers of marine plastic pollution in the world (Jambeck et al., 2015 in OECD, 2019). Approximately 80% of plastic waste is disposed of without further processing from the mainland.

The Indonesian government seeks to realize green economic growth through Government of Indonesia Green Growth Program (BAPPENAS & GGGI, 2015). This program is in collaboration with the Global Green Growth Institute (GGGI), which is an international intergovernmental organization that has concluded an agreement to support and promote strong, inclusive and sustainable economic growth in developing countries. The main reason behind the development of the concept of green economy and green growth is the movement towards a more integrated and comprehensive approach to incorporating environmental and social factors into economic processes that ultimately achieve sustainable development. Green growth will contribute and create opportunities to improve social welfare through a green economy, and ultimately achieve sustainable development so that the three terms green growth, green economy, and sustainable development cannot be separated. (Kasztelan, 2017).

Environmental pollution originating from hazardous and toxic waste (B3), one of which comes from the mining industry. Disposal of B3 waste has an impact on air and water pollution as well as soil contamination. The OECD (2019) stated that in 2016 of the 73 million tons of B3 waste recorded, most of it came from mining with a share of 89%. On the other hand, industry contributes 41% to GDP, the second largest sector after the services sector (OECD, 2019). The largest added value is obtained from the manufacturing, construction, mining and quarrying industries. Globally, Indonesia is one of the largest energy suppliers in the world because it has abundant resources. In 2016 Indonesia became the fifth largest coal producer as well as the second largest exporter in the world. Because the economic dependence on mining is quite large, good management is needed so that environmental pollution does not occur so that sustainability is formed.

There are costs for managing waste and preventing environmental pollution incurred by the company. These costs are then referred to as environmental costs. Hansen and Mowen (2007) mentioned that environmental costs are costs incurred due to poor or potentially poor environmental quality. Based on this definition, environmental costs are divided into 4 categories, namely prevention costs, detection costs, internal failure costs, and external failure costs. The category can be divided into environmental prevention activities, and environmental failure activities. Recording of these environmental costs can be used as a means of controlling the environmental performance of the company.

Disclosure of environmental information is valuable information for stakeholders because it indicates that the company has allocated costs to maintain environmental sustainability which will have an impact on business sustainability. Information on environmental management must be submitted by a public company through OJK Regulation Number 29/POJK.04/2016 concerning the Annual Report of Issuers or Public Companies. The regulation states that one of the information that must be included in the Annual Report is the social and environmental responsibility of the Issuer or Public Company.

Good corporate business governance or corporate governance (CG) is needed so that companies can maintain business sustainability and carry out good environmental management. The failure of large companies in the United States in the 2001-2002 period led to the implementation of the Sarbanes-Oxley Act of 2002 (SOX) and various regulatory changes in stock transactions. This aims to ensure that the information received by investors does not differ from those within the company, as well as to reduce the possibility of errors and fraud in the company (Chhaochharia & Grinstein, 2007). The goal of CG is to establish a transparent, trusted, and accountable environment needed to maintain long-term investment, financial stability, and business integrity.

The company's long-term goal is to optimize the firm value. If the firm value is higher, it indicates that the owner is more prosperous (Wahyudi & Pawestri, 2006). Investors' assessment of the company's success rate is influenced by the firm value because it reflects the company's performance (Suharli, 2006 in Indrayani et al., 2021). Every company will always show potential investors that their company is the right investment alternative. Therefore, managers will try to continue to increase the firm value. Effective CG is considered to be able to limit the personal interests of managers and protect the interests of investors or shareholders. CG can manage all interests of stakeholders and can resolve conflicts of interest between shareholders and non-investor stakeholders (Jo & Harjoto, 2011).

Current study's writing was inextricably linked to the author's past research's observations and analysis, which were still relevant to this study. Buana and Nila (2017) looked at the first segment of the Japan Exchange Group's chemical companies. The goal of the study is to determine the impact of environmental costs on the firm's profitability and value. This research yielded a number of conclusions. First, the environmental costs are substantially lower than the return on investment. Second, environmental costs are negligible in comparison to ROE. Third, the environmental costs are overwhelmingly in favor of NPM. Fourth, environmental costs are negligible in comparison to PER. Fifth, the environmental costs are significantly negative towards Tobin's Q. Hapsoro and Adyaksana (2020) conducted research to see if environmental disclosure moderated the impact of environmental performance and costs on a company's value. Environmental performance has no effect on firm values, but environmental costs have a negative and significant effect on firm values, and environmental disclosure moderates the effect of environmental performance and environmental costs on firm value. Pedron et al. (2021) conducted research on companies listed on the Brazilian Stock Exchange in order to determine the impact of environmental disclosure on profitability and firm value. The findings show that while environmental information disclosure has no significant impact on profitability, it does have a significant positive impact on firm value. Retno dan Priantinah (2012) conducted research to evaluate how corporate governance (CG) and CSR disclosure affect firm value. The companies listed on the Indonesia Stock Exchange from 2007 to 2010 are the subject of this study. The study's findings show that CG has a positive impact on firm value, while CSR disclosure has no significant impact. From 2012 to 2014, Yanti (2015) studied public companies in Indonesia and concluded that corporate governance has no substantial impact on firm value. Falikhatun et al. (2020) conducted study with the goal of obtaining empirical proof of corporate governance's impact on business value. The findings show that CG, as measured by independent commissioners and the board of directors, has a positive impact on company value, whereas independent commissioners have no impact.

The authors have not discovered any research that combines environmental variables with corporate governance variables in one study, based on existing research. The author provides a framework for thinking about the interaction between CG and environmental information based on Naude's (2009) research, which reveals that there is an interrelationship between CSR and CG. As a result, the focus of this study is on environmental management and the impact of good CG implementation on company value.

II. Theoretical Analysis and Research Hypothesis

Stakeholder theory requires companies to take into account the many parties who receive the impact of the company (Lin, 2018). These parties consist of internal and external stakeholders. Investors and creditors demand the company to ensure business continuity. The government requires companies to comply with regulations, one of which is regulations related to the company's environmental management. Employees demand the company to ensure the safety of their work in an environment that is not polluted by hazardous materials.

Based on the theory of legitimacy, companies must also get legitimacy from the surrounding environment to carry out their business activities (Delgado & Castelo, 2013). To fulfill this social contract, the company will carry out several activities that are useful for the environment around the company. Activities can be in the form of social, economic, or environmental activities.

Agency theory suggests that agents can act against the will of the principal (Godfrey et al., 2010). Therefore, the principle is necessary to unify every business activity carried out by the agent to be under the wishes of the principal. One of the monitoring instruments can be in the form of a company report as an evaluation tool by the principal.

Based on signaling theory, managers will signal potential investors and creditors that managers make good business decisions (Connelly et al., 2011). This will certainly attract investors and creditors to invest and provide loans to companies. Companies can continue to grow their business from the new funds they get.

Environmental costs incurred by the company indicate that the company is trying to manage its environment. This environmental management will have an impact on the company's business. Ecoefficiency essentially maintains that organizations can produce more useful goods and services while simultaneously reducing negative environmental impacts, resource consumption, and costs (Hansen & Mowen, 2007). Environmental management is also a form of fulfilling stakeholder demands for business sustainability as well as a means for companies to gain legitimacy as the fulfillment of social contracts with the surrounding environment.

Disclosure of information is important for companies to have a dialogue with stakeholders about the condition of the company (Lindawati & Puspita, 2015). This management will certainly have a good impact on the business. This disclosure is a form of signal to potential investors and creditors that the company is managing the environment properly and its business is more secure. In addition, it can be used as evaluation material by the principal, informing stakeholders which their interests have been accommodated, as well as informing the environment around the company that the company has fulfilled the social contract.

Hypothesis 1: Environmental costs have a positive effect on firm value

Hypothesis 2: Environmental disclosure in the previous period has a positive and significant effect on the firm value for the current period

Agency theory suggests that there is a possibility that the agent may act against the wishes of the principal (Godfrey et al., 2010). Therefore, it is necessary to establish a good corporate governance system to ensure that there is no conflict of interest between managers, owners, and other stakeholders. The goal of CG is to establish a transparent, trusted, and accountable environment needed to maintain long-term, financial, and business integrity.

Corporate governance in this study is proxied by the proportion of independent commissioners and the number of audit committees. Independent commissioners play an important role so that all shareholders do not lack and have the resources and information to carry out potential abuse of authority. The number of independent commissioners must ensure that the control mechanism runs effectively and under the laws and regulations. An independent commissioner can strengthen assurance for investors that the considerations and decisions of the Board of Commissioners will be free from bias. Of course, it is included in the supervision of environmental management by the company whether it has been running properly or not. In addition to independent commissioners, the Audit Committee has a critical role in assisting independent commissioners to supervise adequate and effective risk management, control, reporting, and governance (IFC & OJK, 2018). This audit committee is tasked with ensuring that the company's business activities comply with applicable regulations, from operations to financial reporting.

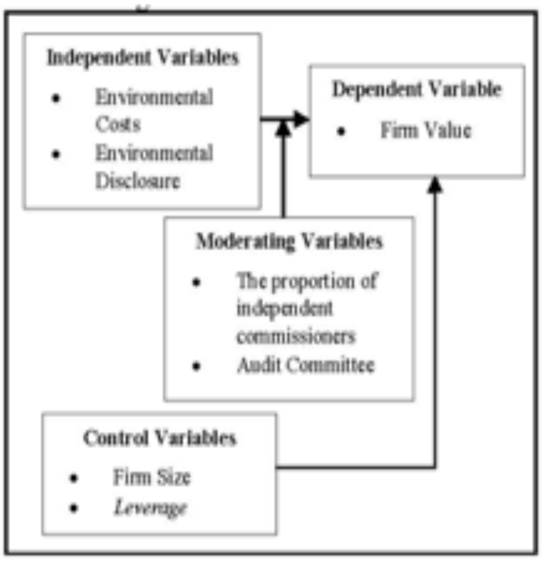
Hypothesis 3: The proportion of independent commissioners moderates the effect of environmental costs on firm value

Hypothesis 4: The proportion of independent commissioners moderates the effect of the previous period's environmental disclosure on the firm value of the current period

Hypothesis 5: The Audit Committee moderates the effect of environmental costs on firm value

Hypothesis 6: The Audit Committee moderates the effect of the previous period's environmental disclosure on the firm value for the current period.

The framework of this research is as follows.



III. Research Design

A. Sample selection and data sources

The types of data used in this study are secondary data on company environmental costs, company environmental information, the proportion of independent commissioners of the company, the number of audit committees, firm value, firm leverage, and firm size for the 2017-2020 period. The data sources are taken from financial reports, annual reports, and company sustainability reports for the period 2017-2020. The data were obtained from the sample firm sites, the Indonesia Stock Exchange website, and other data sources related to the research.

The population in this study are all companies in the mining industry listed on the Indonesia Stock Exchange as of December 31, 2020. We use the purposive sampling method in selecting the sample. The purposive sampling criteria in this study are companies that have been listed on the Indonesia Stock Exchange in the 2017-2020 period and are under the criteria for the mining product sub-industry. The selected sub-industries from the energy sector are Oil & Gas Production & Refinery, Coal Production, and Oil & Gas Drilling Service, while from the basic materials sector, namely Aluminum, Copper, Gold, Iron & Steel, and Diversified Metals & Minerals. The 2017-2020 period was chosen as the research period with consideration of the up-to-date information and the OJK Regulation Number 51/POJK.03/2017 which requires listed companies to issue sustainability reports containing environmental reports.

The sampling criteria are companies listed on the stock exchange at least since 2016, disclosing the environmental costs incurred by the company, and having published a complete annual report from 2016 to 2020. Environmental disclosure that takes into account latency factors requires the annual report of Independent Variables the previous period to be variable. If there are companies that do not meet one of the sample criteria, they are not used as sample data. The results of sample selection based on the aforementioned criteria can be seen in Table I.

No	Research Sample Criteria	Quantities
1	Companies with selected sub-industry as of 31 December 2020	54
2	Companies that do not meet the minimum listed period	(8)
3	Companies that do not disclose environmental costs	(12)
4	Companies that have the potential to be delisted because they have operational problems	(3)
5	Companies that have not published an annual report for the 2020 period	(1)
6	Companies that use different reporting fiscal periods	(1)
7	Quantity of research sample companies	29
8	Number of samples for the period 2017-2020	116

B. Operational definition of variables

1) Independent variables

The first independent variable used in this study is the environmental cost variable. Environmental costs (EC) are costs that are incurred because poor environmental quality exists or because poor environmental quality may exist. (Hansen & Mowen, 2007). Environmental costs must be included in the company's sustainability report under OJK Regulation Number 51/POJK.03/2017. The environmental costs variable is measured using the ratio between total environmental costs and total net profit after tax (Dewata et al., 2018; Egbunike & Okoro, 2018; Fitriani, 2013; Hapsoro & Adyaksana, 2020). If the environmental costs are not listed, then the CSR costs for the environmental development program are used (Dewata et al., 2018; Egbunike & Okoro, 2018; Fitriani, 2013). The formula for the environmental cost variable is as follows.

$$EC = \frac{\Sigma Environmental\ Costs}{Net\ Income\ After\ Tax}$$

The second independent variable used in this study is the environmental disclosure (ED) variable. This variable uses the previous year with the consideration that the disclosure of information from the previous year will affect the firm value in the current year according to research by Pedron et al., (2021) and Anggraeni, (2015). Information disclosure is measured using a checklist of indicators based on the Global Reporting Index (GRI) Standards 2016, with 32 disclosure indicators divided into 8 different categories, namely materials, energy, water and effluents, diversity, emissions, waste, environmental compliance, and supplier environmental assessment. GRI Standards 2016 was the most recent standard at the time this research was conducted. There is an indicator adjustment used in the GRI Standards 2016 from the G4 GRI Standards 2013. However, this adjustment has been accommodated by GRI so that companies that are still using the G4 GRI Standards 2013 can be assessed with the new standard. Indicators of environmental information disclosure can be seen in Table II. The measurement of environmental information disclosure is carried out based on the ratio of the level of disclosure (Hapsoro & Adyaksana, 2020; Pedron et al., 2021) with the following formula.

$$ED = \frac{Number\ of\ Disclosed\ Indicators}{Total\ Indicator}$$

Table II. Indicators in Environmental Disclosure

No.	Category	Number of Indicators	No.	Category	Number of Indicators
1.	Materials	3	5.	Emissions	7
2.	Energy	5	6.	Waste	5
3.	Water and Effluents	5	7.	Environmental Compliance	1
4.	Biodiversity	4	8.	Supplier Environmental Assessment	2

2) Dependent variable

The dependent variable that is the focus of the research is firm value. Firm value is measured using Tobin's Q (TBQ) ratio. Tobin's Q ratio is used because it can provide an overview of the fundamental aspects of the company and the market view of the company. The Tobin's Q ratio can reflect the current value of cash flows that will be obtained by the company in the future, which is based on information both at present and information in the future. (Ganguli dan Agrawal, 2009; Wahla, Shah dan Hussain, 2012 in Singh et al., 2018). The formula for calculating Tobin's Q ratio (Ethika et al., 2019; Nguyen & Tran, 2019; Pedron et al., 2021; Sawitri, 2017) is as follows.

$$TBQ = \frac{MVE + Debt}{TA}$$

3) Moderating variables

The moderating variable in this study is corporate governance. Managers' interests can be limited by implementing effective CG to protect the interests of investors or shareholders. CG can resolve conflicts of interest between shareholders and non-investor stakeholders and can manage all stakeholder interests (Jo & Harjoto, 2011). Because the implementation of CG can ensure good corporate governance, the quality of the company's business activities can be guaranteed in its implementation compared to companies that do not implement CG.

In this study, the moderating variable, corporate governance, uses two proxies based on research by Falikhatun et al., (2020), that is the proportion of independent commissioners and the number of audit committees. Independent commissioners add to investors' assurances that the considerations and decisions of the board of commissioners will be free from bias, including in the supervision of environmental management by the company whether it has been carried out properly or not. The proportion of independent commissioners is measured by the ratio of the total independent commissioners to the total of the entire company's board of commissioners. The audit committee has a critical role in assisting independent commissioners to exercise adequate and effective oversight of risk management, control, reporting, and governance (IFC & OJK, 2018). The audit committee is measured by the total number of members of the company's audit committee.

4) Control variables

There are two control variables used in this study, those are firm size and market leverage. The firm value can depend on the firm size so that it can bias the results (Najid & Rahman, 2011). Therefore, this study uses firm size as one of the control variables. Firm size is measured by the logarithm of the Market Value of Equity (MVE). (Dang et al., 2018). Considering that debt can solve some of the agency costs, leverage is determined as a control variable so as not to generate bias (Najid & Rahman, 2011). Leverage is measured by dividing total liabilities by total equity, known as market leverage (Dang et al., 2018).

Variables	Type	Code	Operational Definitons
EnvironmentalCosts	Independent Variable	EC	$EC = \frac{\Sigma Environment\ Costs}{Net\ Income\ After\ Tax}$
EnvironmentalDisclosure	Independent Variable	ED	$ED = \frac{Number\ of\ Disclosed\ Indicators}{Total\ Indicator}$
Firm Value	Dependent Variable	TBQ	$TBQ = \frac{MVE + Debt}{TA}$
Proportion of Independent Commissioners	Moderating Variable	KI	$K1 = \frac{\Sigma Independent\ Commissioners}{\Sigma Board\ of\ Commissioner}$
Number ofAudit Committees	Moderating Variable	KA	$KA = \Sigma Audit\ Committees$
Firm Size	Control Variable	SIZE	$SIZE = log(MVE)$
Market Leverage	Control Variable	LEV	$LEV = \frac{Total\ Liabilities}{Total\ Equity}$

C. Model design

In order to verify the correctness of the hypotheses, the following models are built for the regression analysis.

1) TBQi,t = α + β1ECi,t + β2EDi,t-1 + β3SIZEi,t + β4LEVi,t + e
2) TBQi,t = α + β1ECi,t + β2EDi,t-1 + β3KIi,t + β4(ECi,t • KIi,t) + β5(EDi,t-1 • KIi,t) + β6SIZEi,t + β7LEVi,t + e
3) TBQi,t = α + β1ECi,t + β2EDi,t-1 + β3KAi,t + β4(ECi,t • KAi,t) + β5(EDi,t-1 • KAi,t) + β6SIZEi,t + β7LEVi,t + e

A regression model was chosen before to performing regression analysis. Pooled Least Square, Fixed Effect Model, and Random Effect Model are the panel data regression models of choice. The Chow Test, the Lagrange Breusch-Pagan Multiplier Test, and the Hausman Test were used to conduct the test. Furthermore, the classic assumption test is utilized to check that the regression model used for this study is feasible, valid, and consistent, and that it can be used to reach a conclusion. Normality, multicollinearity, heteroscedasticity, and autocorrelation are the four tests that must be performed.

The model is subjected to goodness of fit testing in order to get reliable research conclusions. The F- test is used to determine the level of significance and influence of all independent variables on the dependent variable simultaneously with a significance level of 0.05 in the goodness of fit test. Before proceeding on to the T-test, the model must pass the F-test. With a significance level of 0.1, a T-test was used to determine the level of significance and influence of each independent variable on the dependent variable, and an analysis of the coefficient of determination R-Squared (R2) was used to determine the independent variable's ability to explain the variation of the dependent variable. The higher the R2 number, the better the independent variable predicts the dependent variable.

Some software is used to support data processing and writing this research. The software used to process the data are Microsoft Excel and STATA 16. The software used for writing is Microsoft Word.

IV. Empirical Analysis

A. Descriptive statistics analysis

Descriptive statistical analysis was performed using STATA 16. The analysis was carried out on all research variables. The statistical results are shown in Table IV.

Table IV. Descriptive Statistics of Variable

Variable	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
EC	116	-1.067383	9.205512	0.134774	0.8744695
ED	116	0	0.6875	0.2198276	0.1485854
TBQ	116	0.5653767	4.451508	1.309384	0.6895621
KI	116	0.2	0.6666667	0.3961959	0.0876633
KA	116	0	5	3.155172	0.5985991
SIZE	116	10.91041	13.82119	12.63502	0.7189873
LEV	116	-12.24266	23.0944	1.929307	4.35364

The value of the environmental cost sample in this study is in the range of the minimum number of -1.067383 to the maximum number of 9.205512 with an average value of 0.134774 and a standard deviation of 0.8744695. The company with a minimum environmental cost value of -1.067383 is PT Vale Indonesia Tbk in the 2017 period. A negative value of environmental costs indicates that the company has suffered losses in that period. On the other hand, the company with the maximum environmental cost value of 9.205512 is PT Bumi Resources Tbk in the 2019 period. This value indicates the company's strategy to incur environmental costs.

The sample value of environmental information disclosure in this study is in the range of a minimum number of 0 to a maximum number of 0.6875 with an average value of 0.2198276 and a standard deviation of 0.1485854. The company with a minimum environmental information disclosure value of 0 is PT Golden Eagle Energy Tbk in 2017 and 2018. A value of 0 from the disclosure of environmental information indicates that the company did not disclose any environmental information by the 2016 GRI Standards for that period. On the other hand, the company with maximum environmental information disclosure of 0.6875 is PT Adaro Energy Tbk in 2020.

The sample firm value value in this study is in the range of a minimum number of 0.5653767 to a maximum number of 4.451508 with an average value of 1.309384 and a standard deviation of 0.6895621. The company with a minimum company value of 0.5653767 is PT Bumi Resources Minerals Tbk in 2018. On the other hand, the company with a maximum company value of 4.451508 is PT Bayan Resources Tbk in 2018.

The sample value of the proportion of independent commissioners in this study is in the range of a minimum number of 0.2 to a maximum number of 0.6666667 with an average value of 0.3961959 and a standard deviation of 0.0876633. Companies with a minimum proportion of independent commissioners of 0.2 are PT Vale Indonesia Tbk in 2019 and PT Timah Tbk in 2017. This violates the provisions of the Financial Services Authority (OJK) which requires the proportion of independent commissioners to be at least 30% of the total number of commissioners. The board of commissioners in OJK Regulation Number 33/POJK.04/2014 concerning the Board of Directors and Board of Commissioners of Issuers or Public Companies. On the other hand, the company with a maximum proportion of independent commissioners of 0.6666667 is PT Bumi Resources Minerals Tbk in 2017, 2018, and 2019.

The value of the audit committee sample in this study is in the range of a minimum number of 0 to a maximum number of 5 with an average value of 3.155172 and a standard deviation of 0.5985991. A company with a minimum number of audit committees of 0 is PT J Resources Asia Pacific Tbk from 2017 to 2018. This case violates the provisions of the Financial Services Authority (OJK) which requires the number of audit committees to be at least three people in OJK Regulation Number 55/POJK. 04/2015 concerning the Establishment and Guidelines for the Work Implementation of the Audit Committee. Only one company violated these provisions. On the other hand, the company with a maximum number of audit committees of 5 is PT Indika Energy Tbk in 2020.

The value of the sample size of the company in this study is in the range of a minimum number of 10.91041 to a maximum number of 13.82119 with an average value of 12.63502 and a standard deviation of 0.7189873. The company with a minimum company size of 10.91041 is PT Betonjaya Manunggal Tbk in the period 2017. On the other hand, the company with a maximum company size of 13.82119 is PT Bayan Resources Tbk in 2018.

The leverage sample value in this study is in the range of a minimum number of -12,24266 to a maximum number of 23.0944 with an average value

of 1.929307 and a standard deviation of 4.35364. Before further analysis of the leverage data, Winsor was conducted on 2 data samples at the 1% and 99% percentiles because there were outliers that could potentially affect the results of data calculations, as done by Belot and Serve (2018). There are two companies with a minimum leverage value of -12,24266, namely PT Alumindo Light Metal Industry Tbk in the 2018 period and PT Apexindo Pratama Duta Tbk in the 2017 period. On the other hand, the company with a maximum leverage value of 23.0944 is PT Atlas Resources Tbk in the 2018 period and PT Bumi Resources Tbk in 2020.

Table V. Regression Model Selection Results

Model	*Chow* Test	*Hausman* Test	BPLM Test	Choosen Model
Model 1	FEM	FEM	REM	FEM
Model 2	FEM	FEM	REM	FEM
Model 3	FEM	FEM	REM	FEM

C. Classic assumption test

1) Normality Test

The normality test examines the distribution of the regression model's residual variables. The Shapiro-Wilk, Shapiro-Francia, and Skewness/Kurtosis tests were utilized to determine normality in this work. Table VI shows the test results for each model.

The test is carried out by observing the probability value with a significance level of 0.05. If the probability value is above the significance value, then the data is normally distributed, and vice versa if the probability value is below the significance value, then the data is not normally distributed. The three test values are below the significance value, so it can be concluded that the residual data are not normally distributed. If a study uses sample data of less than 100 observations, the assumption of normality plays an important role. However, if the sample data is large, more than 100, the normality assumption can be left (Gujarati & Porter, 2009). In this study, the total number of observational sample data is 116 so that the assumption of normality can be ignored.

Table VI. Normality Test Results

Model	*Shapiro-Wilk* Test	*Shapiro-Francia* Test	*Skewness/Kurtosis* Test
Model 1	0.00000	0.00001	0.00000
Model 2	0.00000	0.00001	0.00000
Model 3	0.00000	0.00001	0.00000

2) Multicollinearity Test

Multicollinearity is the existence of a linear relationship between the explanatory variables of a regression model (Gujarati & Porter, 2009), so it is necessary to have a multicollinearity test to ensure that the independent variables are not related.

Multicollinearity test was conducted by observing the value of variance influence factor (VIF) and the correlation between independent variables. VIF values above 10 and correlation values above 0.9 indicate that there is an indication of multicollinearity in the variable (Gujarati & Porter, 2009).

Tables VII and VIII show the results of the multicollinearity test model I. According to the table, no independent variables or control variables have a correlation value greater than 0.9 or a VIF greater than 10. It may be inferred that model 1 has no multicollinearity issues..

Table VII. Model 1 Correlation Matrix

	TBQ	EC	ED	SIZE	LEV
TBQ	1.0000				
EC	-0.0688	1.0000			
ED	-0.0188	0.0678	1.0000		
SIZE	0.4695	0.0006	0.5003	1.0000	
LEV	-0.1130	0.1097	0.0484	-0.0615	1.0000

Table VIII. Model 1 VIF Value

Variable	VIF	1/VIF
EC	1.02	0.739939
ED	1.35	0.741771
SIZE	1.02	0.977262
LEV	1.02	0.983255

Tables IX and X show the results of the model II multicollinearity test. The environmental cost variable (EC) and its interaction with the variable proportion of independent commissioners as moderating (EC* KI), as well as the variable of environmental information disclosure (ED) and its

interaction with the proportion of independent commissioners as moderating (ED*KI), both have correlation values greater than 0.9 and VIF values greater than 10. The presence of multicollinearity symptoms in the regression equation model 2 may be seen here.

Table IX. Model 2 Correlation Matrix

	TBQ	EC	ED	KI	EC*KI	ED*KI	SIZE	LEV
TBQ	1.000							
EC	-0.069	1.000						
ED	-0.019	0.068	1.000					
KI	-0.167	-0.036	-0.260	1.000				
EC*KI	-0.070	0.999	0.062	-0.028	1.000			
ED*KI	-0.069	0.062	0.935	0.035	0.059	1.000		
SIZE	0.470	0.001	0.500	-0.165	-0.002	0.451	1.000	
LEV	-0.113	0.110	0.048	-0.062	0.108	0.105	-0.062	1.000

Table X. Model 2 VIF Value

Variable	VIF	1/VIF
EC	819.59	0.001220
EC*KI	818.37	0.001222
ED	25.87	0.038657
ED*KI	23.69	0.042211
KI	3.13	0.319209
SIZE	1.35	0.740690
LEV	1.06	0.943768

Tables XI and XII show the results of the model II multicollinearity test. The environmental cost variable (EC) and its interaction with the number of audit committees as a moderating variable (EC*KA), as well as the environmental information disclosure variable (ED) and its interaction with the number of

audit committees as a moderating variable (ED*KA), both have correlation values greater than 0.9 and VIF values greater than 10. The presence of multicollinearity symptoms in the regression equation model 3 may be seen here.

Table XI. Model 3 Correlation Matrix

	TBQ	EC	ED	KA	EC*KA	ED*KA	SIZE	LEV
TBQ	1.000							
EC	-0.069	1.000						
ED	-0.019	0.068	1.000					
KA	0.154	-0.009	0.417	1.000				
EC*KA	-0.071	0.998	0.076	0.001	1.000			
ED*KA	-0.001	0.062	0.973	0.542	0.058	1.000		
SIZE	0.470	0.001	0.500	0.258	0.003	0.490	1.000	
LEV	-0.113	0.110	0.048	0.023	0.102	0.057	-0.062	1.000

Table XII. Model 3 VIF Value

Variable	VIF	1/VIF
EC	219.13	0.004563
EC*KA	218.67	0.004573
ED	27.74	0.036045
ED*KA	32.03	0.031216
KI	2.08	0.481913
SIZE	1.36	0.736800
LEV	1.04	0.957673

In models 2 and 3, symptoms of multicollinearity arise as a result of the interaction between factors, which is the product of the independent and moderating variables. Mean centering was used on the sample data to alleviate the symptoms of multicollinearity. On a micro size, this is effective for minimizing the symptoms of multicollinearity, but not on a macro scale (Iacobucci et al., 2016). On a micro-scale, reducing multicollinearity symptoms

lessens the linear correlation between explanatory or independent factors, resulting in a better relationship between variables. On a macro scale, mean centering is insignificant; for example, it has little effect on the value of R2. Mean centering is achieved by removing the sample mean from each variable data sample. Tables XIII to XVII demonstrate that there are no signs of multicollinearity.

Table XIII. Model 2 Correlation Matrix After Mean Centering

	TBQ	EC	ED	KI	EC*KI	ED*KI	SIZE	LEV
TBQ	1.000							
EC	-0.069	1.000						
ED	-0.019	0.068	1.000					
KI	-0.167	-0.036	-0.260	1.000				
EC*KI	0.126	-0.804	-0.005	-0.341	1.000			
ED*KI	0.051	-0.002	-0.331	-0.173	0.127	1.000		
SIZE	0.470	0.001	0.500	-0.165	0.042	-0.181	1.000	
LEV	-0.113	0.110	0.048	0.119	-0.172	0.035	-0.062	1.000

Table XIV. Model 2 VIF Value After Mean Centering

Variable	VIF	1/VIF
EC	4.15	0.241060
EC*KI	4.76	0.210202
ED	1.62	0.038657
ED*KI	1.25	0.042211
KI	1.82	0.319209
SIZE	1.35	0.740690
LEV	1.06	0.943768

Table XV. Model 3 Correlation Matrix After Mean Centering

	TBQ	EC	ED	KA	EC*KA	ED*KA	SIZE	LEV
TBQ	1.000							
EC	-0.069	1.000						
ED	-0.019	0.068	1.000					
KA	0.154	-0.009	0.418	1.000				

Table XVI. Model 3 VIF Value After Mean Centering

EC*KA	-0.059	-0.447	-0.088	0.001	1.000			
ED*KA	-0.109	-0.029	0.268	-0.166	0.175	1.000		
SIZE	0.470	0.001	0.500	0.258	-0.069	0.093	1.000	
LEV	-0.113	0.110	0.048	0.023	-0.153	0.058	-0.062	1.000

Table XVI. Model 3 VIF Value After Mean Centering

Variable	VIF	1/VIF
EC	1.29	0.772733
EC*KA	1.42	0.703088
ED	1.75	0.570563
ED*KA	1.23	0.813720
KA	1.44	0.694148
SIZE	1.36	0.736800
LEV	1.04	0.957673

3) Heteroscedasticity Test

The next assumption test that must be met in the research model is homoscedasticity (Gujarati & Porter, 2009). A constant value variance from the residual is required in the research model. The Modified Wald test was used to determine heteroscedasticity. With a significance level of 0.05, the test is done out by examining the probability value. If the probability value is more than or equal to the significance value, there is no problem with

heteroscedasticity; however, if the probability value is less than or equal to the significance value, there is a problem with heteroscedasticity. Table XVII shows the results of heteroscedasticity testing on the research regression model. The test findings reveal that all models have problems with heteroscedasticity. In the Fixed Effect Model (FEM) the addition of a robust option is needed to overcome this problem (StataCorp, 2021).

Table XVII. Heteroscedasticity Test Results

Model	Test Results	Conclusion
Model 1	chi2 (29) = 2.5e+05 Prob>chi2 = 0.0000	There is a heteroscedasticity problem
Model 2	chi2 (29) = 1.7e+06 Prob>chi2 = 0.0000	There is a heteroscedasticity problem
Model 3	chi2 (29) = 1.7e+05 Prob>chi2 = 0.0000	There is a heteroscedasticity problem

4) Autocorrelation Test

The correlation between a sample of a set of observations arranged by time or space is known as autocorrelation (Gujarati & Porter, 2009). The Wooldridge test can be used to discover autocorrelation issues. With a significance level of 0.05, the test is done out by examining the probability value. There is no autocorrelation if the probability value is greater than the significance value, and vice versa if the probability value is less than the significance value. Table XVIII shows the results of the autocorrelation test on the research regression model. All models have autocorrelation, according to the test results. To solve this problem, a robust option must be added to the Fixed Effect Model (FEM) (StataCorp, 2021).

Table XVIII. Autocorrelation Test Results

Model	Test Results	Conclusion
Model 1	F(1, 28)= 14.199 Prob > F = 0.0008	There is autocorrelation
Model 2	F(1, 28)= 15.904 Prob > F = 0.0004	There is autocorrelation
Model 3	F(1, 28)= 14.767 Prob > F = 0.0006	There is autocorrelation

D. Regression Analysis

Before a partial test could be done, the F statistic test was used to examine the effect of the independent variable on the dependent variable at the same time. If the probability value of the F-statistic is smaller than the significance value, or the F-count value is more than the F-Table value, the independent variable is shown to effect the dependent variable concurrently. The probability value of the F-statistics of all models in Table XIX is 0.0000. This result is less than the 0.05 significant level, indicating that all independent variables in the study model had an impact on company value at the same time.

The effect of environmental costs on firm value is significant with a significance level of 10%, according to the results shown in Table XIX. With a probability value of 0.019, the coefficient of environmental costs is positive at 0.0330316. Hypothesis 1 was proven by the study model, implying that environmental expenses have a beneficial impact on business value.

With a significance level of 10%, the effect of the previous period's environmental disclosure on the current period's firm value was not significant, according to the results shown in Table XIX. With a probability value of 0.340, the coefficient of environmental information disclosure has a negative value of -0.2451352. The study model failed to verify Hypothesis 2 since the test provided insignificant findings, implying that environmental costs had no positive impact on business value.

With a significance threshold of 10%, the interaction between environmental costs (EC) and the proportion of independent commissioners (KI) has no significant effect on firm value during the current period, according to the results shown in Table XIX. The EC*KI interaction variable has a positive coefficient of 1.180474 and a probability value of 0.336. The KI moderating variable has a coefficient of -0.0615777 and a probability value of 0.833. The probability value is bigger than the 10% significance level, indicating that it has no bearing on the firm's worth. Environmental costs, the independent variable, has a considerable positive effect on firm value, while the moderating and interaction variables have little effect. As a result, Hypothesis 3 is not supported by the study model, implying that the fraction of independent commissioners has no effect on the effect of environmental costs on firm value. According to the proportion of independent commissioners acts as a homologizer moderator when it comes to the impact of environmental costs on firm value. The dependent variable is unaffected by this form of moderator, but it can affect the coefficient values of other independent variables (Sharma et al., 1981).

With a significance threshold of 10%, the interaction between the previous period's environmental disclosure (ED) and the proportion of independent commissioners (KI) had no significant effect on the current period's firm value, according to the results shown in Table XIX. The ED*KI interaction variable's coefficient has a positive value of 0.0020737 and a probability value of 0.998. The KI moderating variable has a coefficient of - 0.0615777 and a probability value of 0.833. The probability value is bigger than the 10% significance level, indicating that it has no effect on the firm's worth. Moderation and interaction variables had no bearing on the outcome. As a result, the study model fails to prove Hypothesis 4, implying that the proportion of independent commissioners has no effect on the effect of environmental information disclosure from the previous period on the current period's firm value. According to Sugiono (2004), the fraction of independent commissioners acts as a homologizer moderator on the impact of previous period's environmental information disclosure on current period's business value.

The interaction between environmental costs (EC) and the number of audit committees (KA) has a significant effect on firm value for the current period, according to the results shown in Table XIX, with a significance level of 10%. With a probability value of 0.038, the coefficient of interaction variable EC*KA has a negative value of -0.1209386. The independent variable of environmental costs, as well as the interaction variable, both have a considerable impact on company value. As a result, Hypothesis 5 was proven by the study model, indicating that the number of audit committees moderates the influence of environmental costs on firm value. According to Sugiono (2004), the number of audit committees acts as a pure moderator of the impact of environmental costs on firm value. This form of moderator interacts with the independent variable but doesn't have a significant effect on the dependent variable (Sharma et al., 1981).

With a significance level of 10%, the interaction between the previous period's environmental information disclosure (ED) and the number of audit committees (KA) has no significant effect on the current period's firm value, according to the results shown in Table XIX. The positive coefficient of the interaction variable ED*KA has a probability value of 0.387 and a positive value of 0.1319319. With a probability of 0.609, the variable number of audit committees has a coefficient of -0.0139231. The probability value is bigger than the 10% significance level, indicating that it has no effect on the firm's value. The independent variable environmental disclosure, as well as the interaction and moderating variables, show no significant effect on firm value. As a result, Hypothesis 6 is not confirmed by the study model, implying that the number of audit committees has no effect on the effect of previous period's environmental information disclosure on current period's business value. According to Sugiono (2004), the proportion of independent commissioners can act as a homologizer moderator when it comes to the effect of previous period's environmental disclosure on current period's firm value.

The coefficient of determination, or R2, is a brief indicator of how well a regression model explains the data (Gujarati & Porter, 2009). The coefficient of determination is one of the factors that influence a regression model's goodness of fit. The corrected R2 value is used as the coefficient of determination in this research. Model 1's adjusted R2 value is 0.5072, model 2's is 0.4953, and model 3's is 0.4976, as shown in Table XIX. Based on these findings, it can be inferred that the variables in model 1 explain 50.72% of the variation in company value, model 2 explains 49.53%, and model 3 explains 49.76% of the variation in firm value. The remaining 49.28% in model 1, 50.47% in model 2, and 50.24% in model 3 are explained by other variables that are not used in this research model.

Table XIX. Regression Analysis Results

Variable	Model 1		Model 2		Model 3	
	Coefficient	Probability	Coefficient	Probability	Coefficient	Probability
C	-18.96688	0.000***	-18.97708	0.000***	-19.15487	0.000***
EC	0.0330316	0.019**	0.0589822	0.062*	0.0225551	0.082*
ED	-0.2451352	0.170	-0.2340177	0.387	-0.2311359	0.380
KI			-0.0615777	0.833		
KA					-0.0139231	0.609
EC*KI			1.180474	0.336		
ED*KI			0.0020737	0.998		
EC*KA					-0.1209386	0.038**
ED*KA					0.1319319	0.387
SIZE	1.607067	0.000***	1.609455	0.000***	1.624886	0.000***
LEV	0.0105691	0.171	0.0114611	0.310	0.0104272	0.357
R-Squared	0.5243		0.5260		0.5282	
Adj. R-Squared	0.5072		0.4953		0.4976	
F-Stat	9.95		17.96		81.72	
Prob F	0.0000		0.0000		0.0000	
Remarks: *) significant at 0.1 level; **) significant at 0.05 level; ***) significant at 0.01 level						

V. Conclusions, Limitations, and Implications

A. Conclusions

1) The Effect of Environmental Costs on Firm Value

Environmental costs are inextricably linked to the concept of ecoefficiency, which is the idea that businesses can provide higher-quality goods and services while decreasing negative environmental consequences. (Hansen & Mowen, 2007). This study shows that a company's environmental costs can improve both its economic and environmental performance. Environmental costs imply that the business practices environmental management in order to achieve long-term sustainability and efficiency. According to Dina et al. (2016), the corporation will get legitimacy from the surrounding environment because it can fulfill the social contract in terms of environmental management and limiting environmental damage. The corporation is also able to conform to the Triple Bottom Line guidelines. This responsibility can be viewed in two ways. First, there is the issue of responsibility as a moral and legal commitment that must be followed. Customers expect ecologically friendly products, governments require corporations follow environmental standards, and employees need a safe and clean work environment, and all of these demands are met. Stakeholders who are concerned about the environment will support the company (Septiadi, 2016). The consistency of environmental care is demonstrated by a clear allocation of costs for environmental management, which builds public trust (Tunggal & Fachrurrozie, 2014). Companies aren't just economic actors; they're also social ones. Second, this accountability can be observed in the company's long-term investment strategy, which places the organization in a favorable and competitive business climate.

2) The Effect of Environmental Disclosure on Firm Value

Information disclosure is a type of corporate signaling theory aimed at reducing information imbalance between interested parties (Spence, 2002 in Connelly et al., 2011). Environmental disclosure is important for stakeholders to understand how the company manages its environment, as well as to comply with regulatory rules. However, according to the findings of the study, environmental information is insufficient to raise the company's worth, therefore investment decisions that cause stock prices to rise are dependent on other financial and non-financial information. Furthermore, not all corporations have disclosed environmental information through sustainability reports. Only 13 companies out of 54 registered companies published sustainability reports as of December 31, 2020, accounting for 24% of the total, according to Anjarwasana (2018), who claims that environmental disclosure in Indonesia is still rare due to a lack of awareness of the long-term positive impact of the environment, and Yanti (2015), who claims that the quality of disclosure is poor because there are still few companies that use the GRI standard. As a result, using GRI Standards for disclosure has no impact on firm value (Retno & Priantinah, 2012). Even though the OJK requires it, ACGA and CLSA (2021) recently highlighted in the CG Watch 2020 report that environmental, social, and corporate governance reporting in Indonesia is still inadequate and limited. Furthermore, the Indonesia Stock Exchange does not yet mandate listed companies to submit a sustainability report as part of their disclosure requirements.

3) The Effect of the Proportion of Independent Commissioners in Moderating the Effect of Environmental Costs on Firm Value

The proportion of independent commissioners is the number of commissioners who are not related to the majority shareholder of all existing commissioners. Independent commissioners are intended to cut agency costs in order to prevent directors from making business decisions that benefit individuals and majority shareholders. Although descriptive statistics show that the company has an average proportion of independent commissioners of 0.3961959 or 39.62 percent, the proportion of independent commissioners is still insufficient to influence every business decision made by the directors (Prastuti & Budiasih, 2015). This statement is backed up by reports from ACGA and CLSA (2018), which claim that minority shareholder rights and protection are still lacking. According to the Corporate Governance Watch study (ACGA & CLSA, 2016), the notion of independence was still debatable in 2016, and independence became a serious issue in the board structure of the organization. As a result, environmental management monitoring, particularly on environmental expenses, is reduced.

4) The Effect of the Proportion of Independent Commissioners in Moderating the Effect of Disclosure of Environmental Information in the Previous Period on the Firm value for the Current Period

The proportion of independent commissioners is still insufficient to influence every business decision made by the directors (Prastuti & Budiasih, 2015), as indicated by ACGA and CLSA (2018) investigations stating that minority shareholder rights and protection are still lacking. The role of independent commissioners is to represent minority shareholders. According to Christanti and Mahastanti (2011), one of the reasons for independent commissioners' incapacity to improve environmental reporting is the behavior of retail investors who do not evaluate the company's environmental concern.

5) The Effect of the Audit Committee in Moderating the Effect of Environmental Costs on Firm Value

The audit committee's role is to assist the board of commissioners with their oversight. Compliance with regulations, especially environmental regulations, is monitored. Environmental management oversight results in the directors decreasing environmental costs incurred, either for savings or for repair expenses that can be avoided from the start through such supervision, so weakening the impact of environmental costs on firm value for the audit committee. One of the criteria in the usage of restricted environmental costs is the disclosure of sustainability, which is currently lacking in Indonesia. (ACGA & CLSA, 2021).

6) The Effect of the Audit Committee in Moderating the Effect of Disclosure of Environmental Information in the Previous Period on the Firm value for the Current Period

Even in other industries, the audit committee has not concentrated on checking the quality of environmental reporting, as seen by the unequal disclosure of environmental information in mining businesses. This comes after concerns that Indonesia's disclosure of environmental information is still lacking (ACGA & CLSA, 2021). The audit committee is intended to be able to oversee the entire operation of the organization, not just the financial elements.

B. Limitations

There are several limitations to this study that cannot be ignored. Due to a lack of company data, the number of companies in the population cannot be used as study samples. The method of content analysis used to score the variable index of the company's environmental information disclosure is tied to the issue of researcher subjectivity. The scope of the research is limited due to time restrictions. In corporate governance, only a few proxies are implemented.

C. Implications

From the results of this study, ecoefficiency through environmental costs should be continued by the company, and the obligation to disclose environmental information should be regulated clearly.

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03 The Effect of Board Diversity on Corporate Social Responsibility (CSR) with Industry Type as Moderated Variable

Diva Alviorizka, Wiwik Supratiwi
Accounting Department, Faculty of Economics and Business, Airlangga University
Email: diva.alviorizka-2017@feb.unair.ac.id

This research aimed to examine the effect of board diversity on corporate social responsibility moderated by industry type. Board diversity's characteristics used were gender diversity, age diversity, and educational background diversity. The population of this research was all companies listed on Indonesia Stock Exchange (IDX) and published their Sustainability Report on 2017-2019. The data was analyzed using multiple linear regression method and moderated regression analysis (MRA) method. This research found that only educational background diversity has a positive effect on CSR disclosure. In contrast, gender diversity has a negative effect, and age diversity did not affect CSR disclosure. Industry type successfully strengthens the positive effect educational background diversity has on CSR disclosure but failed to moderate the effect of diversity gender and diversity age on CSR disclosure.

Keywords: CSR, board diversity, industry type

INTRODUCTION

Corporate Social Responsibility (CSR) is a concept that states that companies have a responsibility to pay attention to economic, social, and environmental aspects in every decision taken. Companies that implement CSR properly get several benefits, both externally and internally (Mao, 2019). These external benefits include promoting environmental sustainability, increasing the accuracy of business forecast analysis, promoting social and economic growth developments, and increasing public awareness of the company and its products. Meanwhile, internal benefits can reduce the turnover of competent staff, increase customer and investor confidence, enhance the company's reputation, and promote the company's development.

Companies need good corporate governance to run effectively and efficiently. One aspect of good corporate governance is the diversity of the board of directors (Wang & Clift, 2009). Board diversity in the company can be seen from the spread of the diverse backgrounds of company board members, creating a different perspective for each member in making decisions (Ararat et al., 2010).

Board diversity can be viewed from the characteristics of each member of the board of directors, such as age, gender, ethnicity, and nationality (Hoang et al., 2016; Katmon et al., 2019) as well as tenure, educational background, and independence (Beji et al., 2020; Harjoto et al., 2015). One of the characteristics of board diversity studied is gender (Khan et al., 2019; Matitaputty & Davianti, 2020; Rao & Tilt, 2016). According to Bear et al. (2010), female board members can influence the analysis and decision-making processes. Meanwhile, age characteristics can also benefit the company, as older members are considered to have a lot of experience and wisdom. In comparison, younger members are active in corporate and community activities (Kang et al., 2007). Board diversity can improve monitoring, services, and strategies for implementing corporate governance through the educational background of members (Alshareef & Sandhu, 2015).

Board diversity also has the potential to cause conflict. Conflicts can occur when members do not believe in the concept of working in a diverse group so that they will face many challenges and dissatisfaction (Rao & Tilt, 2016). This condition is reinforced by Ferreira (2010) statement that the negative impact of board diversity on the company is due to communication problems between the company's board, the community, and shareholders. This difference makes board diversity still interesting to study because too many different individuals can lead to conflicts and differences of opinion in the disclosure of company reports, including CSR disclosures.

Many studies on board diversity and CSR disclosure have different results. Research by Hadya & Susanto (2018), Khan et al. (2019), and Yaseen et al. (2019) proves that gender-based board diversity has a significant positive effect on CSR. In contrast to the results of Ahmad et al. (2018) and Matitaputty & Davianti (2020), although there are relatively few female members on company boards, the effect on positive CSR disclosure is not significant.

Other characteristics such as age diversity also influence the company's CSR. Some evidence shows that age in board diversity does not have the same effect as other characteristics (Katmon et al., 2019; Khan et al., 2019). Therefore, until now, the age characteristics of company board members are still being debated. However, other studies have concluded that the age of the board of directors influences the company's CSR disclosure (Beji et al., 2020; Ibrahim & Hanefah, 2016).

Research on the effect of the educational background of the board of directors on CSR disclosure also shows inconsistent results. Rahindayati et al. (2015) said that education affects CSR disclosure, supported by the statement from Azam et al. (2019) and Hadya & Susanto (2018). This statement is inconsistent with other studies, which reveal that the educational background of the board of directors does not affect the company's CSR disclosure (Ahmad et al., 2018; Khan et al., 2019).

Based on the results of previous studies, there may be other variables between them (Rahindayati et al., 2015). Bayoud et al. (2012) said that the type of industry positively influences CSR disclosure. This is proven by several studies of the effect of board diversity on CSR disclosure which has different results in certain types of industries. Adeniyi & Fadipe (2018) concluded that board diversity does not significantly affect CSR disclosure in the food and beverage industry. In contrast to the research results in the banking industry, board diversity affects corporate CSR disclosure (Yaseen et al., 2018). In the hospitality industry, board diversity affects CSR implementation (Quintana-García et al., 2018). In the property, real estate, and construction industries, it was found that not all aspects of board diversity were significantly positively related to CSR disclosure (Purnomo & Rizki, 2020).

Khan et al. (2019) researched the effect of board diversity on CSR disclosure with age, gender, nationality, ethnicity, education level, educational background, and tenure. This study uses the variables of gender, age, and educational background as board diversity in its effect on CSR disclosure. This study also uses industry type as a moderating variable to strengthen the hypothesis.

LITERATURE REVIEW

Upper Echelon Theory

Upper echelon theory is a theory which states that decisions issued to companies are influenced by the characteristics of the company's top managers (Abatecola & Cristofaro, 2018; Hambrick, 2007; Hambrick & Mason, 1984; Quttainah, 2015). Through the upper echelon theory, Alazzani et al. (2017) and Hassan et al. (2020) explain that gender diversity, age diversity, and educational background diversity affect top managers' social and environmental behavior in decision making.

Corporate Social Responsibility Disclosure

CSR disclosure by Gray et al. (2001) is defined as a process of providing information to demonstrate the issue of social accountability that can be accounted for in various forms of media. The indicators used are from the Global Reporting Initiative (GRI). The GRI Standard consists of two standards, universal standards and topic-specific standards (GRI, 2016). The topic-specific standards consist of 23 disclosures on economic topics, 32 environmental topics, and 40 social topics. GRI Standard disclosures include core and comprehensive options, with 36 universal standard disclosures in core options and 59 universal standard disclosures in comprehensive options. Before the GRI Standard, there was GRI G4 which had 91 specific topic disclosures consisting of economic, environmental, and social topics. GRI G4 also has universal standard disclosures, so the total disclosure from GRI G4 is 125 disclosures.

Board Diversity

Board diversity is a concept of diversity in the composition of individuals on the board of directors. Diverse members of the board of directors can bring diverse perspectives in various approaches and increase the complexity of problem-solving and the quality of decision-making (Hillman, 2015). A diverse board of directors can also increase oversight of company managers' performance because the board's independence is getting stronger (Adams et al., 2015).

Gender Diversity

Gender diversity refers to the differences in characteristics between males and females. In this study, gender diversity is the presence of females and males board of directors in the company. Female board members usually have more experience as directors in smaller companies, are more active in asking questions and opinions, and are more serious in carrying out their duties (Ararat et al., 2010; Bear et al., 2010).

Age Diversity

Age is the length of an individual's life from birth (Santika, 2015). The age of members of a company's board of directors is usually closer to retirement age. This happens because older members have a lot of work experience and wisdom in making decisions. On the other hand, younger board members have less chance of becoming a board of directors, except members who are highly accomplished and experts in their fields.

Educational Background Diversity

Education has a strong influence on the knowledge of members of the board of directors in carrying out their duties, which also affects the policy and decision-making of the board of directors (Kagzi & Guha, 2018). Someone with a high education has a high ability to think about big and complex problems to help increase environmental awareness and awareness (Ahmad et al., 2018).

Industry Type

The industry type is related to operations, risks, and the ability to face business challenges (Astuti et al., 2019). A high-profile industry is an industry that has a high level of consumer visibility or a high level of competition. Meanwhile, low-profile industries do not get much public attention, even if they make mistakes or fail (Martin et al., 2018).

Hypothesis Development

Gender Diversity and CSR Disclosure

In line with the upper echelon theory, which states that the board of directors' characteristics can influence corporate decision-making (Abatecola & Cristofaro, 2018), gender diversity can influence CSR disclosure. Increasing gender diversity can strengthen the ability of the board of directors to make decisions and other issues from multiple perspectives and considerations (Gaurav et al., 2016). Males are considered more willing to take risks (Adams et al., 2015), but females are considered more concerned with the interests of others. Gender diversity can increase the influence of the board of directors on CSR disclosure, both according to the interests of the company and stakeholders (Harjoto et al., 2015).

Hypothesis 1: Gender diversity of the board of directors has a positive effect on CSR disclosure.

Age Diversity and CSR Disclosure

Age diversity in the board of directors creates values and views that are varied, unique, and based on experience (Khan et al., 2019). Generally, older members contribute a lot because of their experiences and opinions about their previous work. In comparison, younger members can bring new perspectives, are more innovative, and are open to ideas in line with the times (Ibrahim & Hanefah, 2016). Characteristics of age diversity can influence the decision to disclose CSR, per the upper echelon theory (Hambrick, 2007; Hambrick & Mason, 1984), which argues that the board of directors' characteristics influence decision-making.

Hypothesis 2: Age diversity of the board of directors has a positive effect on CSR disclosure.

Educational Background Diversity and CSR Disclosure

Educational background diversity will create an innovative and comprehensive organization with its vision and mission (Hassan et al., 2020). The diverse knowledge of each member will improve the company's performance and the quality of CSR disclosure (Hassan et al., 2020). Both of these things follow the upper echelon theory, which states that the educational characteristics of the board of directors can influence decision-making for the company (Hambrick, 2007; Quttainah, 2015).

Hypothesis 3: Educational background diversity of the board of directors has a positive effect on CSR disclosure.

Gender Diversity, Industry Type and CSR Disclosure

According to upper echelon theory (Abatecola & Cristofaro, 2018), gender diversity affects decision-making, CSR disclosure. Research by Ahmad et al. (2018) and Rao & Tilt (2016) show different findings for the effect of gender diversity on CSR disclosure, and this indicates that there are other variables between the two (Rahindayati et al., 2015). Bayoud et al. (2012) showed that one of the variables that positively affect CSR disclosure is the type of industry. This result is also supported by Azam et al. (2019), which states a positive influence of gender diversity on CSR disclosure in the Islamic finance industry.

Hypothesis 4a: Industry type strengthens the effect of gender diversity on CSR disclosure.

Age Diversity, Industry Type and CSR Disclosure

Age diversity as one of the board of directors' characteristics influences the disclosure of company information, in line with the upper echelon theory (Hambrick, 2007). Previous research had different results (Ibrahim & Hanefah, 2016; Khan et al., 2019), so that it was assessed that there were variables that were between age diversity and CSR disclosure (Astuti, 2017). Purwanto's research (2011) says that the type of industry positively influences CSR disclosure. This is supported by Lee et al. (2018) in their research, which concludes that age diversity in the restaurant industry positively affects CSR disclosure.

Hypothesis 4b: Industry type strengthens the effect of age diversity on CSR disclosure.

Educational Background, Industry Type, and CSR Disclosure

Upper echelon theory states that the diversity of educational backgrounds of the board of directors affects CSR disclosure (Hambrick & Mason, 1984; Quttainah, 2015). Previous research had different results (Hassan et al., 2020; Rahindayati et al., 2015), so it was assessed that variables played a role in the influence of educational background diversity on CSR disclosure (Hadya & Susanto, 2018). Based on Purwanto (2011), the type of industry has a positive effect on CSR disclosure, so it is considered that the type of industry can moderate the effect of diversity in the educational background on CSR disclosure. This is also supported by Yaseen et al. (2018), which conclude that the diversity of educational backgrounds positively affects CSR disclosure in the financial industry.

Hypothesis 4c: Industry type strengthens the effect of educational background diversity on CSR disclosure.

RESEARCH METHODOLOGY

Sampling and Data Collection

Data was obtained through the website of the IDX and the websites of the observed companies. Thus, the population includes all companies listed on IDX and published a sustainability report for the 2017-2019 period, with 245 observations.

CSR Disclosure

In this study, CSR disclosure is company information related to economic, environmental, and social issues in the annual report.

$$CSRD = \frac{\sum_{i=1}^{n} X_i}{N}$$

Xi : the number of CSR disclosures by the company (= 1 if the item is disclosed, = 0 if it is not)
N : total number of company disclosure items

Gender Diversity

Gender diversity in this study is the difference in gender or human identity that distinguishes their status in society. Gender diversity is calculated using the Blau index (Blau, 1977) by dividing it into females and males.

Age Diversity

Age diversity in this study represents differences in personality, attitudes and traits, abilities, work values, and behavior. This study measures age diversity using a Blau index dividing the categories into five: members aged less than 40 years, 40-49 years old, 50-59 years old, 60-69 years old, and over 70 years old (Beji et al., 2020).

Educational Background Diversity

The definition of educational background diversity in this study is an aspect that distinguishes the formal competence of each individual. Educational background is divided into five categories: finance, accounting, economics and management, engineering, law, and others (Rahindayati et al., 2015). This study formulates the diversity of educational backgrounds of the board of directors with the Blau index (Blau, 1977).

Industry Type

The industry type is the company's characteristics related to the fields and risks of the business, employees, and environment (Widiastuti et al., 2018). It is measured using the content analysis method by grouping industry into two categories.

Table 1: Industry Type Categories

Categories	Industry Type (*TYPE*)	Score
High-profile	Petroleum, mining, forest and paper, automobile, airlines, energy and fuel, transportation and tourism, agriculture, liquor, tobacco, and media communications.	1
Low-profile	Finance and banking, food, healthcare and personal products, hotels, buildings, textiles and apparel, retailers, medical supplies, property and home appliances.	0

Source(s): Martin et al. (2018)

Company Size

The company's size in this study indicates the scale of the company's activities (Widiastuti et al., 2018). Company size can be computed from the total assets of the company.

Profitability

Profitability in this study is the company's ability to generate profits (Wigrhayani, 2019). Profitability is computed with earnings after tax divided by total assets.

RESULTS AND DISCUSSION

Descriptive Analysis

Table 2: Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
CSRD	245	.088	1.000	.51423	.131842
GENDER	245	.000	1.000	.12468	.178966
AGE	245	.000	.750	.42407	.185229
EDU	245	.219	1.000	.68908	.219665
FIRMSIZE	245	24.754	34.999	30.98285	1.740999
ROA	245	.000	.527	.05324	.072641
Valid N (listwise)	245				

Normality Test

A normality test was carried out to ensure that the data were distributed normally. The normality test in this study used the Kolmogorov-Smirnov test, where the data was concluded to be normal if the asymp Sig. > 0.05.

Table 3: Normality Test

Before *Transform* Variabel		After *Transform* Variabel	
	Unstandardized Residual		Unstandardized Residual
N	245	N	190
Test Statistic	.084	Test Statistic	.060
Asymp. Sig. (2-tailed)	.000	Asymp. Sig. (2-tailed)	.089

Multicollinearity Test

A multicollinearity test was carried out to ensure that there was no correlation among all independent variables. The correlation between variables can be seen from the tolerance value and VIF when performing the multicollinearity test. If the tolerance value > 0.1 and VIF < 10, there is no correlation between the independent variables.

Table 4: Multicollinearity Test

	Tolerance	VIF
(Constant)		
GENDER	.945	1.058
AGE	.973	1.027
EDU	.919	1.088
TYPE	.840	1.190
FIRMSIZE	.861	1.161
ROA	.948	1.055

Heteroscedasticity Test

Heteroscedasticity test was carried out to ensure that there was no similarity of variance of the residuals among the variables in the study that could cause the results to be invalid. This study uses the glejser test, where the significance value must be > 0.05 so that the data can be free from heteroscedasticity.

Table 5: Heteroscedasticity Test

	T	Sig.
(Constant)	-.162	.872
GENDER	-1.549	.123
AGE	-.728	.467
EDU	-.185	.853
TYPE	-1.143	.255
FIRMSIZE	.584	.560
ROA	.121	.904

Autocorrelation Test

Autocorrelation test is performed to detect whether there is a correlation between variables. This study uses Durbin Watson analysis (DW test) to perform the autocorrelation test. Data is said to be free from autocorrelation if the DW value in the table is between -2 to 2.

Table 6: Autocorrelation Test

Durbin-Watson
1.804

Multiple Linear Regression Analysis (Model 1)

Table 7: Multiple Linear Regression Result (Model 1)

	Coefficients	t	Sig.
(Constant)	.983	4.753	.000
GENDER	-.045	-1.971	.050*
AGE	.040	.837	.404
EDU	.061	2.204	.029**
FIRMSIZE	-.024	-.633	.528
ROA	-.122	-1.525	.129
F Statistic			3.216
F Sig.			.008**
R^2			.080
Adjusted R^2			.055
Ket. Signifikansi *0,1; **0,05; ***0,01			

Regression equation:

$$Y= 0{,}983-0{,}045X\_1+0{,}04X\_2+0{,}061X\_3-0{,}024X\_5-0{,}122X\_6+\varepsilon$$

Multiple Linear Regression Analysis (Model 2)

Table 8: Multiple Linear Regression Result (Model 2)

	Coefficients	T	Sig.
(Constant)	.931	4.345	.000
GENDER	-.041	-1.735	.084*
AGE	.037	.774	.440
EDU	.056	2.014	.045**
TYPE	-.013	-.946	.346
FIRMSIZE	.015	-.373	.709
ROA	-.120	-1.503	.135
F Statistic			2.827
F Sig.			.012**
R^2			.085
Adjusted R^2			.055
Ket. Signifikansi *0,1; **0,05; ***0,01			

Regression equation:

$$Y= 0,931-0,041X_1+0,037X_2+0,056X_3-0,013X_4+0,015X_5-0,12X_6+\varepsilon$$

Analisis *Moderated Regression Analysis*

Table 9: Moderated Regression Analysis Result

	Coefficients	T	Sig.
(Constant)	.865	3.989	.000
GENDER	-.013	-.385	.700
AGE	.080	1.213	.227
EDU	.004	.093	.926
TYPE	.017	.384	.701
FIRMSIZE	-.001	-.028	.978
ROA	-.157	-1.911	.058
GENDER*TYPE	-.046	-.943	.347
AGE*TYPE	-.125	-1.288	.200
EDU*TYPE	.123	2.187	.030**
F Statistic			2.643
F Sig.			.007**
R^2			.117
Adjusted R^2			.073
Ket. Signifikansi *0,1; **0,05; ***0,01			

MRA equation:

$$Y= 0,865-0,013X_1+0,08X_2+0,004X_3+0,017X_4-0,001X_5-0,157X_6-0,046X_1\,X_4-0,125X_2\,X_4+0,123X_3\,X_4+\varepsilon$$

Gender Diversity and CSR Disclosure

Table 10: Hypothesis 1 T-Test

	Coefficients	t	Sig.
(Constant)	.971	4.749	.000
GENDER	-.037	-1.720	.087*
FIRMSIZE	-.026	-.695	.488
ROA	-.153	-1.902	.058*
R^2			.032
Adjusted R^2			.020
Significance *0,1; **0,05; ***0,01			

The significance value of 0.087 is less than 0.1, so it can be concluded that the effect of gender diversity on CSR disclosure is significantly negative. Hypothesis 1, which states that gender diversity has a significant positive effect on CSR disclosure, is rejected.

Age Diversity and CSR Disclosure

Table 11: Hypothesis 2 T-Test

	Coefficients	t	Sig.
(Constant)	.984	4.771	.000
AGE	.017	.379	.705
FIRMSIZE	-.030	.796	.427
ROA	-.145	-1.839	.067*
R^2			.024
Adjusted R^2			.010
Significance *0,1; **0,05; ***0,01			

The significance value of 0.705 is greater than 0.05. This means that age diversity has no significant positive effect on CSR disclosure. Hypothesis 2, which states that age diversity has a significant positive effect on CSR disclosure, is rejected.

Educational Background Diversity and CSR Disclosure

Table 12: Hypothesis 3 T-Test

	Coefficients	t	Sig.
(Constant)	.941	4.377	.000
EDU	.042	1.505	.034**
FIRMSIZE	-.021	-.541	.589
ROA	-.131	-1.546	.124
R^2			.029
Adjusted R^2			.015
Significance *0,1; **0,05; ***0,01			

The significance value of 0.034 is smaller than 0.05, so that the effect is a significant positive. Hypothesis 3 states that the diversity of educational backgrounds significantly affects CSR disclosure, so hypothesis 3 is accepted.

Results

Gender Diversity, Industry Type and CSR Disclosure

Based on the MRA, gender diversity moderated by industry type has a significance value of 0.347, so it can be concluded that the type of industry cannot moderate the relationship between gender diversity and CSR disclosure. Hypothesis 4a states that industry type can moderate the relationship of gender diversity to CSR disclosure, so Hypothesis 4a is rejected.

Age Diversity, Industry Type and CSR Disclosure

Age diversity moderated by industry type in the MRA has a significance value of 0.2, greater than 0.05, so that industrial type cannot moderate the relationship between age diversity and CSR disclosure. Based on these results, Hypothesis 4b regarding the type of industry moderating the effect of age diversity on CSR disclosure is rejected.

Educational Background Diversity, Industry Type and CSR Disclosure

On the diversity of educational backgrounds moderated by the type of industry, the significance value is 0.03. The type of industry can moderate the relationship between the diversity of educational backgrounds and CSR disclosure. Thus, Hypothesis 4c, which states that educational background diversity moderates CSR disclosure, is accepted.

Discussion

The Effect of Gender Diversity on CSR Disclosure

Upper echelon theory argues that gender diversity affects the information released by companies, in this case, CSR disclosure (Abatecola & Cristofaro, 2018). The significant negative effect of gender diversity on CSR disclosure can occur because females are still a minority on the board of directors, which can affect decision-making on the board of directors (Ahmad et al., 2018; Rahma & Aldi, 2020). In addition, most Indonesian people still believe that females should not be leaders, and when they become members of the board of directors, their opinions are not too important to be taken into consideration (Ahmad et al., 2018; Purnomo & Rizki, 2020).

Effect of Age Diversity on CSR Disclosure

According to the upper echelon theory (Hambrick, 2007), the characteristics of the age diversity of the board of directors will affect the company's information through CSR disclosure. Age diversity does not affect CSR disclosure can be caused by several things. The majority of companies in Indonesia have more board of directors aged over 50 years (Handajani et al., 2014), so the votes of younger members are in the minority. Katmon et al. (2019) also reveal that age differences can be problematic because older boards of directors tend to have less respect for the opinions of younger members.

The Effect of Educational Background Diversity on CSR Disclosure

Educational backgrounds diversity on CSR disclosure has a significant positive effect. The combination of business and non-business educational backgrounds forms a competent board of directors (Rahindayati et al., 2015) shown through CSR disclosure. Fernandez-Gago et al. (2018) also argue that education can influence the way of thinking of the board of directors, including considering the interests of the company, shareholders, and stakeholders. This explanation is in line with and supports the upper echelon theory.

Industry Type Moderates the Effect of Gender Diversity on CSR Disclosure

Industry type that does not moderate the effect of gender diversity on CSR disclosure can occur because some companies issue CSR disclosures to fulfill their responsibilities to the community and meet stakeholder demands (Urmila & Mertha, 2017). Gender diversity does not affect CSR disclosure according to the type of company industry because the board of directors prefers to adjust information that is preferred by the community and stakeholders rather than adjust information according to the industry type.

Industry Type Moderates Effect of Age Diversity on CSR Disclosure

Industry type cannot moderate the effect of age diversity on CSR disclosure. This can occur because social activists and the government pressure regarding environmental responsibility is only centered on certain companies (Nisak & Jaeni, 2019). The age of the board of directors does not affect the disclosure of CSR according to the type of industry because the board of directors is more concerned with how to respond from the activists and the government rather than issuing information appropriate to the type of industry of the company.

Industry Type Moderates the Effect of Diversity of Educational Background on CSR Disclosure

The industry type can moderate the diversity of educational backgrounds and its effect on CSR disclosure, possibly because many companies whose board of directors composition follow the company's industry. Thus, the board of directors contains members with a business education background and non-business, linear with industry type. The diversity of educational backgrounds facilitates the preparation of CSR disclosures whose information is to attract the attention of investors (Wigrhayani, 2019).

CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on the results, it can be concluded that gender diversity has a significant negative effect on CSR disclosure. Age diversity does not have a significant positive effect on CSR disclosure, educational background diversity has a significant positive effect on CSR disclosure, and industry type cannot moderate the effect. Gender diversity and age diversity on CSR disclosure can moderate the effect of educational background diversity on CSR disclosure.

Suggestions

Companies are expected to consider the gender and age characteristics of the board of directors and support the diversity caused by these characteristics. In addition, further research is expected to add variables related to board diversity to strengthen the effect of board diversity on CSR disclosure.

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04 Environmental Transparency and Corporate Sustainability Performance: Preliminary Finding in Indonesian Industry During COVID-19

Vina Putri Andini[1], Marisa Nursabela[2], Estu Widarwati[3], Nunik Nurmalasari[4]
[1,2,3]Sekolah Tinggi Ilmu Ekonomi Sutaatmadja Subang, Indonesia
[1]vinaputriandn@gmail.com, [2]marisanursabela123@gmail.com,[3]wie2tdz@gmail.com,
[4]nuniknurmalasari90@gmail.com

ABSTRACT

Environmental transparency play a considerable part in the firm's sustainability and important for decision strategy during abnormal economy. Board have main role getting effectively direction of environmental-friendly investment ie corporate social responsibility in achieving sustainability goal Environment, Social, and Governance scores provide transparency of information that is useful to both investors and managers of fims. As the growing industrial world grew, it had an increasing impact as well. Thus, people's hopes for responsibility and firm concern for the environment emerged.

This research uses purposive sampling approach and the sample included infrastructure, health, basic material, nom-primer, and insutrial sector of firm listed IDX during 2019-2020. We use board size and corporate social responsibility (CSR) disclosure as proxy of environmental transparency, therefore the measurement of corporate sustainability performance (CSP) using three indicators of it are economic, social, and environmental. The study results shows that environmental transparency of Indonesian industry increased during covid-19 but tend to less their participation in corporate social responsibility. The higest value of environment transparency in automotive industry and then farmacy industry have highest value of CSP. There is significant effect of environmental transparency to CSP for both board size and CSR. During abnormal economy, a firm should still keeping it transparency of governance and continue the CSR program specially for social and environment aspect.

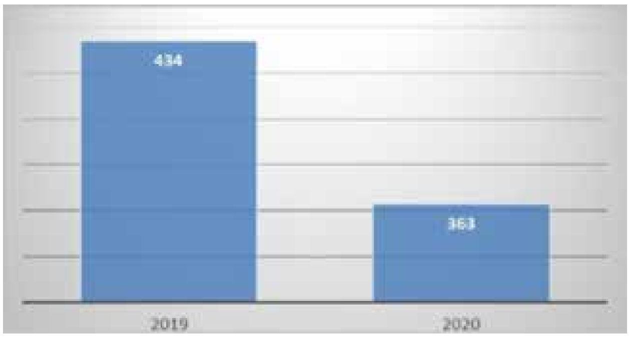
1. INTRODUCTION

The development of the business world and industry is increasing, the environmental impacts caused by its operational activities are also growing and tend to be challenging to control. It raises the demands and expectations of the community regarding the company's role, responsibility, and concern for the community and the surrounding environment. Thus, in recent years, there has been a change in views on the business environment. Firms have begun to compete in transparency, namely by disclosing information that can support decision-making activities.

Indeed, the role of the environment has a substantial contribution to the firm. Where all firms activities will always involve and utilize natural resources. The use of natural resources that are not goodwill causes damage to the environment and can interfere with the community's welfare. It triggers people's concerns about their survival that the community asks the company to provide information related to its activities. By providing this information, the public can review how the firm cares about the environment and society. On the other hand, providing the information can also give recognition from the public to the existence of the firm.

Law Number 40 of 2007 concerning Limited Liability Companies, Article 74 paragraph (1) states that companies carrying out their business activities in fields related to natural resources are obliged to carry out social and environmental responsibilities. It is a legal basis that regulates detailed and more specific reports that can be used as a record of assessing the company's commitment to the government regarding sustainable development programs (sustainability report). Elkingkon (1997) argues that to achieve extraordinary performance, companies must be responsible for the positive and negative impacts caused by social, economic, and environmental aspects. These three aspects are better known as the triple bottom line. Corporate sustainability have compliance pressure from both internal and external stakeholders and Bansal (2005) state that sustainability concept based on balancing the principles of integrity (environment), equity (society), and prosperity (economy). For this reason, companies should be able to issue sustainability reports whose contents are related to financial statements and non-financial information such as social, economic, and environmental performance activities. This annual report hopes that the company will grow and develop sustainability (sustainable performance).

Based on data for the 2019-2020 periods, many firms are listed on the Indonesia Stock Exchange in the non-financial sector that does not issue sustainability reports. There is only 434 companies reported sustainability reports for 2019 and 363 companies in 2020. Meanwhile, 99% of companies did not issue sustainability reports in a row during 2019-2020.



Graph 1. Firm's Sustainability Reporting in 2019-2020 Source: Data Processing Results, 2021

Firms that do not report their sustainability report are unlikely to achieve maximum performance. Because, as said before, the firm must have a piece of information from three aspects; social, economic, and environmental to achieve outstanding performance, recognition from the public, and increasing the image of the company in the eyes of investors.

Environmental risks become very important to be reported. Firms that protect the environment will indirectly extend the service life of it. The sustainable ecological conditions can support the success and sustainability of economic and social development. It links to the chance of firm's sustainability performance. Sustainability performance can be used by management to show responsibility for resource allocation so as to assess overall company performance (Rosini and Rahman, 2020). In this context, an assessment of the company's performance can be used by management to make decisions (Staniskis and Arbaciauskas, 2009). Sustainability performance arises from world concerns over the impact of environmental damage ie environmental risk.

Environmental risks will increase the company's overall risk, and in the end, these risks will affect investors' decisions (Eriandani et al., 2019). Environmental risks caused by industrial operations can occur in all configurations, such as the contamination of drinking water sources, the release of toxic gases, and the erosion of soil quality in the world. Firms that are not sustainable in terms of environmental factors have problems that are high in risk. Public awareness of the importance of environmental risks optimizes the firm's actions in its social responsibility. There are environmental impacts that arise as a result of running a company. The higher the operational level of the company, the more problems faced must be controlled. The investors seeking transparency look for some indicator of corporate responsibility from third party agencies that is a combination of past performance and evaluation of action that can influence future performance. A firm should concern to its environmental transparency because corporate governance a core aspect of a business, that describes the effectivity improvement of firm's sustainability (Jha and Rangarjan, 2020).

Previous research conducted by Arieftiara and Venusita (2017) shows that the company's environmental performance affects firm value. The research Mc. Guire et al. (1988), Brower (2010), Yu and Zhao (2012), Wiedmann and Lenzens (2006), Massound et al. (2011), Earnhart and Lizal (2010), and Iqbal et al. (2013) proves that consumers prefer environmentally friendly products. Moreover, companies have an excellent environmental performance focus on the production process and are serious about producing ecologically friendly products. While the research of Eriandani et al. (2019) shows that the environmental risk information is responded to positively by investors, it is not used to determine the rate of return or from the company's side. It is not able to reduce the cost of capital.

This research focus on environmental transparency as part of industry risk that determine sustainability performance. Investors are interested in the additional information included in annual reports, information on environmental, social and political responsibilities and ensuring firm's commitment to building a sustainable economy and improving the quality life through the environmental governance disclosure (Meiwanto et al., 2018). According Rosini and Rahman (2020), it is also importance focus of corporate attention for formulating the dimensions of sustainability performance namely economic, social, environmental, and communication performance. The disclosure of firm's environment describes an countinuing of social, economy, and environmental responsibility and will due to sustainability performance caused supporting of stakeholder.

Many companies of Indonesia industry still do not report their sustainability reports during covid 19, then we examine the environmental tranparency on corporate sustainability performance which using environmental transparency as proxy of industrial risk that measured by board size and firm's participation of CSR program. According Meiwanto et al (2018), the firm's relationship in meeting stakeholder's interests characterises stakeholder theory. But as for the explanation of norms in its operational environment, the application of legitimacy theory results in better tendencies. The better tendency is generally that high profitability can become public information communicating the advantages of one company in comparison to other companies. We follow the research of Meiwanto et al (2018) that using non-financial industry as observation unit, but we focus developing new measurement of environmental transparency namely Environmental Transparency Average (ETA) that calculated the score of boardsize and CSR and also measure corporate sustainability performance by average of economic, social, and environment performance namely Corporate Sustainability Performance Average (CSPA). We argue governance process can not separate between input and outcome, then boardszie as decision making will connected to their decision ie CSR program and totally corporate performance. This study implicates the empirical finding of corporate sustainability performance determinant specially in Indonesia's non financial industry.

2. Literature Review

Firm's Environment Risk and Transparency

Risk management is learning about a firm applying rules in dealing with various problems by placing a regular and comprehensive management approach. One of them is the disclosure of corporate risk, which is a way to increase the firm's confidence in helping investors understand its strategy. Investors know the opportunities and threats that the company will face and how the firm's ability to handle these opportunities. Furthermore, threats can be interpreted as firm risk being a condition where one day there may be a decline in company performance inversely proportional to the company's expectations due to certain conditions in the future.

Green (2015) defines environment risk as to the probability value of an undesirable event and its consequences from spontaneous natural origin or human actions (physical or administrative) transmitted through the environment. The environment risk arises because of the relationship between the company, the environment, and the materials that manage the environment. Environmental hazards can come from greenhouse gas emissions, the use of hazardous substances, and things that can pollute and/or pollute biodiversity.

The firm's environment risk are divided into two. First, the threat comes from the firm's internal environment, such as employee performance and production and non-production activities. Second is the risk that comes from outside the firm's background, namely its relationship with nature and its impacts which also need to be controlled by the company. Natural disasters, weather conditions, and changes are forms of unpredictable environment risks. The ecological dangers caused by the firm's activities are predictable, such as using dioxins in their production. Regardless of the various risks that may occur, firm can only control the way they respond to external threats, not manage their risks (Eriandani et al., 2019).

Analyzing various firm's environment risk that may occur is the first step to achieving a sustainable environment. Although the disclosure requires additional costs, these costs can be invested in preventing and controlling environmental pollution. In addition to supporting in the background, companies must also reduce the pollution that occurs. By doing these two things, the company can improve the function of natural resources, which can directly increase the company's productivity and extend the firm's life.

The firm's disclosure of environmental information is a form of ecological transparency that can affect the company's ability to realize good governance. By implementing transparency, companies participate and facilitate the government's performance in sustainable activities Tahir (2014) states that fairness can be grown with transparency in every policy and decision within the organization and government.

We use ecological transparency that measured by board size, and CSR disclosure. This based on the argument that environmental transparency issued by the firm is one way for providing information needed by the firm's stakeholders. The firm's relationship with the social environment requires corporate social responsibility, so sound business governance (good corporate governance) is required. In carrying out transparency and environmental accountability, board members, both the board of directors and the commissioners, are needed to assist managers in making environmental decisions. According to Dey (1994 in Kusumawati et al (2005) suggest that good corporate governance in the long term can improve firm performance and benefit shareholders. Beiner et al. (2003) state that board size of directors is a crucial governance mechanism because they can ensure that managers follow board interests. We also use CSR disclosure as proxied of environmental tranparency according the findings from previous studies also suggest that the increase in CSR disclosures is associated with government ownership and the introduction of corporate governance standards. Therefore, environmental and social activities as frindly investment practise relevant to financial stability of business reflecting the expectations of shareholders (Chepeliuk and Harkusha, 2020).

Corporate Sustainability Performance

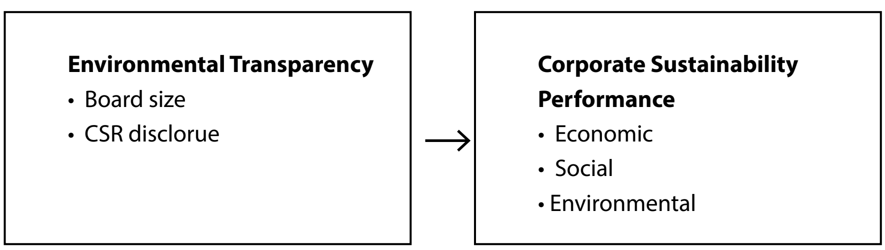
Company performance describes a company's ability to achieve its goals through the effective and efficient use of its resources and the extent to which its success in generating profits. According to Indrawan (2011), company performance is a measurable result and describes the empirical conditions of a company of various agreed sizes. The performance finds out that has been achieved, and a performance assessment is carried out. The company's performance appraisal can be reviewed based on the financial statements and changes in stock prices. Therefore, the value of the company will be reflected based on the share price.

Corporate sustainability performance (CSP) describes the company's impact on society, including customers, employees, suppliers, local communities, and the natural environment (Hilman and Kim 2001; Mateen and Bulan, 2008). So that CSP is described as a broad interpretation of the social or human and environmental dimensions (Perrini et al., 2011). In CSP, the environmental aspects that are more concerned are the problems of resource conservation, energy consumption, waste minimization, and emission or pollution reduction (Krause et al., 2009; Wagner, 2010). CSP has a comprehensive scope in social aspects in overcoming poverty, employee health and safety, protection of human rights, and participation in various social initiatives (Krause et al., 2009; Perrini et al., 2011).

The company's sustainability performance shows how well its priorities are in addressing social issues such as reducing poverty, freedom of human rights, improving living standards, and addressing environmental problems such as waste management, pollution reduction, and resource conservation.

In this study, corporate sustainability performance (CSP) follow Hourneaux et al (2018) that includes three indicators, namely economic, social, and environmental, revealed in the firm's sustainability report and GRI-G4 in Indonesia. Reporting Framework is intended to perform as an accepted framework for reporting on an organisation's economic, environmental and social performance (GRI, 2008). The GRI is a network with experts and representatives from various sectors of society present in over 40 countries around the world, and it has been determining the guidelines to sustainability reporting with the participation of several important stakeholders.

Environmental Transparency and Corporate Sustainability Performance



Oswald (2010) reveals that environmental transparency is valuable information about how the company works and encourages community involvement and company disclosure. Environmental transparency creates an advantage for the community to get better access to environmental policies, environmental status, and components that companies use in their operations. Environmental transparency can also be interpreted as disclosure of information in decision making or disclosing material and relevant information, such as the effect of fluctuations in the company's stock price. Souce : developed from Hong et al (2021), Koloreva et al (2020), and Hourneux et al (2018)

Soekarno (2008) suggests that companies will get the desired results and fulfill their social responsibilities towards ecological risks by considering environmental risks. The openness of environmental and social activities will increase the trust and reputation of the company for stakeholder. It will then affect the entire performance of the company, including the company's sustainability performance. Based on new measurement of environmental transparency and corporate sustainability performance, we develop the hyphotesis in this study :
H1 : The environmental transparency (ETA) affect corporate sustainability performance (CSPA)

3. Data and Methodology
This paper explores data from annual report and sustainability report of non-financial industry firms listed on the Indonesia Stock Exchange in 2019-2020 such data of boardz size, and CSR disclosure . The sample selected by specific criteria consisted of new IDX-IC industry are non-primer sector, healthy sector, basic material sector, and infrastructure sector. As for delisting, relisting, moving other areas, mergers or acquisitions and no sustainability reporting excluded from the sample.

The dependent variable corporate sustainability performance (CSP) is measured by calculated the dimensions of economic, social and environmental according to the TBL approach. We develop the measurement of CSP from Hourneaux et al. (2018) named Corporate Sustainability Performance Average (CSPA). We count economic indicators (ROE), social and environmental indicator according Global Reporting Initiative (GRI), provide a specific scale and averaged so that it reflects the firm's CSP in a year. Independent variable is environmental tranparency proxied by board size and CSR disclosure of social and environment score. We also develop the measurement of environmental tranparency from Hong et al (2021) named ETA (Environmental Transparency Average) which calculate the average of board size and CSR score.We propose the hypothesis that environmental tranparency have positive impact on sustainability performance and test it with simple regression. The model expressed as follows:

$$CSPA_{i,t} = \beta_0 + \beta_1 ETA_{i,t} + \Sigma_{i,t}$$

CSPA is the corporate sustainability performance average measured by the average of three indicator are finance, social, environment and ETA is the environmental transparency average proxied by average of board size and CSR.

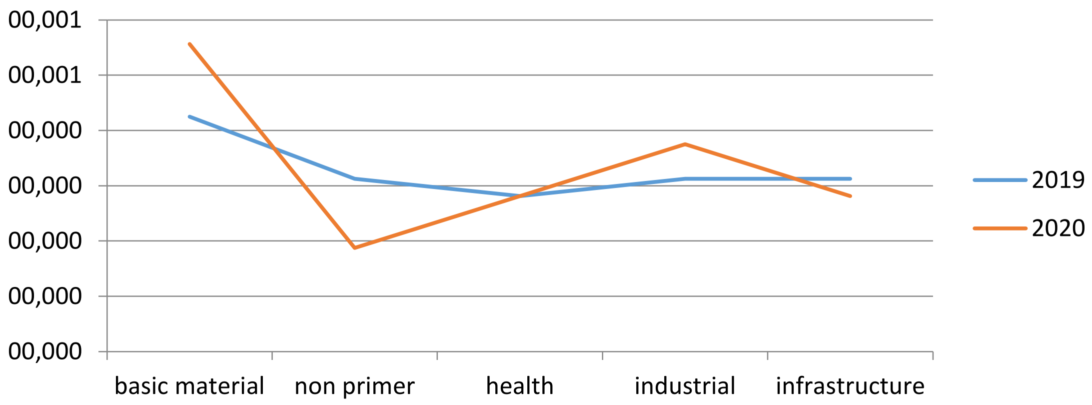
4. Results and Discussion
Table 1. present the detail reviews of the cross-industry distribution of the environmental transparency. We observe data of governance and sustainability report ie CSR disclosure during 2019-2020 from basic material, infrastructure, health, industrial, and non-primer industry. Detailed board size descriptive data in those industry shows a minimum number of board members is six and a maximum of 15. The average firm have value of number of social participation in CSR disclosure between 6-7 item such training and education, comunity awarness, and safe healthy aspect. Furthermore, the Indonesian industry seem get more attention of social aspect in CSR disclosure better than environmental.

Table 1. Industry Distribution of Environmental Tranparency

Industry	Average Board Size	Social participationof CSR disclosure	Environmentparticipation of CSR disclosure	Score CSR
Basic Material	10.8	6.3	7.35	0.4906
Non Primer	15	7	3.5	0.2500
Health	12	6.5	5.5	0.2813
Industrial	12	7	5.5	0.3438
Infrastructure	10	7	5	0.2969
Mean		6.8	5.37	0.3325
Modus	12	7	5.5	-

Board Size is the number of board members in the firm, CSR disclosure based on GRI.G40

During covid-19 in 2020, environmentally-friendly investment in Indonesia firms tend to decreasing the participation, except basic material and industrial sector. This may caused firms facing a distressed financial linked to global impact of covid-19. Our data shows that the average CSR is 5.8333 which economic dimension is -39.5233, average environment dimension is 0.6049, and the social dimension is 0.3030. Below the data of CSR in non financial sector of Indonesian industry.



Graph 1. Average CSR Per Sector
Source: Data Processing Results, 2021

For corporate sustainability performance, our data shows that health sector has the highest average CSP score and increase it value during covid-2020, while other industries had decreased CSP score and infrastructure industry has the lowest average score (minus). The concept in corporate sustainability performance (CSP) is a system consisting of three elements, namely social, environmental, and economic, to achieve the goal of perfection, namely sustainability (Montiel, 2008).

Table 2. Industry Distribution of Corporate Sustainability Performance

Industry	EconomicIndicator	Social Indicator	Environmentalindicator
Basic Material	0.694	0.700	0.364
Non Primer	3.55	0.444	1.331
Health	27.7	0.444	4.626
Industrial	14.45	0.556	3.456
Infrastructure	-404.73	0.5	-65.89
Mean	-71.67	0.529	-11.22

CSP indicator folowed Hourneaux et al. (2018) included finance/economic, social, and environment indicator

The value of CSP describes the effectiveness, efficiency, and stability of the company. The tabel 2 shows that a company with a negative CSP value means that company is unstable.

Furthermore, the data of average environmental transparency linked to average CSP describes that the higest environmental transparency in non-primer sector and the lowest is infrastructure sector (minus). It contras with the value of sustainability performance which health sector has the highest value. We argument the abnormal economy such covid-19 lead the firms have unpredictable risk linked to their market. Our data confirm that non financial sector of Indonesian industry tend decreased sustainability performance during covid-19 in 2020.

Table 3. Results of regression and robust test analysis

Variable	Dependent variable: Corporate Sustainabil Performance Average (CSPA)	
	Research model	Robust model
Environmental TransparencyAverage (ETA)	-0,929*(0,622)	
Board Size		-0,912* (0,440)
CSR		-0,894* (0,353)
Economic		-0.1409* (0,0439)
Social		0,0249* (0,0061)
Environmental		0,4376* (0,0758)
R-squared	0,863	0,8216

* significant 1%, exposed values are standard errors.

Hypothesis testing shows developed measurement of environmental transparency proxy namely Environmental Transparency (ETA), has negative effect on corporate sustainability performance (CSPA). The finding of this study is same with Hong et al (2021) that board size impacts CSP which desicion of members inside the board can have an impact on the environmental performance. Furthermore, the tabel 3 of results of robust tests by replacing environmental tranparency measurements following Hourneaux et al. (2018) which separates the three dimensions of CSR, also show that the environmental transparency will decrease the firm's sustainability performance.

As previously stated above, the disclosure of environmental risks will require additional costs. Meanwhile, ecological risk disclosure is also a voluntary disclosure. However, firm aware of and protecting the environment will continue to provide transparent information to stakeholders. Also, companies that consider risk will get the results they want and fulfill their responsibilities to the surrounding environment (Soekarno, 2008).

5. Conclusion

Based on the results and discussion of the research that has been done, it can be concluded that the environmental transparency in this study more fluctuates in abnormal economy such covid-19. The participation and responsibilities that the firm has carried out towards the surrounding environment have increased and decreased.

Corporate sustainability performance in this study each company has different values, the assessment is seen from the economic, environmental, and social elements. The high CSP value indicate that the firm's efficiency, effectiveness, and stability are stable. Vice versa, firm with low or even negative CSP values indicate that the firm's condition is less stable. The new measurement of ETA and CSPA have consistency results with robustness check finding that the firm's environmental transparency affects corporate sustainability performance (CSP). It may indicates the disclosure of environmental risks in Indonesian industry still require high additional costs or there is inefficiency in firm's operational process that should explored more by next study. However, with environmental hazards, the firm will complete the annual report and the firm's sustainability report. A complete and transparent firm report will make it easier for stakeholders to make an assessment.

There are very few companies that issue annual reports and Sustainability Performance consecutively from 2019-2020, so this study has limited the observation unit in short period with simple model. Furthermore, in analyzing the data, we find several firm have incomplete data then must calculate it manually. It is recommended to develop this research further to know the extent of the influence of corporate environmental risks on corporate sustainability performance. Next research could add some control variables such firm characteristic, market risk, operational efficiency and other variabel into CSP model for better analysis about determinant of CSP.

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05 Sustainability Reports Disclosure and Implementation of CGC in Determining Corporate Value (Case Study on Companies Listed on the IDX in 2018-2020)

Chita Oktapriana[1], *, Kadek Wisnu Bhuana[2], Muhammad Takrim[3]
[1,2] Sarjana Akuntansi; Universitas Bina Insani; Jl. Raya Siliwangi No. 6 Kec. Rawalumbu, Kota Bekasi Jawa Barat; e-mail: chitaoktapriana@binainsani.ac.id, kadekwisnu@binainsani.ac.id.
[2] Manajemen Administrasi; Universitas Bina Insani; Jl. Raya Siliwangi No. 6 Kec. Rawalumbu, Kota Bekasi Jawa Barat; e-mail: takrim@binainsani.ac.id

* Correspondence: e-mail: chitaoktapriana@binainsani.ac.id

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Abstrak: Perusahaan yang telah terdaftar pada BEI akan memperhatikan nilai perusahaan sebagai salah satu factor penting dalam menarik minat investor. Dengan adanya isu keberlanjutan melalui kinerja CSR dan implementasi GCG dalam laporan tahunan perusahaan akan membantu menambah sinyal positif bagi calon investor dalam mengambil keputusan berinvestasi. Kondisi ini akan menunjukkan citra perusahaan selain dari penilaian kinerja perusahaan dari laporan keuangan. Tujuan penelitian ini adalah mencari dampak dari pengungkapan keberlanjutan perusahaan melalui kinerja CSR dan penerapan GCG perusahaan terhadap nilai perusahaan yang dilihat dari indeks harga saham di akhir periode. Jenis penelitian ini bersifat kuantitatif dengan menggunakan data sekunder. Metode pengumpulan data melalui purposive sampling dan pengolahan data menggunakan uji statistic regresi linier berganda melalui aplikasi IBM SPSS 26. Hasil dari penelitian ini menunjukkan bahwa pengungkapan laporan keberlanjutan yang dilihat dari kinerja CSR mampu memberikan pengaruh positif terhadap nilai perusahan. Sedangkan dari penelitian ini didapatkan hasil bahwa GCG memebrikan hasil negative terhadap nilai perusahaan.

Kata kunci: keberlanjutan, CSR, GCG, nilai perusahaan

Companies that have been listed on the IDX will pay attention to the value of the company as an important factor in attracting investors. The existence of sustainability issues through CSR performance and the implementation of GCG in the company's annual report will help add a positive signal to potential investors in making investment decisions. This condition will show the company's image apart from the company's performance appraisal from the financial statements. The purpose of this study is to find out the impact of the disclosure of corporate sustainability through CSR performance and the implementation of corporate GCG on corporate value as seen from the stock price index at the end of the period. This type of research is quantitative using secondary data. The data collection method is through purposive sampling and data processing uses multiple linear regression statistical tests through the IBM SPSS 26 application. The results of this study indicate that the sustainability reports disclosure seen from CSR performance is able to have a positive influence on corporate value. Meanwhile, from this study, it was found that GCG gave negative results to corporate value.

Keywords*: sustainability, CSR, GCG, corporate value*

1. Introduction

Companies that have gone public must be able to demonstrate consistent and significant quality and business performance. This is solely intended to show a good portfolio in order to be able to attract investors' interest in making investment decisions. Not only through financial performance alone, in this era investors will be more sensitive in assessing the company's portfolio. The tendency of investors to invest will of course be influenced by the level of business sustainability or going concern. Based on previous research, the going concern assumption explains that a business entity is considered to have the ability to survive in the long term without liquidation in the short term. Going concern is a condition that can be realized by the influence of corporate value. According to [Prena and Diarsa, 2019], found the results of the study that the value of the company has a positive influence on business continuity. Referring to the results of this study, it appears that the company is an important factor for business value.

Business issues cannot be separated from the form of social responsibility that can be seen from the sustainability reports and social responsibility performance of each company itself. Research conducted by [Dewi et al., 2019] it was found that the sustainability reports disclosure had an effect of 54.5% on the value of the company. The existence of a sustainability report form will be a positive signal for investors that the company has carried out business related to its business sustainability. Through previous research related to signal theory, it was sparked that there is a signal criterion as additional information in decision making. [Spence, 1973]

The existence of signals for investment decisions can also be seen from the form of corporate social responsibility. According to [Muliani et al., 2018] Disclosure of CSR in the annual report strengthens the company's image as one of the considerations that investors and potential investors pay attention to because it is considered that the company is not only pursuing profit. Based on previous research, it was found that CSR has a positive influence on corporate value. [Sari and Priantinah, 2018] Thus, the assessment of CSR performance is a factor that can support the value of the company.

The value of the company in this study will be proxied through the stock price at the end of the period through the SRI-KEHATI index and the ESG Leader index. To determine the stock price, of course this is influenced by the company's profitability in one period. This research is a continuation of previous research by the head of the research team who has conducted research on the effect of profitability on CSR performance. From this study, it was found that profitability has a significant influence on CSR performance. [Oktapriana, 2019] In line with the results of this study, the research conducted by [Pristianingrum, 2017] gives the result that profitability and CSR disclosure together have an effect on corporate value.

Literature Review and Hypotheses

Signaling Theory

Signaling theory is used to explain that financial statements are used to provide positive signals (good news) and negative signals (bad news) to the user. [Listyaningsih et al., 2020]. Signaling theory explains that the role of company information is a model as a basis for decisions, if managers expaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaect a high level of company growth in the future, they will try to give a good signal to investors by providing transparent information and in accordance with the disclosures made by the company. [Pratama et al., 2020].

Sustainability Report Disclosure

Sustainability Reports Disclosure in Indonesia and several other countries is still voluntary, meaning that there are no obligatory rules as is the case with the issuance of financial reporting, Utama in [Wibowo, 2020]. in measuring the sustainability reports disclosure will be proxied by calculating the company's CSR performance.

The definition of Corporate Social Responsibility (CSR) based on World Business Council for Sustainable Development (WBCSD) in [Susilawati, 2020] is an ongoing commitment by the business community to act ethically and contribute to the economic development of the local community or society at large, along with improving the standard of living of its workers and their entire families.

CSR performance measurement can be calculated using the CSR index ratio calculation method based on the Global Reporting Initiative (GRI) which is used as an indicator for preparing sustainability reports (Sustainability Reporting).

$$CSRIj = \frac{\sum Xij}{nj}$$

Ket:

CSRIj = index of Corporate Social Responsibility
Σ Xij = total items disclosed by the corporate
nj = number of disclosure items according to GRI

Corporate Value

According to Noerirawan in [Pujiningsih, 2020], corporate value is a condition that has been achieved by a company as an illustration of public trust in the company after going through a process of activities for several years, namely since the company was founded until now. Corporate value is the selling value of a company as an operating business. The existence of excess selling value above the liquidation value is the value of the management organization that runs the company and according to Fakhrudin and Sopian in [Nugroho, 2014] Corporate value is an investor's perception of the company, which is often associated with stock prices. In this study, the final stock price index will be seen from the SRI-KEHATI and ESG Leader indexes.

Good Corporate Governance (GCG)

There is a decision by the Indonesian government as stated in the SEOJK No. 16, that in the annual report it is mandatory to disclose good practices or Good Corporate Governance. [Otoritas Jasa Keuangan, 2021] GCG is a must that aims to create added value for all stakeholders in the company. [Hadyarti and Mahsin, 2020] According to [Setiawan and Muljono, 2021] Good Corporate Governance is a major element considered by investors in choosing a company to invest in. GCG can be measured using the GCPI as follows:

$$\boxed{\text{GCPI} = \frac{\text{total items disclosed by the corporate}}{\text{maximum value earned by the corporate}} \times 100\%}$$

Institutional Ownership

To ensure that the disclosure of SR and GCG as one of the independent variables in this study does not give biased calculation results, one control variable is given in the form of institutional ownership. According to [Munthe, 2014] institutional ownership is the proportion of share ownership by institutions such as NGOs, private companies, insurance companies, banks, investment companies. To measure this institutional ownership can use the following formula:

$$\text{Institutional Ownership} = \frac{\text{number of institutional shares}}{\text{total shares outstanding}}$$

Hypotheses

When a company engages in socially commendable behavior, people's perception of the company will be much more favorable, so the company is valued in the capital market. That is, the higher the sustainability report index, the higher the value of the company [Kharisma and Zulfiati, 2020]. High corporate value can increase prosperity for shareholders, so shareholders will invest their capital in the company, Haruman in [Sejati and Prastiwi, 2015]. Sustainability reports are evidence that the company is also responsible for the interests of its stakeholders. One of the benefits of a sustainability report is that it can build the interest of shareholders with a long-term vision and help demonstrate how to increase corporate value related to social and environmental issues.

Disclosure of environmental, social and economic performance in the sustainability report or in the annual report is to reflect the level of accountability, responsibility, and transparency of the company to investors and other stakeholders. In research conducted by [Singh et al., 2020] that the sustainability report or CSR has a positive relationship to corporate value in China and Hong Kong. While the results of research from [Loh et al., 2017], [Latifah and Luhur, 2017] dan [Puspitandari, 2017] also proves that the sustainability reports disclosure has an effect on corporate value.

GCG has several measurement dimensions including institutional ownership, composition of independent commissioners and size of the board of directors. From the previous research conducted by [Putra, 2016] it was found that these three elements of GCG have an influence on the value of the company. In line with research conducted by [Maryanti and Fithri, 2017] that it is found that GCG indirectly through financial performance has a significant effect on corporate value. In an effort to complete or control the causal relationship between disclosure of SR and GCG with the dependent variable in this study, institutional ownership is used as a control variable. Based on the results of research conducted by [Munthe, 2014] it was found that institutional ownership has a significant positive effect on company performance. With good company performance, it can also have an influence on company value. Based on the explanation above, the following hypothesis is formulated:

H1: Disclosure of Sustainability Reports controlled by Institutional Ownership has a positive effect on Corporate value.
H2: Good Corporate Governance (GCG) controlled by institutional ownership has a positive effect on corporate value.

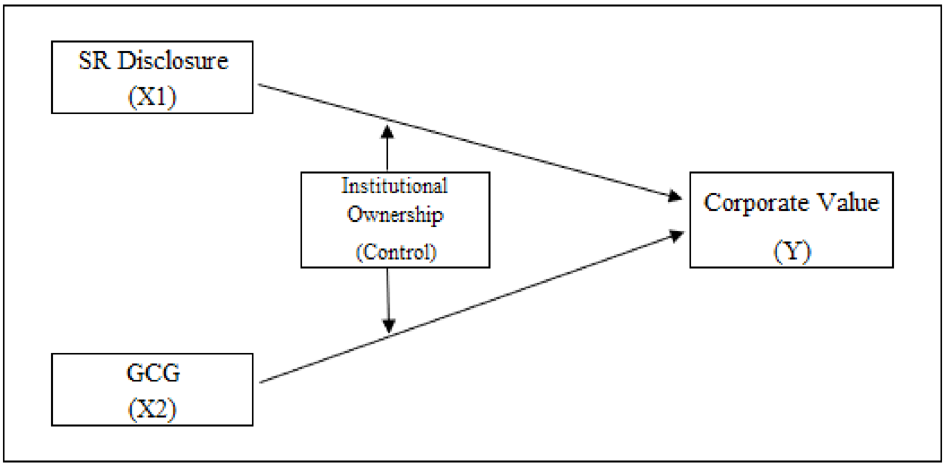

Figure 1. Research Conceptual Framework

2. Methodology

This research is quantitative in nature using secondary data in the form of company annual reports obtained from the company's official website. The data processing in this study uses the SPSS 26 application. Both the independent variable and the dependent variable in this study use ratio measurement data, namely the data is numerical in the real sense and can be operated mathematically. Likewise, with the control variables in this study using the results in the form of a ratio. Based on this scale, this study will use multiple linear regression with statistical analysis of variance (ANOVA) which is a method for testing the relationship between one dependent variable and one or more independent variables. [Ghozali, 2021]

The population in this study are all companies that have gone public on the IDX. From the existing population, a sample will be taken using a purposive sampling method, namely sampling based on certain criteria.[Sujarweni, 2016] The sample criteria selected are companies listed on the IDX in 2018 to 2020, have sustainability reports that are reported consistently every year, and are listed on the SRI-KEHATI and ESG Leader indexes.

3. Results and Discussion

Results

Descriptive Statistics

Table 1. Descriptive Statistics Test

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
SR Disclosure	129	.18919	.78378	.4146239	.13894528
GCG Performance	129	.47368	84.21053	1.4670656	7.34293906
Institutional Ownership	129	.01500	.98860	.6303178	.24055930
Corporate Value	129	146	42000	4227.07	6764.299
Valid N (listwise)	129				

Source: Secondary data processed with SPSS

From the results of the descriptive statistics above, it can be seen that the SR Disclosure has a minimum value of 0.18919 which is owned by PT Media Nusantara Citra Tbk in 2018 and a maximum value of 0.78378 which is owned by PT Pembangunan Jaya Ancol Tbk in 2020. The GCG performance variable has the lowest value. 0.47368 owned by PT Mitra Adi Perkasa Tbk in 2018 and a maximum of 84.21053 owned by PT Industri Jamu and Farmasi Sido Muncul Tbk in 2020. For institutional ownership variable has a minimum value of 0.015 owned by PT Astra Otopart Tbk and the highest value is 0 .98860 owned by PT Indosat Tbk in 2018. The lowest company value is 146 by PT Sri Rejeki Isman Tbk and the highest is 42,000 owned by PT Unilever Indonesia Tbk in 2019.

Correlations Test

Table 2. Correlations Test

Correlations					
Control Variables			SR Disclosure	GCG Performance	Corporate Value
Institutional Ownership	SR Disclosure	Correlation	1.000	.019	.039
		Significance (2-tailed)	.	.828	.664
		df	0	126	126
	GCG Performance	Correlation	.019	1.000	-.042
		Significance (2-tailed)	.828	.	.637
		df	126	0	126
	Corporate Value	Correlation	.039	-.042	1.000
		Significance (2-tailed)	.664	.637	.
		df	126	126	0

Source: Secondary data processed with SPSS

The value of the correlation test of SR disclosure to corporate value controlled by institutional ownership variable is 0.039. These results indicate that the relationship between SR disclosure and corporate value controlled by institutional ownership variables is very weak. GCG performance has a correlation value of -0.042 with corporate value with institutional ownership as a control variable. These results indicate that the relationship between GCG performance on corporate value and institutional ownership as a control variable is very weak and negative.

Multiple Linear Regression

Hypothesis Test (t)

The t-test was conducted to determine whether the coefficient value of the independent variable had a significant relationship or not with the dependent variable.

Table 3. Hypothesis Test

Coefficients[a]						
Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	3667.146	2396.180		1.530	.128
	SR Disclosure	1931.531	4360.148	.040	.443	.659
	GCG Performance	-39.534	82.348	-.043	-.480	.632
	Institutional Ownership	-290.230	2520.381	-.010	-.115	.909
a. Dependent Variable: Corporate Value						

Source: Secondary data processed with SPSS

From the hypothesis testing table above, it can be seen that the equation of the multiple linear regression model is as follows:

Y = a + β1X1 + β2X2 + β3X3 + e

Corporate Value = a + β1 SR Disclosure + β2GCG Performance + β3Institutional Ownership + e

Hypothesis testing is as follows:

a. Hypothesis Test

Based on the results of the t test above, it can be seen that the SR disclosure has a significant value of 0.659 > 0.05. These results indicate that the disclosure of SR has no significant effect on corporate value.

The results of the t test on the GCG Performance variable have a significance value of 0.632 > 0.05, meaning that GCG performance has no significant effect on corporate value.

b. Control variable hypothesis testing

The institutional ownership control variable based on the results of the regression test has a significance value of 0.909 > 0.05. These results indicate the control variable used in this study, namely institutional ownership has no effect on corporate value. This shows that institutional ownership in SR disclosure and GCG performance does not affect corporate value.

Coefficient of Determination Test (R Square)

The R Square test shows how big the independent variable is in explaining the dependent variable. A value close to one means that the independent variable provides almost all the information needed to explain the dependent variable.

Table 4. Coefficient of Determination Test (R Square)

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.058[a]	.003	-.021	6833.453	1.653
a. Predictors: (Constant), Institutional Ownership, GCG Performance, SR Disclosure					
b. Dependent Variable: Corporate Value					

Source: Secondary data processed with SPSS

This study uses more than one independent variable so that this study uses the Adjusted R Square value to determine the magnitude of the influence of the independent variable on the dependent variable. The R Square test result is -0.021. This value indicates that the change in the dependent variable can be explained by -2.1% by the determinant variable in the model, while the remaining 97.9% is influenced by other variables outside this research model.

Simultaneous Test (F Test)

The F test was conducted to determine whether the independent variables jointly affect the dependent variable. In this study, the independent variables used are SR Disclosure and GCG Performance while institutional ownership is the control variable.

Table 5. Simultaneous Test (F Test)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19724343.907	3	6574781.302	.141	.935[b]
	Residual	5837010164.465	125	46696081.316		
	Total	5856734508.372	128			
a. Dependent Variable: Corporate Value						
b. Predictors: (Constant), Institutional Ownership, GCG Performance, SR Disclosure						

Source: Secondary data processed with SPSS

Discussion

Sustainability Report Disclosure on Corporate Value

The results of multiple linear regression test indicate that the disclosure of the Sustainability Report has a significance value of 0.659 > 0.05 and has a Beta (B) value of 1931,531. These results indicate that the disclosure of the Sustainability Report has no significant positive effect. The results of this linear test also show that every 1% increase in sustainability report disclosure will increase stock prices by 1931,531. The results of this study are in line with the results of research conducted by [Singh et al., 2020] which states that the sustainability report or CSR has a positive relationship to corporate value in China and Hong Kong.

The relationship between the disclosure of SR on the value of the controlled company with the variable of institutional ownership has a value of 0.039. The results of this study indicate that the relationship between the disclosure of SR with the value of controlled companies with institutional ownership is very weak.

According to Noerirawan in [Pujiningsih, 2020], company value is a condition that has been achieved by a company as an illustration of public trust in the company after going through a process of activities for several years, namely since the company was founded until now. Disclosure of the Sustainability Report which is still voluntary is carried out by the company to provide an overview to the public, especially to investors, about the achievements made in the implementation of sustainability activities. The signal theory used is in line with the results of this study where the role of information provided by the company is used by the public and investors in making decisions to invest in the company.

GCG Performance on Corporate Value

GCG performance has a sig value. 0.632 > 0.05 and the Beta (B) value is negative -39,534. These results indicate that GCG performance has no significant negative effect on corporate value. The results of this linear test also show that every 1% increase in GCG performance in the company will decrease stock prices by 39,112. The results of this study are in line with research conducted by Mutmainah (201) which states that GCG has a significant negative effect on corporate value.

GCG performance has a correlation value of -0.042 with corporate value with institutional ownership as a control variable. These results indicate that the relationship between GCG performance on corporate value and institutional ownership as a control variable is very weak and negative.

According to Fakhrudin and Sopian in [Nugroho, 2014] corporate value is the investor's perception of the company, which is often associated with stock prices. The signal theory used in this study in giving signs to investors gives a negative signal to investors' perceptions of investing. One of the perceptions used by investors towards companies to invest is the performance of GCG (Good Corporate Governance). According to [Fauzi et al., 2016] the existence of GCG can have a negative influence on the value of the company because the element of managerial ownership can worsen the independence of the company so that it can give a negative signal to investment decisions. According to [Setiawan and Muljono, 2021] Good Corporate Governance is a main element considered by investors in choosing companies to invest. This is because the large amount of bureaucracy in the company will slow down in making management decisions so that it will eliminate existing opportunities.

4. Conclusion

The results of this study indicate that the disclosure of the sustainability report will have a positive effect on corporate value with institutional ownership as a control variable. This illustrates that the more indicators of Sustainability Report disclosed by the company, the value of the company will increase. The results of GCG performance in this study have a negative effect on stock value with institutional ownership as a control variable. This shows that the more the company's GCG performance increases, the lower the value of the company.

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06 The Effect of Liquidity Risk and Credit Risk on Bank Stability in ASEAN Countries Experiencing Recession Due to the Covid-19 Pandemic

Andreas Krisvian, Rofikoh Rokhim

Department of Management, Faculty of Economics and Business, University of Indonesia,
Depok City, 16424, Indonesia

E-mail: andreas.krisvian@ui.ac.id , rofikoh.rokhim@ui.ac.id

Abstract

This study was conducted to determine various elements that may affect the stability of the bank. This influence mainly comes from banking risk in the form of liquidity risk and credit risk. In this study, the sample used was 41 open conventional banks from 5 ASEAN countries that experienced a recession due to the Covid-19 pandemic in 2020. The analysis in this study used the GMM and VECM methods with quarterly data in the period of Q4 2015 to Q3 2020 so that it covered the period before and during the crisis. The results of this study found that there is a reciprocal effect between the two banking risks in the long term and both simultaneously significantly affect bank stability. The results of this study can provide a deeper understanding of banking risk management with the aim to increase bank stability that supports the country's sustainable economy.

Keywords: Risk Management, Bank Stability, Recession, ASEAN, Covid-19, Sustainable Economy

1. **Introduction**

Various negative impacts on the economy have been felt by many countries as a result of the pandemic caused by the Covid-19 virus. The pandemic, which has been more than 1 year since its inception in 2020, has caused the economy of countries to slow down, and many of them have even announced a recession. A country that is being hit by an economic crisis, marked by a recession, has to face a dilemma where the country's economy must continue to run without causing the spread of the Covid-19 virus to expand. This condition will be a challenge for banks as financial service providers, as well as intermediaries for economic activities in each country. Banks must be able to continue to operate and meet the needs of public financial services, especially in dealing with situations that are new and different from normal conditions before the pandemic. Banks must also adapt by having good stability during this new "normal" situation, given their very significant role in creating a conducive environment for the country's economy.

One way for banks to have good stability is to carry out good financial risk management as well. That way, the bank can cope with a loss due to financial risk well and be prepared to face similar risks in the future or in other words, it is a way to adapt sustainably. Four financial risks are generally faced by banks, namely liquidity risk that can occur when there is a rapid and massive withdrawal of funds by the public or commonly known as bank runs, credit risk which means borrowers of loan funds who do not pay off payments according to the agreed time previously agreed, interest rate risk occurs when interest rate changes occur, and operational risk when a bank has to experience a disaster such as a damaged computer system or a building fire for example. However, according to Ghenimi, Chaibi, and Omri (2017), liquidity risk and credit risk are the two most essential risks because they are directly related to bank business activities and are the main causes if a bank fails or goes bankrupt.

Financial experts believe that liquidity risk and credit risk are two interrelated risks and have an influence on bank stability. Dermine (1986) argues that liquidity risk is a cost that can reduce profits so that failure in terms of loan repayment will cause a decrease in cash inflows and reduce the level of liquidity. Then Ghenimi, Chaibi, and Omri (2017), through their research on the effect of liquidity risk and credit risk on bank stability in the MENA region, stated that liquidity risk and credit risk simultaneously could significantly affect bank stability. In addition, another similar study was also conducted by Imbierowicz and Rauch (2014) who took the subject of research in the form of commercial banks in America, proving that liquidity risk and credit risk simultaneously affect bank stability or the possibility of banks going bankrupt.

This study took samples in the Southeast Asia region or the ASEAN Region and specifically focused on countries that experienced a recession in 2020 due to the worsening economic effects of the Covid-19 pandemic. There are at least five ASEAN countries that are experiencing a recession, including the Philippines, Indonesia, Malaysia, Singapore, and Thailand (Aida, 2020; Prayoga, 2020). The ASEAN region was chosen to be the research sample because apart from being a research limitation, the ASEAN region is a collection of countries with high state financial prospects and can compete with other world regions, and are one of the most affected countries by this crisis. For example, based on statistical data from ASEANStatsDataPortal (2021), the main income of ASEAN countries that mostly come from the tourism sector, has experienced a significant decrease in the number of tourists, which was as much as 143.5 million in 2019 and to only 26.1 million tourists in 2020.

This research is a relatively new study because there has been no similar research which takes samples in the form of ASEAN countries experiencing a recession due to the Covid-19 pandemic. This study takes reference from the previous research by Ghenimi, Chaibi, and Omri (2017), which discusses similar topics and research objectives, namely the influence of liquidity risk and credit risk on bank stability. However, this study has differences in terms of sample selection, data periods, crisis periods, and additional discussion in terms of analysis of the long-term effect of risk variables and both of internal and external variables that may also affect liquidity risk, credit risk, and bank stability. In this way, different research results may also be obtained. The researchers hopes that this research can contribute to provide benefits in the form of more knowledge about banking risk management to increase bank stability as a form of responding to the challenges of the economic crisis in a sustainable manner. In addition, researchers also hope that this research can be a reference for parties who need it, such as academics, banking researchers, and the government as a regulator.

2. Literature Review

2.1 Influence between Liquidity Risk and Credit Risk

The influence between liquidity risk and credit risk is believed by experts to be two interconnected risks. This effect is when a change in one of these two risks will affect the other. Several previous studies by financial experts had also examined and proven the relationship between these two risks. These studies were first conducted by Diamond and Rajan (2005), explaining theoretically that liquidity risk and credit risk in banks are two risks that are simultaneously interconnected. In addition, the research by Ejoh, Okpa, and Inyang (2014) examined the relationship between liquidity risk and credit risk at banks in Nigeria through experimental research on 80 respondents. Later, research by Djebali and Zaghdoudi (2020) examined the threshold effect of the two risks by taking research samples in the MENA region and got the results in the form of a negative effect caused by one risk will result in a similar effect on other risks.

In this study, the investigated effect is whether there is a reciprocal and significant relationship between liquidity risk and credit risk to support the previous research. Thus, the hypotheses of this research can be formulated as follows:
H_1: There is a reciprocal effect between liquidity risk and credit risk significantly
H_2: Liquidity risk significantly affects credit risk
H_3: Liquidity risk significantly affects credit risk

2.2 Effect of Liquidity Risk and Credit Risk on Bank Stability

Apart from the influence of liquidity risk on credit risk and vice versa, these two risks have been widely studied by financial experts as two risks that also play a major role in determining the level of probability for a bank going bankrupt or in determining the stability of the bank. There are at least 6 previous studies that had succeeded in proving the significant influence between liquidity risk and credit risk variables on the stability or level of probability of bank bankruptcy, including:

1. Ejoh, Okpa, and Inyang (2014) examined the effect of liquidity risk and credit risk on bank bankruptcy risk in Nigeria;

2. Imbierowicz and Rauch (2014) examined the effect of liquidity risk and credit risk on the probability of a bank experiencing bankruptcy or the probability of default (PD) by taking a sample of banks in the United States;
3. Ghenimi, Chaibi, and Omri (2017) examine the effect of liquidity risk and credit risk on bank stability in the MENA region;
4. Setiawan, Sudarto, and Widiastuti (2019) examined the effect of credit risk and liquidity risk individually or simultaneously on bank stability in Indonesia;
5. Zaghdoudi (2019) examined the effect of credit risk, liquidity risk, and operational risk on bank stability in Tunisia;
6. Djebali and Zaghdoudi (2020) examined the effect of the threshold effect of liquidity risk and credit risk on bank stability in the MENA region.

Based on several studies above, it has been proven that liquidity risk and credit risk are either individually or simultaneously in the form of a combination of the two risks have a significant influence on bank stability. Therefore, in this study, several hypotheses can be formulated which refer to the previous studies, as follows:
H_4: Liquidity risk significantly affects bank stability
H_5: Credit risk significantly affects bank stability
H_6: The combination of liquidity risk and credit risk significantly affects bank stability

2.3 Bank's Internal and External Factors Affecting Liquidity Risk, Credit Risk, and Bank Stability

Research from several economists and one of them, namely Ghenimi, Chaibi, and Omri (2017), states that each of the liquidity risk, credit risk, and bank stability can be influenced by other factors apart from the risk factor itself. These factors are divided into 2 types, namely risk factors originating from financial statements or internal bank conditions and external risk factors derived from a country's macroeconomic conditions. Internal factors in this study include the stability ratio itself in the previous period or lagged bank stability, bank size, profitability (ROE and ROA), loan asset ratio, income diversification, efficiency, net interest margin, net interest margin, liquidity gap, and loan growth rates. Meanwhile, external factors consist of the ASEAN economic crisis in the form of a recession due to the pandemic, Real Gross Domestic Product (GDP), and inflation.

2.3.1 Lagged Stability Bank (Z-Score(-1))

Based on the results of the research conducted by Ghenimi, Chaibi, and Omri (2017), results are obtained which state that bank stability in a certain period can affect bank stability in the next period. The stability of the bank is measured by using the Z-Score calculation using the formula for the average return on assets (ROA) plus the equity to asset ratio (EAR) and the results are divided by the standard deviation of the ROA during the period studied. For this reason, the following hypotheses were formulated in this study:

H_7: Lagged bank stability significantly affects bank stability

2.3.2 Bank Size

The size of the bank based on previous research by experts is said to have a significant influence on liquidity risk, credit risk, and bank stability. Iqbal (2012), in his research, obtained the results that the size of the bank affects liquidity risk positively and significantly. Then, further research by Ghenimi, Chaibi, and Omri (2017) proved that bank size has a positive and significant effect on credit risk. In addition, according to Zaghdoudi (2019) and Ghenimi, Chaibi, and Omri (2017), bank size also had a negative and significant effect on bank stability. By referring to some of these previous studies, the following hypotheses can be formulated:
H_8: Bank size significantly affects liquidity risk
H_9: Bank size significantly affects credit risk
H_{10}: Bank size significantly affects bank stability

2.3.3 Return on Assets (ROA)

ROA has a significant influence on liquidity risk, credit risk, and bank stability, according to previous research by several experts. The effect of ROA on liquidity risk was obtained through research and has been proven to have a positive and significant correlation by Akhtar, Ali, and Sadaqat (2011) and Iqbal (2012). Then, the effect on credit risk was proven by Kabir, Worthington, and Rakes (2015) and Ghenimi, Chaibi, and Omri (2017) in a negative and significant way. In addition, according to research by Ghenimi, Chaibi, and Omri (2017) and Setiawan, Sudarto, and Widiastuti (2019), ROA also had a positive and significant effect on bank stability. Therefore, referring to some of these previous studies, the

following hypotheses can be formulated:
H11: ROA significantly affects liquidity risk
H_{12}: ROA significantly affects credit risk
H_{13}: ROA significantly affects bank stability

2.3.4 Return on Equity (ROE)

ROE, based on several previous studies, is said to have a significant influence on liquidity risk. This is evidenced through research by Iqbal (2012) and Muharam and Kurnia (2015), which both successively produced two significant results, but in the opposite direction to liquidity risk. Iqbal (2012) found that ROE had a positive effect, while research by Muharam and Kurnia (2015) gave a negative effect. By referring to the results of these previous studies, the following hypotheses can be formulated:
H_{14}: ROE significantly affects liquidity risk

2.3.5 Loan to Asset Ratio (LAR)

Based on a previous study, it has been proven that LAR has a significant effect on credit risk. The study by Kabir, Worthington, and Rakes (2015) succeeded in proving a negative and significant effect on the LAR ratio to credit risk. In addition, another study that also examined the effect of LAR on credit risk was carried out by Ghenimi, Chaibi, and Omri (2017), but their study did not have a significant effect on credit risk. Therefore, referring to previous research, a hypothesis can be formulated, namely:
H_{15}: LAR significantly affects credit risk

2.3.6 Loan Growth

According to Ghenimi, Chaibi, and Omri (2017) this loan growth ratio is proven to have a negative and significant effect on bank stability so that in this study a hypothesis can be formulated referring to these results, as follows:
H_{16}: Loan growth significantly affects bank stability

2.3.7 Income Diversification

Kabir, Worthington, and Rakes (2015) provided results where income diversification had a negative and significant effect on bank stability. This is different from Srairi (2013) and Ghenimi, Chaibi, and Omri (2017), both of which provde that there was a positive and significant effect of income diversification on bank stability. Referring to some of these previous studies, the following hypotheses can be formulated:
H_{17}: Income diversification significantly affects credit risk
H_{18}: Income diversification significantly affects bank stability

2.3.8 Efficiency

Efficiency is one of the factors of credit risk and is thought to influence bank stability based on previous studies. Ghenimi, Chaibi, and Omri (2017), through their research, resulted in the form of a negative and significant effect of efficiency on credit risk. However, its effect on bank stability based on previous studies was still questionable, and further research is needed. For example, research by Kabir, Worthington, and Rakes (2015) and Ghenimi, Chaibi, and Omri (2017) has not proven that efficiency can significantly affect bank stability. However, the results of both had the same direction of influence, namely negatively. Therefore, in this study, the following hypotheses will be formulated:
H_{19}: Efficiency significantly affects credit risk
H_{20}: Efficiency significantly affects bank stability

2.3.9 Net Interest Margin (NIM)

The bank's net interest income margin (NIM) is thought to be a factor of liquidity risk based on several previous studies. However, the significance of the NIM is still unclear, and further research is needed that might prove its significant effect on liquidity risk. For example, the previous research by Muharam and Kurnia (2015), which confirmed the effectiveness of NIM on the liquidity risk of conventional banks, was negative and insignificant. However, this study also examined the same thing in Islamic banks, and it turned out to be successful in providing positive and significant results. In addition, similar results were also obtained by Ghenimi, Chaibi, and Omri (2017), which proved the insignificant effect of NIM on liquidity risk, but in the opposite direction, namely positively. Thus, in this study, the hypothesis was formulated, namely:
H_{21}: NIM significantly affects liquidity risk

2.3.10 Liquidity Gap

The liquidity gap in its role as a factor of bank risk has been proven only to affect bank liquidity risk. This is supported by research by Muharam and Kurnia (2015), which proved that the liquidity gap could negatively and significantly affect liquidity risk. Also, another study that also examined the same thing, one of which was Ghenimi, Chaibi, and Omri (2017), although in their research it was not successful in proving the significant effect of a liquidity gap on liquidity risk. Based on the previous research, a hypothesis can be formulated, as follows:

H_{22}: Liquidity gap affects liquidity risk significantly

2.3.11 Capital Adequacy Ratio (CAR)

Based on several previous studies, CAR is proven to have a significant effect on liquidity risk and bank stability. Research by Iqbal (2012) confirmed that CAR had a positive and significant effect on bank stability. In addition, there are at least 2 studies that have succeeded in proving the significant effect of CAR on bank stability. These studies were conducted by Ghenimi, Chaibi, and Omri (2017) and Setiawan, Sudarto, and Widiastuti (2019), both of which succeeded in proving a positive and significant influence on CAR on bank stability. Based on these previous studies, some hypotheses can be formulated, namely:

H_{23}: CAR significantly affects liquidity risk
H_{24}: CAR significantly affects bank stability

2.3.12 Economic Crisis 2020 (Recession)

External factors in the form of the economic crisis in previous research by Ghenimi, Chaibi, and Omri (2017), have an influence on liquidity risk, credit risk, and bank stability, respectively, which are positively and significantly (liquidity risk as an inverse measure of liquidity), negative insignificant, and negative significant. Furthermore, with the reason that there are allegations of the same or different effects between these variables based on previous research, in this study, several hypotheses can be formulated:

H_{25}: The economic crisis significantly affects liquidity risk
H_{26}: The economic crisis significantly affects credit risk
H_{27}: The economic crisis significantly affects bank stability

2.3.13 Inflation Rate

Previous research by Ghenimi, Chaibi, and Omri (2017) proved that external factors in the form of inflation rates influenced liquidity risk, credit risk, and bank stability, respectively, negatively and significantly (liquidity risk as an inverse measure of liquidity), positive and significant, and significant positive. Furthermore, because there is an allegation of the same effect and the possibility of finding a different result between these variables, this study can formulate the following hypotheses:

H_{28}: Inflation rate significantly affects liquidity risk
H_{29}: Inflation rate significantly affects credit risk
H_{30}: Inflation rate affects banks significantly

2.3.14 Real Gross Domestic Product Growth

Previous research by Ghenimi, Chaibi, and Omri (2017) proved that external factors in the form of real GDP growth influence liquidity risk, credit risk, and bank stability, which are positively and insignificantly positive (liquidity risk as an inverse measure of liquidity), negative significant, and negative insignificant. Furthermore, because there is an allegation of the same effect and the possibility of finding a different result between these variables, in this study, several hypotheses can be formulated as follows:

H_{31}: Real GDP growth affects liquidity risk significantly
H_{32}: Real GDP growth affects credit risk significantly
H_{33}: Real GDP growth significantly affects bank stability

3. Methodology

3.1 Econometric Methods

This study used 2 methods. The first method used is the System-Generalized Method of Moments or SYS – GMM by Blundell and Bond (1998) in one stage or one step regression carried out simultaneously and non-simultaneously. This method is used because it is assumed that there is a problem of endogeneity in this study or there is a correlation between the variables and the error term or other factors that are not included in a research equation. This endogeneity problem generally occurs in simultaneous equations or research that analyzes the influence between variables reciprocally, such as this study, or it is assumed that there is an endogeneity problem. The GMM method is an estimate of the effect in the short term, seen through its characteristics where the sample size N must be greater than the research period T to avoid the potential for autocorrelation problems in the research residuals (Asteriou, Pilbeam, and Pratiwi, 2021). For this reason, additional estimates are needed using other methods to measure the relationship between variables in the long term.

The second method, Vector Error Correction Model (VECM), serves to assess whether there is a short-term and long-term causal or reciprocal relationship between research variables, both with variables in the same period or with variables in the same period lagged risk variables in the previous period. In addition, VECM method can also be used as an additional complement to the GMM method to assess the robustness or consistency of research results related to the reciprocal effect of variables as well as to examine the long-term effect on the relationship between research variables.

3.2 Sample Data

The sample data of this study included two different types of data, namely data on banking companies and macroeconomic data for a country. The data of banking companies must meet several special criteria, while macroeconomic data in the form of inflation data and Real GDP growth of the countries studied are only a complement to the banking companies' data and do not have any particular criteria. The criteria for the banking companies' data include:

1. Open conventional banks from 5 countries in ASEAN, consist of Philippines, Indonesia, Malaysia, Singapore, and Thailand that experienced a recession in 2020.
2. Has made an Initial Public Offering or IPO at least before the fourth quarter of 2015 until the third quarter of 2020.

Based on these criteria, 41 conventional banks were obtained from the Philippines, Indonesia, Malaysia, Singapore, and Thailand.

3.3 Research Variables

Table 1. List of Research Variables

Variables	Equation	Source
Credit Risk	Non – Performing Loans & Impaired Loans / Gross Loans	(Ghenimi, Chaibi, dan Omri, 2017)
Liquidity *	Liquid Assets / Total Assets	(Ghenimi, Chaibi, dan Omri, 2017)
Bank Size	Logarithm of Total Assets	(Ghenimi, Chaibi, dan Omri, 2017)
ROE	Net Income / Total Equity	(Ghenimi, Chaibi, dan Omri, 2017)
ROA	Net Income / Total Assets	(Ghenimi, Chaibi, dan Omri, 2017)
LAR	Net Loans / Total Assets	(Ghenimi, Chaibi, dan Omri, 2017)
Income Diversification	Non – Interest Income / Total Operating Income	(Ghenimi, Chaibi, dan Omri, 2017; Srairi, 2013)
Efficiency	Non – Interest Expense / (Revenue – Provision for Loan Losses	(Ghenimi, Chaibi, dan Omri, 2017)
NIM	Net Interest Income / Earning Assets	(Ghenimi, Chaibi, dan Omri, 2017)
Liquidity Gap	Logarithm of (Total Assets – Total Liabilities)	(Ghenimi, Chaibi, dan Omri, 2017)
CAR	Capital Adequacy (Value) / Risk Weighted Assets or Capital Adequacy (Percentage)	(Ghenimi, Chaibi, dan Omri, 2017)
Economic Crisis	Value 1 for the period 1st quarter to 3rd quarter of 2020	(Ghenimi, Chaibi, dan Omri, 2017)
Inflation Rate	Quarterly Consumer Price Index through interpolation	(Ghenimi, Chaibi, dan Omri, 2017)
Real GDP Growth	Real GDP growth per quarter through interpolation	(Ghenimi, Chaibi, dan Omri, 2017)
Loan Growth	(Loan (t) – Loan (t-1)) / Loan (t-1)	(Ghenimi, Chaibi, dan Omri, 2017)

Variables	Equation	Source
Stability (Z – Score) **	(Mean of ROA + (Total Equity / Total Assets)) / Standard Deviation of ROA	(Ghenimi, Chaibi, dan Omri, 2017)
Credit Risk x Liquidity Risk	(Non – Performing Loans & Impaired Loans / Gross Loans) x 1 / (Liquid Assets / Total Assets)	(Ghenimi, Chaibi, dan Omri, 2017)
Z – Score (-1)	Formulated via the STATA app	(Ghenimi, Chaibi, dan Omri, 2017)
Credit Risk (-1)	Formulated via the STATA app	(Ghenimi, Chaibi, dan Omri, 2017)
Liquidity (-1)	Formulated via the STATA app	(Ghenimi, Chaibi, dan Omri, 2017)

* Liquidity risk is measured inversely from the liquidity ratio. So, for example, if other variables affect liquidity negatively, then those variables affect liquidity risk positively

** The measure of bank stability (Z-score) in this study is transformed in the form of a logarithm (log) for the reason of data symmetry the same as the previous study by Ghenimi, Chaibi, and Omri (2017).

3.4 Research Equation Models

Simultaneous Equation Model 1 (Simultaneous GMM Method):

Equation 1:

$$\text{Credit Risk}_{(i,\ t)} = C + \beta_1 \text{Credit Risk}_{(i,\ t-1)} + \beta_2 \text{Liquidity}_{(i,\ t)} + \sum_{j=1}^{J} \beta_{j}\ \text{Bank}^{j}_{(i,\ t)} + \sum_{l=1}^{L} \beta_{l}\ \text{Macroeconomics}^{l}_{(i,\ t)} + \varepsilon_{(i,\ t)}$$

Equation 2:

$$\text{Liquidity}_{(i,\ t)} = C + \beta_1 \text{Liquidity}_{(i,\ t-1)} + \beta_2 \text{Risk Liquidity}_{(i,\ t)} + \sum_{p=1}^{P} \beta_{p}\ \text{Bank}^{P}_{(i,\ t)} + \sum_{q=1}^{Q} \beta_{q}\ \text{Macroeconomics}^{q}_{(i,\ t)} + \varepsilon_{(i,\ t)}$$

*$\text{Bank}^{j}_{(i,\ t)}$ and $\text{Bank}^{P}_{(i,\ t)}$ represent the bank-specific control variables

Equation Model 2 (VECM Method):

Equation 1:

$$\text{Credit Risk}_{(i,\ t)} = \partial_0 + \sum_{i=1}^{m} \text{Credit Risk}_{(i,\ t-1)} + \sum_{j=1}^{m} \text{Liquidity}_{(i,\ t-1)} + \varepsilon_{(i,\ t)}$$

Equation 2:

$$\text{Liquidity}_{(i,\ t)} = \partial_0 + \sum_{i=1}^{m} \text{Liquidity}_{(i,\ t-1)} + \sum_{j=1}^{m} \text{Credit Risk}_{(i,\ t-1)} + \varepsilon_{(i,\ t)}$$

Non-Simultaneous Equation Model 3 (Non-Simultaneous GMM Method):

$$\text{Stability}_{(i,\ t)} = \beta_0 + \beta_1 \text{Stability}_{(i,\ t-1)} + \beta_2 \text{Credit Risk}_{(i,\ t)} + \beta_3 \text{Liquidity}_{(i,\ t)} + \beta_4 \text{Credit Risk*Liquidity Risk}_{(i,\ t)} + \beta_5 \text{ROA}_{(i,\ t)} + \beta_6 \text{Bank Size}_{(i,\ t)} + \beta_7 \text{CAR}_{(i,\ t)} + \beta_8 \text{Loan Growth}_{(i,\ t)} + \beta_9 \text{Income Diversification}_{(i,\ t)} + \beta_{10} \text{Efficiency}_{(i,\ t)} + \beta_{11} \text{Economic Crisis}_{(i,\ t)} + \beta_{12} \text{Inflation Rate}_{(i,\ t)} + \beta_{13} \text{Real GDP Growth}_{(i,\ t)} + \varepsilon_{(i,\ t)}$$

1.5 Descriptive Statistics

Table 2. Descriptive Statistics of Research Variables

Variables	Obs	Mean	Std	Min	Max
Credit Risk	820	.0379945	.0626401	.000606	.9967093
Liquidity	820	.845148	.0826934	.4923324	.9921046
Credit Risk * Liquidity Risk	820	.0466144	.0779942	.0006602	1.104852
Stability	820	2.089102	.3419747	.8397949	2.573408
Loan Growth	820	.0150752	.0537166	-.4816903	1.024868
Bank Size	820	7.749768	1.248267	5.768708	10.16072
ROE	820	.0211025	.0333775	-.5705322	.0693776
ROA	820	.0026397	.0044843	-.0765772	.0096758
LAR	820	.6405335	.0790959	.3938296	.8290935
Income Diversification	820	.2570078	.1328385	-.4881947	.876903
Efficiency	820	.5876001	.7863934	-12.8279	7.505943
NIM	820	.0093303	.0043705	-.0013028	.0223358
Liquidity Gap	820	6.849432	1.291122	4.740507	9.320218
CAR	820	.1875515	.0425884	.1003388	.4585
Economic Crisis	820	.15	.3572893	0	1
Inflation Rate	820	2.262712	1.709805	-.9	6.361
Real GDP Growth	820	4.029634	2.232278	-5.6	7.1

3. Results and Discussion

Table 3. Results of Regression Equation Model 1

Regressors	Credit Risk		Liquidity	
	Coefficient	P-Value	Coefficient	P-Value
Constant	.395113	0.044	.2825527	0.160
Credit Risk	-	-	-.0039533	0.935
Credit Risk (-1)	-.031416	0.871	-	-
Liquidity	-.1079842	0.489	-	-
Liquidity (-1)	-	-	.2105874	0.222
Bank Size	-.0001306	0.983	.4978334	0.037
ROE	-	-	-7.023546	0.146
ROA	-1.418954	0.002	51.55072	0.154
LAR	-.3695847	0.032	-	-
Income Diversification	-.0520581	0.238	-	-
Efficiency	-.0002884	0.899	-	-
NIM	-	-	7.178312	0.041
Liquidity Gap	-	-	-.5229661	0.034
CAR	-	-	.0209607	0.932
Economic Crisis	-.0146928	0.358	.0331348	0.025
Inflation Rate	.0007873	0.778	.0068769	0.263
Real GDP Growth	-.0021592	0.375	.0071369	0.002
AR(2) Test	0.08	0.938	-0.99	0.324
Hansen Test	14.76	0.194	21.96	0.109

Table 4. Hypothesis Testing for Simultaneous Equation Model 1

Regressors (H_X)	Credit Risk	< or > α = 0,05	Alternate Hypothesis (H_X)	Liquidity	< or > α = 0,05	Alternate Hypothesis (H_X)
	P-Value			P-Value		
Credit Risk (H_3)	-	-	-	0.935	>	Unacceptable
Credit Risk (-1) *	0.871	>	-	-	-	-
Liquidity (H_2)	0.489	>	Unacceptable	-	-	-
Liquidity (-1) *	-	-	-	0.222	>	-
Bank Size (H_9) | (H_8)	0.983	>	Unacceptable	0.037	<	Acceptable
ROE (H_{14})	-	-	-	0.146	>	Unacceptable
ROA (H_{12}) | (H_{11})	0.002	<	Acceptable	0.154	>	Unacceptable
LAR (H_{15})	0.032	<	Acceptable	-	-	-
Income Diversification (H_{17})	0.238	>	Unacceptable	-	-	-
Efficiency (H_{19})	0.899	>	Unacceptable	-	-	-
NIM (H_{21})	-	-	-	0.041	<	Acceptable
Liquidity Gap (H_{22})	-	-	-	0.034	<	Acceptable
CAR (H_{23})	-	-	-	0.932	>	Unacceptable
Economic Crisis (H_{26}) | (H_{25})	0.358	>	Unacceptable	0.025	<	Acceptable
Inflation Rate (H_{29}) | (H_{28})	0.778	>	Unacceptable	0.263	>	Unacceptable
Real GDP Growth (H_{32}) | (H_{31})	0.375	>	Unacceptable	0.002	<	Acceptable

Table 5. Results of Regression Equation Model 2 (Short-Term)

Dependent Variable: Credit Risk Independent Variable: Liquidity			
Statistics Test	Statistics Value	df	P-Value
Chi-square	2.347656	2	0.3092
Dependent Variable: Liquidity Independent Variable: Credit Risk			
Statistics Test	Statistics Value	df	P-Value
Chi-square	11.15976	2	0.0038

Table 6. Results of Regression Equation Model 2 (Long-Term)

Dependent Variable: Credit Risk Independent Variable: Liquidity	Coefficient	P-Value
C(1)	-0.425641	0.0000
Dependent Variable: Liquidity Independent Variable: Credit Risk	Coefficient	P-Value
C(1)	-0.010486	0.0011

Table 7. Results of Regression Equation Model 3

Variable *Regressor*	Stability (Z-Score)	
	Coefficient	P-Value
Constant	1.039724	0.027
Z-Score(-1)	.49182	0.005
Liquidity	.0307959	0.816
Credit Risk	1.60168	0.043
Credit Risk x Risk Liquidity	-1.485775	0.032
ROA	8.296796	0.031
Bank Size	-.0417272	0.103
CAR	1.592437	0.016
Loan Growth	.0185082	0.775
Income Diversification	.2168817	0.049
Efficiency	.0068571	0.635
Inflation Rate	-.0158928	0.088
Real GDP Growth	-.0030638	0.468
Economic Crisis	-.0258942	0.357
AR(2) Test	1.10	0.273
Hansen Test	5.53	0.237

Table 8. Hypothesis Testing for Non-Simultaneous Equation Model 3

Regressor (H_x)	Stability (Z-Score)	< or > $\alpha = 0,05$	Alternate Hypothesis (H_x)
	P-Value		
Z-Score (-1) (H_7)	0.005	<	Acceptable
Liquidity (H_4)	0.816	>	Unacceptable
Credit Risk (H_5)	0.043	<	Acceptable
Credit Risk x Liquidity Risk (H_6)	0.032	<	Acceptable
ROA (H_{13})	0.031	<	Acceptable
Bank Size (H_{10})	0.103	>	Unacceptable
CAR (H_{24})	0.016	<	Acceptable
Loan Growth (H_{16})	0.775	>	Unacceptable
Income Diversification (H_{18})	0.049	<	Acceptable
Efficiency (H_{20})	0.635	>	Unacceptable
Inflation Rate (H_{30})	0.088	>	Unacceptable
Real GDP Growth (H_{33})	0.468	>	Unacceptable
Economic Crisis (H_{27})	0.357	>	Unacceptable

4.1 Discussion of Equation Model 1

Based on the regression results in Table 3 above, it is known that the values of the AR(2) Test and Hansen's Test for liquidity and credit risk, respectively, as dependent variables show insignificant values (P-Value > 0,05). This means that the study results do not found any autocorrelation problems or invalid instrumental variables, respectively. Then in Tables 3 and 4, the results of the short-term effects between variables are as follows:

a. There is no reciprocal effect between liquidity risk (inverse of Liquidity) and credit risk by previous research by Imbierowicz and Rauch (2014) and Ghenimi, Chaibi, and Omri (2017). Thus H_1 is unacceptable;
b. Credit risk is significantly influenced by 2 internal bank factors: profitability in the form of return on assets (ROA) and bank loan asset ratio (LAR). The influence between ROA and credit risk in this study is supported by previous research by Kabir, Worthington, and Rakes (2015) and Ghenimi, Chaibi, and Omri (2017). Also, the effect of LAR on credit risk in this study is supported by previous research by Kabir, Worthington, and Rakes (2015);
c. Liquidity as an inverse measure of liquidity risk is influenced by several internal bank factors. Bank liquidity is significantly influenced by 3 internal factors: bank size, NIM, and liquidity gap. The effect of bank size on liquidity in this study is supported by previous research by Iqbal (2012). This study also obtained new findings in the form of the influence of NIM which positively and significantly affects liquidity. The influence between NIM and liquidity is in line with research by Ghenimi, Chaibi, and Omri (2017), which also shows a positive directional effect. Furthermore, the effect of the liquidity gap on liquidity in this study is supported by the results of previous research by Muharam and Kurnia (2015);
d. The external factors of the bank only significantly affect its liquidity, and there is no significant effect economically on the bank's credit risk, these factors are the economic crisis and real GDP growth. The effect of the economic crisis on bank liquidity in this study is different from the results of previous studies by Ghenimi, Chaibi, and Omri (2017). This difference is obtained in terms of direction and significance between the opposite variables. In this study, the economic crisis has a positive and significant effect on bank liquidity, in contrast to research by Ghenimi, Chaibi, and Omri (2017), which resulted in a negative and insignificant effect. This is similar to Real GDP growth in this study which also has a positive and significant effect on bank liquidity, in contrast to research by Ghenimi, Chaibi, and Omri (2017), which get the opposite result.

The reciprocal effect of liquidity risk and credit risk in Equation 1 Model is an estimate of the effect in the short term. So in the short term, banks do not need to take extra precautions against other risks if the bank is affected by one of the risks of the two banking risks in this study. For example, a bank affected by credit risk only needs to focus entirely on mitigating losses due to credit risk, such as by restructuring or refinancing loans.

Concerning reducing credit risk, banks can seek to increase the value of their income, both through interest and non-interest income, with the aim to increase bank profitability in the form of ROA ratios; so that, bank losses due to loan repayment failures by debtors can be absorbed from increased profits obtained by the bank. In addition, banks can also strive to increase the number and value of lending to their customers, one of which is by promoting credit facilities. The reason is that the percentage value of losses due to the failure of the bank to receive back the loan funds along with the profit on the interest on the loan can be covered with profits from loans given to other debtors.

Concerning reducing liquidity risk or increasing bank liquidity, banks can increase the number and value of their assets to increase the size of the bank. This is because larger size banks will have a competitive advantage compared to smaller size banks through the economics of scale activities, such as the cost of making bank financial facilities that are less because they are carried out massively or in large quantities. Later, the bank can try to increase income on loan interest, namely by increasing the percentage of loan interest charged to debtors. This is done with the aim of increasing the NIM ratio, as evidenced by this research can further prevent banks from being affected by liquidity problems.

In addition, related to the the effect of the liquidity gap and liquidity risk, there are 2 assumptions that can explain the influence between the variables. The first assumption means that the greater the bank's liabilities, the less the level of liquidity gap; so that, it will increase bank liquidity and vice versa. This means that a lower level of liquidity gap will have a good impact on banks by reducing their liquidity risk and vice versa. This follows the theory by Kenton (2020), which explained that banks can increase their liquidity to deal with problems in terms of cash flow availability, for example, when bank runs occur by making loans or debts in large amounts to other institutions. While the second assumption, the difference in the value of total assets and liabilities that are too large for the bank, will be detrimental to the internal bank and vice versa. This is because if the bank has a proportion of assets that far exceed its liabilities, it can be said that the bank relies too much on funding from the asset side in paying off all its obligations.

Next is the influence of external factors on liquidity risk. Based on the results of this study, the economic crisis in 2020 had a good impact on the liquidity of the banks of 5 ASEAN countries that experienced a recession that year. Public money stored in banks in the form of deposits was not used optimally by the society as in normal conditions before the pandemic. This is because there is a tendency for people to save in times of crisis in anticipation of preparing for all the worst possibilities from the pandemic; so that, bank liquidity conditions increase, which is marked by a decrease in the reference interest rate of each country at that time.

Additionally, the growth of Real GDP on bank liquidity is used to determine how the state's economic conditions through state revenues are known to affect banking conditions. To reduce liquidity risk, the effect of Real GDP on bank liquidity in this study provides an interpretation that the income of the 5 ASEAN countries studied can provide liquidity support to banks in the country concerned. An increase in the country's Real GDP, as measured by state income calculated based on the level of the inflation rate, indicates that the country's economy is running well so that the community can contribute to state revenue.

1.2 Discussion of Equation Model 2

1.2.1 Discussion of Short-Term Regression Equation Model 2

Based on the regression results in Table 5, the results were obtained in no reciprocal influence between credit risk variables and bank liquidity in the short term. This is because the effect between the two variables and their respective dependent variables are not in line or do not show the same significance. In addition, the liquidity variable in this study is an inverse measure of liquidity risk. So it can be said, too, that there is no reciprocal effect between liquidity risk and credit risk. The results of this study are supported by previous research by Imbierowicz and Rauch (2014) and Ghenimi, Chaibi, and Omri (2017). They also did not find a reciprocal relationship between the two variables and were consistent with the regression results in the Equation Model 1.

1.2.2 Discussion of Long-Term Regression Equation Model 2

Based on the regression results in Table 6, new findings are obtained in a reciprocal influence between credit risk variables and bank liquidity risk in the long term. This is because the influence between the two variables and their respective dependent variables is in line or shows the same direction and significance. So, in the long run, H_1 is acceptable. Plus, these results are also supported by previous research by Diamond and Rajan (2005) and Djebali and Zaghdoudi (2020). To overcome the reciprocal effect of these two banking risks, banks need to overcome liquidity problems and losses on credit risk in an efficient and short time so that they do not impact the emergence of other risks in the long term.
For example, if the bank is affected by credit risk, the bank needs to take various risk management steps to overcome the problem in terms of the number of customers who are unable to pay off the loans that have been given in a short time. Arrangement of loan terms or contracts for refinancing and restructuring actions should also be carried out immediately, especially if the debtor in question has shown some symptoms of difficulty in paying off loan debts. Likewise, the setting of a new loan repayment contract period should also not have a too long period of time, although the short repayment period can also mean that the bank will earn less interest on the loan. This is because the bank's inability to recover its borrowed funds in the long term will make it difficult for banks to have funds that can be used to fulfill their obligations, for example, the obligation to provide funds for depositors to take.

1.3 Discussion of Equation Model 3

Based on the regression results in Table 7 above, it is known that the value of the AR(2) Test and Hansen's Test for stability (Z-Score) as the dependent variable shows an insignificant value (P-Value > 0,05). This means that the results of the study do not show any autocorrelation problems or invalid instrumental variables, respectively. Then the results of the research in Table 7 and Table 8 above show that bank stability is positively and significantly affected by credit risk. This result is different from several previous studies by Ghenimi, Chaibi, and Omri (2017), Setiawan, Sudarto, and Widiastuti (2019), and Zaghdoudi (2019), all of which stated that there was a negative and significant influence of credit risk on bank stability. Nevertheless, the results in this study can still be said to be reasonable and explained logically using the theory of "gambling for resurrection" which is another form of the principle of "high-risk high return" but is carried out when a business is in a risk-affected condition based on research by Imbierowicz and Rauch (2014). Under these conditions, banks that are only affected by credit risk are assumed to provide a response that will instead provide a mitigation effect that can increase its stability.

In other words, banks in the 5 countries sampled in this study do not perceive credit risk as an obstacle but as an opportunity to increase their stability. The response of the bank, which is assumed to be effective according to this, is to seek for debtors to repay the loans that have been given in any way. One of them is by increasing intermediation costs, such as in terms of a stricter supervision of the profile and performance of debtors in terms of loan repayment, renegotiation of loan repayment contracts through refinancing facilities, and issuing loans with entirely new contracts through restructuring for debtors who have the most difficulty in repaying loans.

The combined effect of credit risk and liquidity risk (credit risk x liquidity risk) negatively and significantly affects bank stability in this study. This is supported by several previous studies by Ejoh, Okpa, and Inyang (2014), Ghenimi, Chaibi, and Omri (2017), Zaghdoudi (2019), and Djebali and Zaghdoudi (2020), which also obtained the same results. The combination of credit risk and liquidity risk is a condition where the bank is affected by these 2 risks at once. Concerning bank stability, this means that the problem of losses due to the failure of the debtor to repay the loan and accompanied by the inability of the bank to withdraw funds from its assets can make the bank unstable or increase the likelihood of failure in terms of fulfilling its obligations. Under these circumstances, banks can at least apply 4 response options, namely:

a. Prevent the occurrence of both risks simultaneously by imposing stricter regulations in terms of terms or contracts of loans, ensuring their investments, and deposit funds from depositors;
b. Lower the expected rate of return or the profit expected by the bank;
c. Make large loans to banks and other companies;
d. Carry out risk-sharing, namely through a process of merger or merging of one bank with another bank in cooperation and acquisition relationships or allowing a bank to be taken over by another more stable institution.

Furthermore, based on Table 7 and Table 8 above, bank stability is also influenced by several internal factors, including:

a. The effect of Z-Score (-1) on bank stability obtained in this study is positive and significant. This result is supported by previous research by Ghenimi, Chaibi, and Omri (2017), which also obtained the same result;
b. The effect of ROA on bank stability shows a positive and significant effect on bank stability. These results are consistent with previous studies by Ghenimi, Chaibi, and Omri (2017) and Setiawan, Sudarto, and Widiastuti (2019), which also obtained the same results;
c. The effect of CAR on bank stability in this study is positive and significant. This result is the same as previous research by Ghenimi, Chaibi, and Omri (2017) and Setiawan, Sudarto, and Widiastuti (2019), which means an increase or decrease in the CAR level can increase or decrease the level of bank stability respectively;
d. Income diversification has a positive and significant effect on bank stability. This result is the same as previous research by Srairi (2013) and Ghenimi, Chaibi, and Omri (2017).

In this study, lagged bank stability functions as an indicator that measures its ability to maintain its stability in a certain period. This means that banks that are successful in increasing their stability in a certain period will potentially obtain even better stability in the future. Calculation of the measure of bank stability using the Z-Score involves the ROA ratio and the amount of capital owned by the bank as an indicator that can increase bank stability if both things increase. This is consistent with the results of this study regarding the effect of ROA and CAR, which positively and significantly affect bank stability.

Increasing the ROA ratio itself can be done by banks by trying to get more revenue on interest and non-interest. Then the bank can also reduce lending to debtors who have a high-risk profile because this can increase the Risk-Weighted Assets ratio, which can reduce the level of the CAR. Furthermore, bank income through income diversification, for example, transaction fees charged to its customers, deposits to other banks, investments in stocks and bonds, and so on based on this research, can encourage banks to obtain higher stability.

4. **Conclusion and Managerial Implications**

Based on the results of this study, conclusions can be drawn in the form of several points of managerial implications that can be carried out by the management of the 5 ASEAN banks in this study in order to create a safe, productive, and sustainable business environment, including:

1. Banks need to pay special attention to the two banking risks, which are most directly related to the performance of the bank itself, namely liquidity risk and credit risk. Both of these risks can be the main cause of a bank failing or going bankrupt. Therefore, a good risk management process needs to be applied by banks specifically to prevent and overcome the occurrence of these two risks, given the significant influence of these two risks on bank stability;
2. Based on this research, risk mitigation as an effort to improve bank stability consists of 3 stages, namely the stage of preventing the occurrence of the risk, handling when affected by risk, and maintaining a stable bank condition;
3. Prevention of liquidity risk and bank credit risk can be done successively, for example, by ensuring the bank's investment assets and deposit funds of depositors and tightening the risk profile assessment process for debtors before the bank decides to provide loans to its customers;
4. Countermeasures when a bank is affected by liquidity risk and credit risk can be carried out in succession, for example, changing the bank's investment structure to the majority of assets with a short period of time and seeking debtors to repay loans either by refinancing or credit restructuring;
5. Maintaining the bank's stable condition can be done by increasing the size of the bank's stability through increasing ROA and CAR in a certain period. The reason is that based on this research, banks that succeed in improving their stability in a period will have the opportunity to obtain better stability in the future;
6. Liquidity risk and credit risk were found in this study to have a mutually influencing effect in the long term. This means that in order to overcome one of the risks of the two risks, the bank must be able to resolve it in a fast and efficient time to avoid the emergence of other risks in the long term;
7. The application of the theory of "gambling for resurrection" through the principle of "high-risk high return" can be applied by banks especially to deal with one of the risks and, in this case, refers specifically to credit risk. However, applying this principle should only be carried out when the bank is not experiencing liquidity problems because the potential for the bank to fail will be much greater. Several ways to overcome the risks that occur simultaneously can be done using the risk-sharing method through the merger and acquisition process or making large loans to other parties;
8. The role of banks during this crisis can be seen from the impact of the economic crisis due to the Covid-19 pandemic, which directly affects bank liquidity. The economic crisis due to this pandemic has increased bank liquidity because many people do not use their money for transaction activities optimally and save more. Thus, bank liquidity rises in line with the increase in the amount of funds stored in the bank. Banks can take advantage of this crisis moment with good liquidity conditions to channel more loan facilities in order to increase their income on bank interest.

5. Suggestions for Further Research

For further research, it may be possible to use closed conventional bank data because in this study, the authors can only obtain open conventional bank data. In addition, the time interval of the research period may be extended to include the period in 2021 or the period after the economic crisis conditions due to the pandemic have improved. But this all depends on the availability of financial statement data published by all the banks concerned. This is because in this study, for example, from a total of 75 open conventional banks in 5 ASEAN countries that experienced a recession in 2020 and had published their financial statements at least before the 4th quarter of 2015, only 41 banks that had completely published their financial statements data until the 3rd quarter of 2020 counted since the last data collection for the making of this research in May 2021.

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07

Factors Influencing the Intention of Cash Waqf to Support the Sustainability Waqf Movement : Empirical Study in Indonesia

Dina Fitrisia Septiarini[1]*, Habiburrochman Habiburrochman[2], Heni Sukmawati[3], Neni Sri Wulandari[4]

[1]Doctoral Student of Islamic Economics, Faculty of Economic and Business, Airlangga University, Indonesia. Email: dina.fitrisia.septiarini-2020@feb.unair.ac.id
[2]Lecturer of Accounting Department, Faculty of Economic and Business, Airlangga University. Indonesia. Email: habib@feb.unair.ac.id
[3]Lecturer of Islamic Economics Department, Faculty of Islamic Studies, Siliwangi University. Indonesia. Email: henisukmawati@unsil.ac.id
[4]Lecturer of Islamic Economics and Finance, Faculty of Economic and Business Education, Universitas Pendidikan Indonesia. Indonesia. Email: neni.wulandari@upi.edu

Abstract
Waqf as a form of community concern to help other people who are in need. One way to maintain the sustainability of the waqf movement is to evaluate the factors that influence the community's cash waqf intentions. This study uses a quantitative approach. As 200 respondents were obtained from questionnaires distributed online for a month and a half. To test the hypotheses developed, used the PLS-SEM approach with tools Smartpls 3.0 statistics. The results of this study show that demographic factors such as age, education, and income proved to have a significant positive effect on the cash waqf intention. This study also proved that public trust acts as a moderation variable on the influence of the aforementioned. However, only the age of the cash waqf intention is moderated by trust, while education and income towards the cash waqf intention are not proven. Besides public trust is also proven to be an intermediary (mediation variable) on the influence of reputation and transparency to the cash waqf intention in the waqf funds management institutions in Indonesia.

Keywords: Sustainability, Public Trust, Reputation, Transparency, Cash Waqf Intention, Waqf Funds Institutions.

JEL Classification Code: D30, D31, D33, D53, D91, G23

1. Introduction
Waqf is included in the sadaqah jariyah (continuous, flowing, and ongoing charity) that flows reward of all time even when the giver is gone (Mahamood in Shukor et al., 2019). According to Kahf (2003) waqf can be defined as holding the value of a particular asset and make use of it for the benefit of the people. Mauluddin &Rahman (2018) explained that the form of waqf assets is not limited to fixed assets but also transferable assets, such as cash waqf or often called waqf al-nuqud in Arabic. This waqf is a form of waqf paid by individuals, groups, or institutions with cash (maybe in the form of money or securities) where the cash is maintained in value and invested following sharia and its profits are used for charity in the way of Allah (MUI, 2002). Waqf is not only worth worship, more than that, but the benefits of waqf can also encourage the improvement of development and solve the socioeconomic disparity of a country.

In Indonesia, the socialization of cash waqf has been started for more than a decade (Qurrata et al., 2020). The practice of cash waqf itself is still relatively new if compared to land waqf that has long been known by the community Indonesian. Nevertheless, the potential of cash waqf in Indonesia is quite large. Nasution in Hasanah (2011) explained that the potential waqf of funds that could be collected from the Muslim population in Indonesia reaches 3 trillion. Unfortunately, from potential, only 200 billion can be collected by the Indonesian Waqf Board (BWI, 2018). Qurrata et al. (2019) explained that cash waqf can be developed and regulated with good management by an institution, it improves social welfare, education equality, meet the basic rights of society and reduce economic suffering.

There are still many factors that cause the optimal collection of cash waqf in Indonesia, including issues related to management and knowledge of waqf of funds (Nizar, 2014). In terms of management, cash waqf marketing strategy still tends to spread rather than focus on potential targets so that waqf education and collection are not optimal (Khan et al., 2020). Therefore, it is important to know how demographic factors affect donor/wakif intentions in waqf so that more effective and efficient marketing strategies can be carried out. even though this, previous studies (Chang, 2005; Lwin et al., 2014; Khan et al., 2020) on the influence of demographic factors on charitable intentions still show results in each variable. Referring to Mcwilliams &Siegel (2000), the diversity of research results may be due to the misspecification of the model due to other variables that have a strong influence on the relationship aforementioned. In the context of charities, factors that have an essential role in influence a person's intention to provide charitable funds to a managing institution funds including waqf institutions are public trusts (Yang et al., 2014).

Public trust is at the heart of charitable institutions (Sargeant and Lee, 2004) and is urgently needed to conduct fundraising and the objectives of the institution (Bendapudi et al., 1996). This also applies to cash waqf management institutions. According to the results of the study by the center NAFI research, the percentage of public trust in Islamic charitable institutions is not much different i.e. 44% believe and 43% do not believe (IRTI, 2017). This is also a problem that needs to be considered by the managers of cash waqf institutions to optimize the potential of waqf in Indonesia. Public trust can be shaped by a variety of things. Bennett &Gabriel (2003) explain that reputation is required by charities to stimulate public trust in the institution. In addition, Farwell et al. (2018) added that transparency of institutions is important to build and maintain public trust. Both of these things can affect public trust and then it can affect one's intention to waqf in a trusted institution. Thus, indirectly, reputation and transparency waqf institutions affect cash waqf intention of in institutions mediated by public trust.

This research will help waqf movement specially for Waqf fund management institutions in Indonesia in developing their strategies. This research will provide empirical evidence of influence factors to the intention to donate cash waqf on an institution by paying attention to the factors that make waqf movement more sustainable in the future. In addition, this study can also assist waqf management institutions to create strategy by focusing on factor influencing people to donate cash waqf.

2. Literature Review and Hypothesis Development

2.1. Emphaty-Altruism Theory

Charity is a common practice in society and in all religions and cultures that are considered to be acts that bring reward (Mohanty, 2011). Waqf of money, including in charity, is an act of giving for the benefit of others. How one does such actions can be explained by the theory of altruism (Otto &Bolle, 2011; Simmons &Emanuele, 2007). According to Brewer (2003), altruism is a cognitive activity to help others. In line with that, Schwartz (1970) explains that altruism is a habit to help. Adding, Lwin et al. (2014) said altruism is a desire to improve the condition of others.

The empathy-altruism hypothesis in the study of social psychology explains that people are not always selfish and have empathy that encourages them to help others (Eveland &Crutchfield, 2007). Empathy gives a more emotional perspective to the charity behavior in which an individual sees another individual in distress and then feels sad about the situation and is further emotionally motivated to give the can reduce their suffering and or reduce their feelings of sadness (Chang, 2014). Thus, altruistic motivation can be a motivation to help based on sympathy for requests for help and felt a moral responsibility to assist (Hibbert et al., 2005).

2.2. Demographic Factors

Various literature shows that in general people with characteristics different tendencies in donating, and different demographics is an effective differentiator between a person who is more likely to charity or not (Dvorak &Toubman, 2013). Hearts & Indris (2014) describe several demographic factors such as age, gender, education, and income can be a differentiator in seeing a person's tendency, including the tendency to waqf.

According to Sze et al. (2012) age can affect one's charitable behavior because one's emotional empathy and altruistic behavior will increase in line with age. Nonetheless, some research still has different results. Research (Smith &McSweeney, 2007) showed a significant positive influence, but the result of research (Danko &Stanley, 1986) has positive influence only applies until a person reaches the age of 65 years, the rest of the charitable behavior shows

a decrease with age. On the other hand, research (Louie &Obermiller, 2000) shows the absence of influence in the relationship. Thus, the hypothesis is used as follows:
H1a: Age positively affects the waqf intention.

The literature also explains that education levels can affect one's charitable behavior. James (2008) explains that the higher one's education will increase one's empathy for charity. It is because the more educated people will increasingly understand how the value of humanity and the cause of the great inequality between the community. As with empirical research on other demographic factors, research related to this also showed mixed results. Research (Khan et al., 2019) showed no influence on this relationship, while the study (Slyke & Johnson, 2006; Woodyard &Grable, 2014) explains the positive influence between the level of education towards charitable behavior. Thus, the hypothesis is used as next:
H1b: The level of education positively affects waqf intention.

Lastly, income can also affect a person's charitable behavior. Wiepking &Breeze, (2011) explains that ''feeling prosperous (well-off feeling)" from someone with income that further influences behavior, and this is reflected in how they treat money when disposable income is high. James &Sharpe (2007) prove that income positively affects charitable behavior. Nevertheless, Bennett (2011) found the opposite of which empirical research results showed a negative influence on the relationship. Thus, the hypothesis is used as follows:
H1c: Income positively affects waqf intention.

2.3 Public Trust

Shukor et al. (2019) conceptually explain the definition of public trust has two emphases. First, ''confidence" means that beliefs describe the belief that the other party is in a relationship will not take any undesirable actions together. Second, ''hope (expectancy)" means trust describes the expectation of quality consistent, competent, honest, responsible, and so on. Public trust plays an important role in the existence and legitimacy of charities, including waqf institutions (Greiling, 2007). Public trust can ensure the sustainability of waqf fund management institutions. Sargeant and Lee (2004) that the higher public confidence in the institution, the closer the desire of a person to be a donor and donate funds in greater numbers and this is also true otherwise.

The influence of public trust on the success of an organization or charity has been examined by (Melendez, 2001; Sargeant and Lee, 2002; Taniguchi and Marshall, 2014). Melendez (2001) explained that the charity does not provide funds to institutions they don't trust. Additionally, Burnett in Shukor et al. (2019) explained that public trust has an impact on donations and increases the amount donated by the donor. Supports things Hou et al. (2017) explained that failure to maintain public trust is bad for charities that could lead to unwilling donors to provide funds to the institution. Based on this, the hypothesis is used as follows:
H2: Public trust positively affects the waqf intention.

Based on Mcwilliams &Siegel (2000), diversity of research results may be due to data misspecification caused by the inclusion of essential moderating variables, the diversity of previous research results related to demographic factors to waqf intention may be due to unaccounted public trust as moderating variable. It is supported by Melendez (2001) who explains that a person does not provide charitable funds to an institution they do not believe in, so demographic factors can be explained well if moderated by public trust. Therefore, the hypotheses can be built as follows:
H3a: Public trust positively moderates the influence of age on waqf intentions.
H3b: Public trust positively moderates the influence of education towards waqf intention.
H3c: Public trust positively moderates the influence of income against waqf intention.

2.4 Reputation

Reputation is a concept that relates to imagery and connotations assessment of the quality of organizations built during a period and focuses on what he does and how he behaves (Balmer in Bennet &Gabriel, 2003). In business organizations, reputation has an important role to play because it can bring in new customers and make it possible to establish long-term work (Anderson and Weitz, 1989) and also affect the intensity of purchases caused by consumer confidence in reputable organizations (Yoon et al., 1993). In charities, including waqf fund management agencies, reputation has an important role in attracting donors or wakif candidates (Bennet & Gabriel, 2003). Bennet &Gabriel (2003) explained that the government institutions of charitable funds need a reputation to stimulate the trust of donors and stakeholders.

Various studies test how reputation affects one's intentions to waqf through trust as mediating variable. Bennett and Ali-Choudhury (2009) prove that the desire to donate again by young people significantly greater in those who consider charities to have a good reputation. Shukor et al. (2019) explained that a good reputation trust in institutions where they can convince the wakif to waqf. In other words, reputation will affect the waqf intention mediating by the public trust. Therefore, the hypotheses can be built as follows:
H4: Reputation positively affects the waqf intention mediating by public trust.

2.5 Transparency

Transparence is described as the extent to which organizational actions can be observed by an outside party (Xue &Niu, 2019). This refers to the extent to which the organization discloses information about internal work, decision-making processes, surgical procedures, and results (Grimmelikhuijsen, 2010). Liu et al. (2015) added that accessibility and objectivity of information are the main dimensions of transparency directed on external parties. In a business organization, Transparency is needed to build and restore trust with vendors, customers, and other stakeholders (Rawlins in Busser & Shulga, 2019). This also applies to charitable fund management agencies (Farwell, 2018) includes waqf fund management institutions (Shukor et al., 2019).

Transparency is one form of good corporate governance that influences public trust (Grimmelikhuijsen, 2012). Increased agency transparency will reduce the sense of customer uncertainty, increase trust, intention to buy, and the availability of pay at a premium price (Liu et al., 2015). Referring to (Farwell, 2018; Shukor et al., 2019), the same thing also happens to waqf management institutions which means transparency will affect the intention of waqf by wakif mediated by wakif's trust in the institution. Thus, the hypothesis built as follows:
H5: Transparency affects the waqf intention in institutions mediated by public trust

3. Research Methods and Research Design

3.1. Sample and Data Collection

The sample population uses Indonesian Muslims who know cash waqf both in general and in detail and know at least one institution that manages cash waqf in Indonesia. Knowledge of cash waqf is used as a condition to provide related data intentions, while knowledge related to waqf management institutions is made requirements to provide data related to transparency, reputation and trust validly.

The sampling technique used is convenience sampling (sampling convenience) which is a sampling method based on the availability of elements and ease of sampling (Sugiarto et al., 2001:38). According to Mohammad et al. (2019), this technique is the most commonly used in quantitative research. According to Sugiarto et al. (2001:39) the use of this method useful for the early stages of explorative research intended for early instructions regarding an attention-grabbing phenomenon in which the results are generally provided abundant evidence.
Data obtained by disseminating questionnaires online through various media. Questionnaires are distributed to various demographic data of respondents. From questionnaires that have been disseminated collected by 207 respondents who then sorted before data processing. Out of 207 respondents, 3 respondents were eliminated because it shows an answer that is too extreme, and as many as 4 eliminated because it was sent by the same respondent.

3.2. Measurement

Age. Age measurement is done by categorizing the age into five groups with ratings 1 to 5. as in the research (Shukor et al., 2019) five age categories, among others: brought 20 years with a value of 1, 21-30 years with a value of 2.31-40 years with a value of 3.41-50 years with a value of 4 and above 50 years with a value of 5.

Education. Modified education level measurement from research (Lwin et al., 2014) which uses five categories with five rating scales. Different from the study, the five categories in this study were elementary school graduates to grade 1, junior high school graduate for grade 2, high school graduate for grade 3, Diploma 1/2/3/4 graduate, and Strata 1 for grade 4 and Graduates of Strata 2/3 for grades 5.

Income. Modified income measurement from research (Lwin et al., 2014) which uses five categories with five rating scales. Deep this study, categories and income assessments as follows: below 2 million rated 1, between 2 - 4 million rated 2, between 4 - 6 million rated 3, between 6 – 8 million are rated 4 and above 8 million are rated 5.

Reputation, Transparency, Public Trust, and Goodwill. Variable uses latent variable measured by items questions raised from previous research (Farwell et al., 2018; Shukor et al., 2019) with an assessment using a Linkert scale of 1-5. Each variable is measured by three indicator items where each item is represented by one question. This can be seen in Table 2.

To test the influence between hypothesized variables in this study as seen in Figure 1, the structural equation method is used Variant-based modeling or called PLS-SEM with Smartpls statistical tools 3.0. According to Ghozali &Latan (2015:19), PLS-SEM can be used to predicting either the development or confirmation of a theory, in addition to can be used to test complex research models with a variety of data types (scale, category, nominal, ordinal, interval or ratio) in one model research.

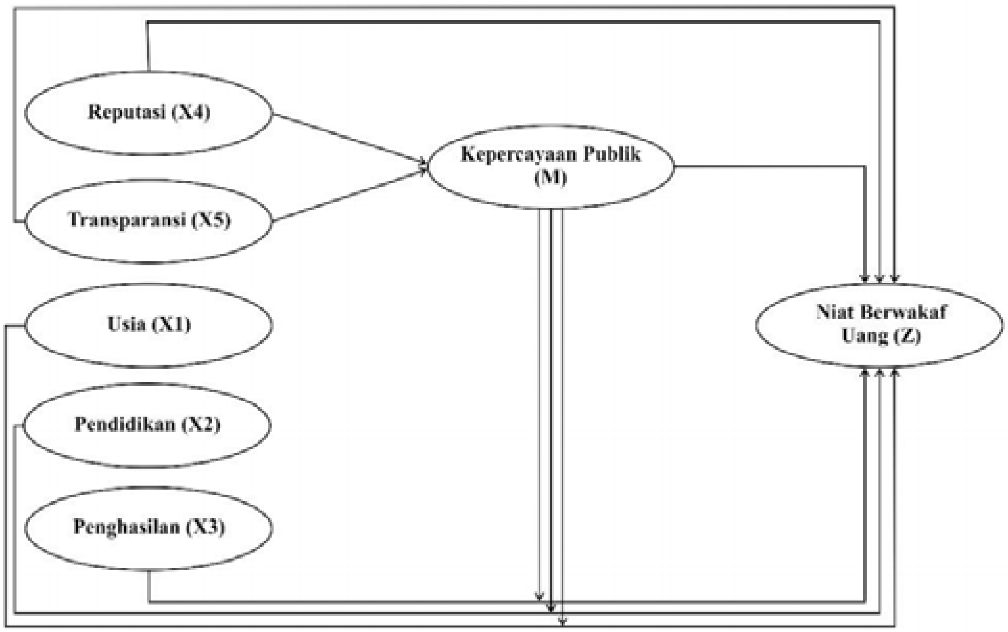

Figure 1. Conceptual Framework of Research

4. Results and Discussion

Respondents from this study were the largest from Surabaya and followed by Kediri, Sidoarjo, Bandung, Malang, and Jakarta with a total of 58% while 42% others are spread in various cities and districts in Indonesia. Age-related profiles, gender, marital status, employment status, education, and income can be viewed in table 1.

4.1 Result

4.1.1 Outer Model Analysis

Before testing the influence between variables, in the PLS-SEM method, testing of the outer model in advance to determine the validity and latent variable reliability with its indicators (Ghozali &Latan, 2015:7). The outer model measurement results can be seen in Table 2. Based on the table, the loading factor value of each indicator against its latent variable amounting to more than 0.7 which according to Ghozali &Latan (2015:75) Rule of Thumb for loading factor is a minimum of 0.7 which indicates a strong correlation between latent variables with its indicators so that the outer model can be said to be valid. In addition, to test the validity of latent variables, average testing is also conducted Variance Extracted (AVE) (Ghozali, 2008). According to Ghozali &Latan (2015:76), Rule of Thumb for AVE is a minimum of 0.5, so the results available in table 2 indicates that the outer model in this study is valid because all variable indicates an AVE value greater than 0.5.

Table 1. Demographic Profile Respondents

Demographics	Category	Number of Respondents	(%)
Domicile	Surabaya	49	25
	Kediri	24	12
	Sidoarjo	16	8
	Malang	10	5
	Bandung	9	5
	Jakarta	8	4
	Others	84	42
Age	<21 y.o	10	5
	21-30 y.o.	83	42
	31-40 y.o	51	26
	41-50 y.o	36	18
	>50 y.o	20	10
Gender	Male	106	53
	Female	94	47
Marital Status	Married	117	58
	Single/Unmarried	83	42
Employment Status	Work	68	34
	Not Work	132	66
Education	SD/MI (Elementary School)	5	3
	SMP/MTS (Junior High School)	11	6
	SMA/SMK MA (Senior High School)	42	21
	D1/D2/D3/D4/S1 (Diploma or Strata 1)	79	40
	S2/S3 (Strata 2/3)	63	32
Income	< 2 million	60	30
	2-4 million	40	20
	4-6 million	31	16
	6-8 million	12	6
	>8 million	57	29

Table 2. Loading Factor & Variable Validity Latent in Models

Item	Code	Loading Factor
Reputation		
I assume that the manager of the waqf fund efforts in waqf fundraising activities.	R1	0,897
I assume that the waqf manager manages waqf fund assets well and professionally.	R2	0,935
I assume that the waqf manager distributes the benefits of cash waqf well and has a positive impact on the community.	R3	0,925
Transparency		
I feel that information related to the management of cash waqf provided by the institution is complete and clear	T1	0,909

Item	Code	Loading Factor
I feel that access to information related to waqf fund given by waqf managers is very easy to obtain	T2	0,927
I feel that cash waqf-related programs and services are well delivered by the manager	T3	0,942
Public Trust		
I am concerned about the waqf institution that manages the waqf fund	KP1	0,826
I believe in the management of waqf institutions that managing waqf funds	KP2	0,883
I believe that waqf institutions do their best in managing waqf funds	KP3	0,775
Waqf Intentions		
I have the opportunity to cash waqf in the future	NB1	0,909
I will be cash waqf soon	NB2	0,814
In the next three months, I will cash waqf	NB3	0,897

Table 3. AVE, Composite Reliability & Cronbach's alpha in each Laten Variable

Variables	Average variance extracted (AVE	Composite reliability	Cronbach's alpha
Reputation	0,845	0,942	0,908
Transparency	0,858	0,948	0,917
Public Trust	0,677	0,862	0,759
Waqf Intention	0,764	0,907	0,844

Then, to see the reliability of the outer model, look at the value of Composite Reliability and Cronbach's Alpha (Ghozali, 2008). According to Ghozali &Latan (2015:76), The Rule of Thumb for Composite Reliability and Cronbach's Alpha are each having a value of more than 0.7. Therefore, based on table 2 it can be concluded that the outer model in this study was reliable because all latent variables and indicators have a Composite Reliability value and Cronbach's Alpha more than 0.7.

4.1.2 Inner Model Analysis

The inner model analysis aims to prove the influence between hypothesized variables. The first thing to look at is the R-square value of a relationship. Based on Figure 2, the value of the R-square variable of waqf intention is 0.939 or 93.9% which means that the intention of waqf can be explained by age, education, and income which are moderated by the public trust variable of 93.9% while 6.1% is explained by other variables. In addition, the R-square value of public trust is 0.649 or 64.9% which means that public trust can be explained by reputation variables and transparency of 64.9% while 35.1% is explained by other variables.

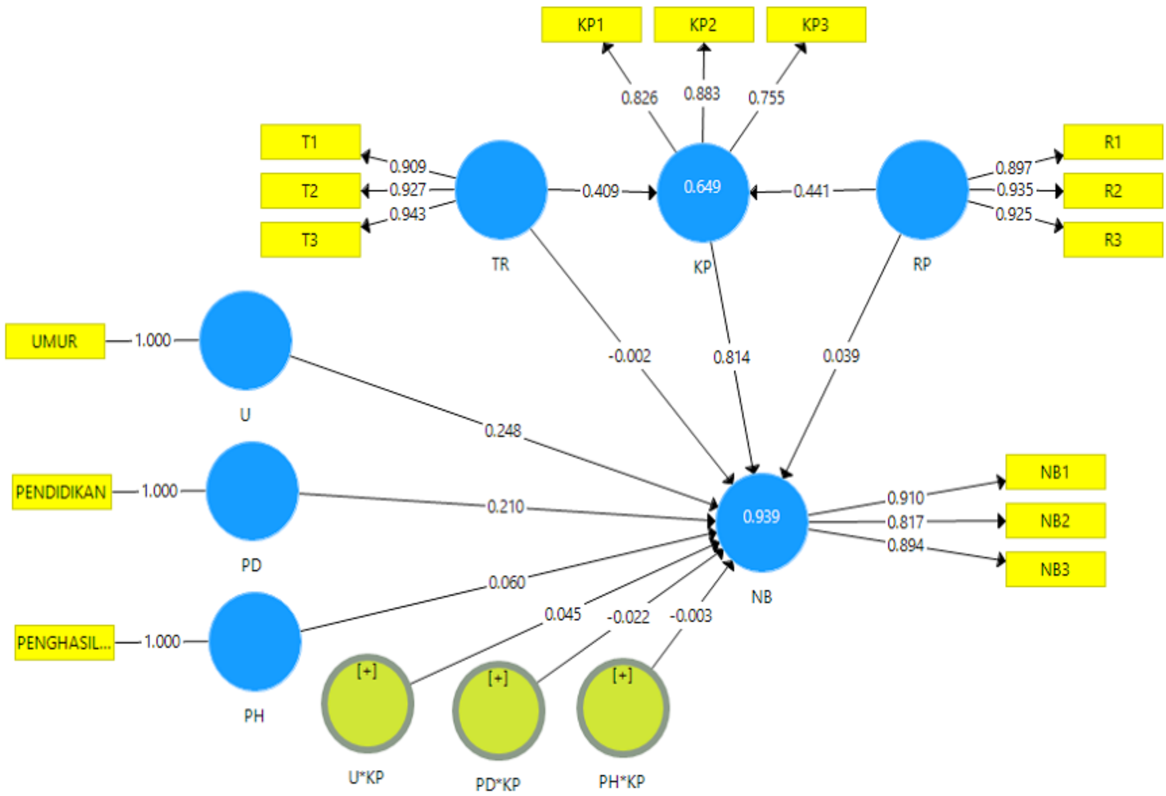

Figure 2. PLS Algoritm Results

4.2 Discussion

The Influence of Age, Education, and Income on Waqf Intention. Based on the test results using Smartpls 3.0, it can be concluded that demographic factors consisting of age, education, and income are shown to have a significant positive influence on the intention of Waqf Intention. Concerning age, this is in line with research (Smith and McSweeney, 2007) that proves the significant positive influence of age on charitable intentions. Supporting this, Jonas et al. (2002) explained that the increase in charitable intentions as a person gets older is due to the feeling of getting closer to the end of his life. In other words, getting older makes a person aware of death which then encourages the intention of giving more and more.

Furthermore, related to the level of education, the significant positive results in this study are in line with the research (Bekkers and Wiepking, 2011; James, 2008; Woodyard &Grable, 2014) which shows that the higher one's education, the greater the charitable intentions. Brown &Ferris (2007) stated that education will provide a wide range of information and knowledge, one of which is related to socioeconomic inequality in society so that those who are more educated get more information which then makes them feel a responsibility to solve the problem. This makes those who are higher education have the intention of giving greater.

For income level, the positive significant influence on the waqf intention in this study is in line with the research (Khan et al., 2020) which proves that in the context of waqf institutions in Malaysia, the higher the income of prospective wakif, the greater the waqf intention owned. This at the same time rejects the results of research (Bennett, 2011) on the context of charities in London which explains that charitable intentions are higher in the low-income group. Wiepking &Breeze (2011) explains that feeling prosperous in someone with a high income encourages them to give easier so that they have the intention of giving more than those who are still struggling with their condition.

The Influence of Public Trust on Waqf Intention. Based on the results of statistical tests, public trust in waqf management institutions has a significant positive effect on one's intentions. This is in line with research (Shukor et al., 2019) at the waqf fund management agency in Malaysia which showed a significant positive influence between trust in waqf intention. Seong-Gin's (2017) explains that public trust plays an important role in charitable fundraising. Shukor et al. (2019) explained that trust represents the beliefs and expectations of a society filled with institutions so that they feel there is no problem giving charitable funds to trusted institutions.

Public Trust as a Moderation of The Influence of Age, Education, and Income on Cas Waqf Intention. Research on the influence of demographic factors, namely age, education, and income on the intention of making money moderated by the public trust is a new research framework. From the results of statistical tests, public trust as moderation is proven on the influence of age on the waqf intention. This is following Melendez's statement (2001) which made it clear that a person does not provide charitable funds to institutions they do not trust. The implication of this is that even as age increases followed by increased charitable intentions, it can be disrupted by a level of trust in charities. That is, even if a person of a higher age has the intention of making more money, this does not apply if the person's trust in the waqf management institution is low. Likewise, when age and trust in institutions are high, the intention to waqf will be greater because trust moderates the influence.

However, in this study, public trust was not proven to moderate the influence of both education and income on waqf intention in waqf institutions. These three variables are only significant as free variables that positively affect one's intentions at a waqf fund management institution.

The Influence of Reputation on Waqf Intention mediating by the Public Trust. The results of the statistical test prove that reputation has a significant positive effect on waqf intention through public trust. That is, one of the important factors that influence cash waqf intention is public trust in the waqf management institution, and the trust itself is influenced by the reputation of the institution. This is in line with the results of research by (Shukor et al., 2019) that proves trust in waqf institutions depends on the reputation of the institution. Furthermore, Sargeant &Lee (2002) explained that trust has an important role in influencing one's intentions in charity.

The Effect of Transparency on Waqf Intention Mediating by Public Trust. The results of this study also prove that transparency influences waqf intention through public trust. This can be interpreted that the transparency of waqf fund institutions is an important factor in building public trust. Farwell (2018) explained that the transparency of charities will encourage public trust in the institution. Yeo et al. (2017) explained that transparency such as disclosure of information related to background, management, and finance is a strong predictor of the intention of donating. To clarify this, Shukor et al. (2019) explained that disclosure of information removes the doubts that people feel and then encourages their desire to waqf in institutions that they consider transparent.

5. Conclusions

Previous research (Shukor et al., 2019) on the role of trust in waqf institutions describes trust as a mediator between integrity, transparency, and reputation for the intention of waqf money in waqf institutions. However, the study did not explain the possible role of trust in institutions as moderating variable. Referring to research (Khan et al., 2020) that explains the influence of demographic factors on the waqf intention, this study builds a theoretical framework that explains the role of public trust as a mediating variable between reputation and transparency on waqf intention, while moderating between demographic factors such as age, education, and income towards waqf intention.

Based on the results, it can be confirmed that the role of trust not only as a mediator as in research (Shukor et al., 2019) but also as moderators that strengthen the influence of demographic factors, especially age on waqf intention in waqf institutions. The implications of this study can be applied with various strategic measures such as specifying waqf fundraising targets. As is known, age, education, and income proved to have a significant positive effect on waqf intention. Therefore, waqf fund managers can categorize prospective wakif based on these variables to develop a more specific strategy. This can be the answer to the fundraising problem, as presented (Khan et al., 2020) related to the marketing strategy of waqf fund that is still spreading rather than focusing on potential circles.

In addition, the results of the study also implicate the importance of building public trust by waqf fund management institutions as stated by (Greiling, 2007). Waqf institution management can build public trust by building a good image or reputation in the eyes of the community and building transparent governance because both are proven to be factors that affect public trust in the institution. According to Shukor et al. (2019) building a reputation can be done with open and wise management. Adding, Yeo et al. (2017) explained that transparency or openness related to governance, background and financial information can build both reputation and public trust in charitable fund management institutions.

It should be emphasized again that public trust is an important thing that needs to be maintained by waqf fund managers because it not only directly affects the waqf intention but can also moderate the influence of demographic factors on the waqf intention. Hou et al. (2017) explained that failure to maintain public trust led to the unwillingness of donors to provide funds to charities. This can eliminate the potential of waqf fundraising in potential circles such as the elderly, educated, and high-income. Especially for the elderly, the change in the level of trust will have a huge impact on waqf movement because trust is proven to moderate the influence of age on the intention of waqf. So the waqf fund management must be have different strategy base on donor demografic profiles

6. Research Limitations and Suggestions

First, this study only examined demographic factors such as age, education, and income towards the waqf intention while various previous literature also hypothesized demographic factors such as gender, marital status, and employment. These factors can be examined in subsequent studies. Second, the influence of reputation on public trust is only examined in one direction. The relationship should be reciprocally explained where reputation affects trust and trust affects reputation. In addition, transparency should also be scrutinized for its influence on reputation of waqf movement. Therefore, further research can fill the deficiencies that have been described. Third, respondents in the study are still focused on Java Island. In the Indonesian context, this study can be developed by considering cross-cultural by expanding the reach of respondents to spread evenly in various islands outside Java Island. Fourth, the waqf movement model should be address to support sustainability waqf movement in Indonesia.

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08 Creative Accounting: Viewed from Risk and Sharia Compliance Perspective

Muhammad Noor[1], Sopian[2]
[1,2]Polytechnic of State Finance STAN muhammadnoor.91@gmail.com[1], sopian@pknstan.ac.id

ABSTRACT

Purpose: A company with a corporate form resulting from the industrial revolution rises a principal and agent relationship. The separation between the company's owner and the people who run the company makes accounting needs more crucial. However, accounting which is a solution for communication between owners and management is often exploited by managers through creative accounting, also known as earnings management. This study aims to determine the effect of firm risk, tax risk, and sharia compliance on earnings management.

Design/methodology/approach: The research was conducted on manufacturing sector companies listed on Indonesia Stock Exchange (IDX) in 2016-2019. Using the purposive sampling method, the number of samples used is 69 companies with 276 observations. The hypothesis examination used in this research is the multiple linear regression analysis of pooled data.

Findings: The result shows that firm risk from the perspective of debtholders has a positive effect on earnings management. As for firm risk from equity holders' perspective, tax risk, and sharia compliance has no effect on earnings management.

Research limitations: First, this study only measures earnings management with proxy discretionary accruals from the modified Jones model. Second, this study measures firm risk (equity holder) with the total risk proxy. The proxy describes the risks faced by the company both systematically and non- systemically. To see which of the two risks affects earnings management more, further research can simultaneously use systematic risk and idiosyncratic risk proxies. Third, the study was conducted in the period before the covid 19 pandemic in Indonesia.

Practical implications: Companies with high leverage tend to carry out earnings management so that creditors must be more aware of the company's financial statements. On the other hand, as an independent party that tests a company's financial statements, auditors can be more aware of companies with high leverage because they tend to use earnings management. It requires more vigilance when conducting audits of related companies.

Originality: There are still several inconsistencies in the results in previous studies regarding the effect of firm risk from the debtholder perspective on

earnings management. Research that discusses the effect of firm risk from the equity holder side on earnings management is quite diverse. The research on the effect of sharia compliance, which is more specific than the level of religiosity, and tax risk on earnings management has never been done. All of these make this research the first study of its kind.

Keywords: earnings management, firm risk, tax risk, sharia compliance.

1. INTRODUCTION

Since the start of the industrial revolution, the definition of a company has shifted significantly. The industrial revolution brought many new things in the business world, one of which was the form of the corporation. Today, company owners can be interpreted as owners of capital. In the case of a public company, shareholders are often very far from where the company's activities are running. For the company's day-to-day operations to continue under these conditions, the owners of capital appoint certain parties as representatives, namely the company's board of directors.

The separation of shareholders from the companies they own makes the need for reporting on the board of directors' performance very important. Accounting is present as a bridge between the two parties. Through accounting reports, the board of directors conveys the version that has been carried out during a period to the owners of the company. Accounting, which is a communication solution between company owners and management, does not come without problems. It is not uncommon for company management to cover operational deficiencies by manipulating records, either by taking advantage of the flexibility gaps in accounting provisions or committing fraud, also known as creative accounting.

Creative accounting is nothing new. It has existed since the emergence of accounting science (Umobong & Ironkwe, 2017). Diana and Beattrice (2010) mention that this has been going on for 500 years and Luca Paciolo has described this practice in his book De Arithmetica. Marino (1993) further mentions that the history of creative accounting appeared during Phillip II's reign in the Kingdom of Spanish Naples. At that time, the rationalization of mathematical calculations was used to reduce the interest rate on the royal debt from the original 9% to only 3.3%. Mathematical illusions are steps taken to overcome the kingdom's economic conditions related to deficit financing, projected income, and interest rates.

Mutuc et al. (2019) state that creative accounting occurs when management uses their judgment to prepare financial statements and make transactions that alter financial statements. Jones (2010) explained further about five strategies that can be used by company managers related to creative accounting. The strategy is to control the company's revenue, cut

various expenses, increase the value of the company's assets, reduce the company's liabilities, and increase the company's operating cash flow.

The widespread adoption of earnings management has given rise to a number of major scandals around the world. Several accounting scandals that occurred in Australia after 1980 were described by Carnegie and O'Connell (2012), namely the case of Adelaide Steamship (Adsteam), One.Tel, and the biggest one was the collapse of HIH Insurance. Creative accounting problems are also rife in the Asian continent. Chen et al. (2012) described various accounting scandals in China, including the Great Wall Fund Raising in 1993 and Zhengzhou Baiwen in 2000. Still from the East Asia region, Suda (2012) describes several accounting scandals in Japan after the 1980s involving Yaohan Japan, Nikko Cordial, and Kanebo. Not only in the Pacific region, but creative accounting has also shocked the Indian Ocean region. Banerjee (2012) describes some cases that occurred in India. One of the most exceptional cases is Satyam Computer Service Ltd. that happened in 2009.

Excessive earnings management also occurs in many countries in Europe. Two big cases in the blue continent are Parmalat in Italy and Polly Peck in the United Kingdom. Melis (2012) mentions that Parmalat represents the most important and most spectacular case in Italy. The Parmalat case covers various techniques, from creative accounting to false accounting. Difficulties in detecting the problems occur because Parmalat utilizes many related parties with very complicated corporate schemes. In the United Kingdom, Gwilliam and Jackson (2012) illustrate Polly Peck's growth rate as a meteoric rise which recorded an increase in profit before tax from 9 million pounds in 1982 to 161 million pounds in 1989. Although there is still no bright spot, Polly Peck's success which finally dimmed is thought to be due to the company's accounting policies regarding transactions using foreign exchange, asset revaluation, and management's interpretation.

Two of the largest creative accounting cases in the world occurred in the United States. Mulford and Comiskey (2012) mention that these two companies, Enron Corp. and WorldCom, are famous for the wrong reasons. Enron, which in 2000 was ranked seventh in the Fortune 500, suddenly faced bankruptcy and went into liquidation in 2001. That is due to the disclosure of management practices that use special purpose vehicles to hide debt and create phantom income. Just a few months later, the WorldCom case came to the attention of the American public. The scheme used by WorldCom management is the capitalization of expenses by using operating expenses for leasing telecommunications lines from other companies, which are reported as capital expenditures and added to the company's balance sheet as fixed assets.

In Indonesia, several cases related to creative accounting have been revealed. One of the most exceptional cases in the practice of earnings

management is PT Garuda Indonesia which recognizes revenue from PT Mahata Aero Teknologi prematurely (Hartomo, 2019). The latest case involving one of the state-owned enterprises, Jiwasraya, involved the management of financial statements with the window-dressing method (Irene, 2020).

The exploitation of earnings management in the preparation of financial statements can also affect the development of sustainability accounting. Lamberton (2005) mentions three indicators that underlie the concept of sustainability accounting, economic, environmental, and social. Earnings management practices will be able to affect all aspects of the economic indicators. As for social indicators, earnings management has a close relationship with the category of society.

The board of directors' decision to carry out the earnings management strategy without paying attention to ethics has proven detrimental to shareholders, creditors, and the company itself. The presentation of the original accounting profit becomes so crucial because of the rapid growth of domestic and international investors. In the equity market, the development of individual investors is also increasing in the debt market. Referring to the release of OJK data, the number of lender accounts registered with a number of peer-to-peer lending in the country grew by 186% since December 2018. The high growth of investors and lenders makes the need for financial statements increasingly important.

The tendency of a company to carry out earnings management has encouraged tests using many factors and variables by several previous researchers. These studies include discussing the variables that affect the company in carrying out earnings management practices in the form of good corporate governance (Kordlouie & Sheikhbeglo, 2012; Wibawa et al., 2020; Mutuc et al., 2019; Jao & Pagalung, 2011; Asitalia & Trisnawati, 2017; Mahiswari & Nugroho, 2014), deferred tax expense (Phillips et al., 2003; Nurhanifah & Jaya, 2014; Trisnawati et al., 2015; Ifada & Wulandari, 2015; Wibawa et al., 2020), deferred tax asset (Utami et al., 2018; Yahya & Wahyuningsih, 2019; Wibawa et al., 2020), tax planning (Ifada & Wulandari, 2015; Trisanti, 2019; Dwianika & Wisnantiasri, 2019), leverage (Sosiawan,

2012; Suhartanto, 2015; Dwianika & Wisnantiasri, 2019; Religiosa & Surjandari, 2021; Jao & Pagalung, 2011; Tala & Karamoy, 2017; Asitalia & Trisnawati, 2017; Mahiswari & Nugroho, 2014), company size (Sosiawan, 2012; Suhartanto, 2015; Trisanti, 2019; Jao & Pagalung, 2011; Mahiswari & Nugroho, 2014), profitability (Trisnawati et al., 2015; Suhartanto, 2015; Tala & Karamoy, 2017), litigation risk (Kirana et al., 2016), firm risk (Suhartanto, 2015; Pradnyani & Astika, 2019; Religiosa & Surjandari, 2021), and religiosity (Kanagaretnam et al., 2015).

One of the factors that influence the company's actions in carrying out earnings management practices is leverage. Leverage, which is the use of debt in the capital structure, can bring the company to default risk. This

bankruptcy risk is the risk of the company from the perspective of the debtholder. Sosiawan (2012) has previously researched the effect of leverage on earnings management with the results that leverage has a positive effect on earnings management. In contrast to the results of this study, Suhartanto (2015) found that leverage has no effect on earnings management practices.

An indicator of the existence of earnings management in a company that has also been studied previously is the firm risk. Suhartanto (2015) proves that the firm business risk influences earnings management. In addition, Religiosa and Surjandari (2021) examined the effect of corporate risk in the banking sector and obtained results indicating that corporate risk has a significant effect on earnings management practices.

In terms of taxation, previous research has discussed several factors and their relation to earnings management. Wibawa et al. (2020), who researched mining companies on the IDX for the 2016-2019 period, concluded that deferred tax expense aligns with earnings management activities. In contrast to the previous opinion, Nurhanifah & Jaya (2014), Trisnawati et al. (2015), and Ifada and Wulandari (2015) write that deferred tax expense has no effect on earnings management practices. As for the deferred tax asset variable, Utami et al. (2018) and Yahya and Wahyuningsih (2019) indicate that there is no effect of deferred tax assets on earnings management. Wibawa et al. (2020) state that the regression test results show that deferred tax assets have a positive effect on earnings management.

Further research related to taxes revolves around tax planning variables. Ifada and Wulandari (2015), in their study, indicate that tax planning has no significant effect on improving earnings management practices. It is contrary to Dwianika and Wisnantiasri's (2019) research, which states that tax planning has an effect on earnings management. Trisanti (2019) reinforces this result, who concludes that tax planning moderates the effect of firm size on earnings management practices. Based on this explanation, it can be seen that the research on taxation factors on earnings management that has been carried out is deferred tax expense, deferred tax assets, and tax planning. There is still no correspondence regarding tax risk research on earning management practices.

Another factor that is also related to earnings management but rarely gets the attention of researchers is the level of religiosity. Kanagaretnam et al. (2015) previously researched religiosity and earnings management in the international banking industry. In line with the hypothesis, the results of the analysis show that religiosity has a negative effect on earnings management, whether it is aimed at avoiding losses or just meeting the company's revenue targets.

From the explanation above, it can be seen that there are still several inconsistencies in the results in previous studies regarding the effect of firm

risk from debtholder perspective on earnings management. Research that discusses the effect of firm risk from equity holder side on earnings management is quite diverse. The research on the effect of sharia compliance, which is more specific than the level of religiosity, and tax risk on earnings management has never been done. It makes the variables very interesting to study.

The purpose of this study was to determine the effect of firm risk (debtholder and equity holder), tax risk, and sharia compliance on earnings management. The research is expected to be used by investors in determining the investment decisions to be made. In addition, the study is expected to be useful for the government, especially the Financial Services Authority (OJK) and the Directorate General of Taxes (DJP), to provide a basis for indications of companies conducting creative accounting to mislead investors and avoid taxes.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1. POSITIF ACCOUNTING THEORY

Modern positive accounting research began to develop in the 1960s when Ball and Brown (1968), Beaver (1968), and other researchers introduced the use of empirical financial methods in financial accounting. (Watts & Zimmerman, 1990). Positive accounting theory developed from several thoughts, one of which was the thought of Ball and Brown (1968) about how one can explain the predictive ability of a proposition based on assumptions without adequate verification. Accounting that does not have a sufficient theoretical framework that is comprehensive causes the development of differences in practice in the field (Ball & Brown, 1968).

Watts and Zimmerman (1986) mention three positive accounting theory hypotheses: the bonus plan hypothesis, the debt covenant hypothesis, and the political cost hypothesis. The bonus plan hypothesis explains the tendency of companies to choose accounting procedures that can increase current period profits so that management gets bonuses from the company. The debt covenant hypothesis sees management's efforts to implement accounting policies that maintain the company's debt ratio at a safe level to avoid imposing penalties from creditors. The political cost hypothesis describes management's intention to carry out earnings management practices to minimize political costs.

2.2. AGENCY THEORY

Agency relations are one of the oldest and most common codified methods of social interaction. It can be said that an agency relationship exists between two or more parties, one party acts as an agent and the

other party acts as a principal (Ross, 1973). Eisenhardt (1989) concludes that agency theory offers a unique view of information systems, outcome uncertainty, incentives, and risk.

Jensen and Meckling (1976) argue that an agency relationship is a contract entered into by the company's owner involving other parties (agents) to carry out several functions on their behalf. Agency theory demonstrates that the emergence of various conflicts between the owner (principal) and management (agent) gives rise to agency costs, costs that exist to reduce friction (Morris, 1987). On the other hand, Umobong and Ironkwe (2017) argue that agency relationships require delegation of decision-making authority from the owner to the agent.

2.3. EARNINGS MANAGEMENT

Also known as creative accounting, earnings management is a purposeful intervention in the financial reporting process to external parties. Management is motivated to carry out creative accounting due to pressure to meet the company's financial expectations (Mutuc et al., 2019). Healy and Wahlen (1999) argue that earnings management occurs when managers use financial reporting and transaction preparation judgment to modify financial statements.
Sosiawan (2012) states that earnings management adds to the bias in financial statements and can interfere with users of financial statements who believe that the engineered profit figure is an unengineered profit figure. Earnings management itself is a step in reporting manipulated profits for the benefit of company management (Trisnawati et al., 2015).

Based on the definition described above, earnings management is a practice used by company management in utilizing the flexibility of accounting rules in preparing financial statements. This flexibility is exploited to meet the needs of management with various objectives that often conflict with the expectations of the company's owners.

2.4. FIRM RISK

Pradnyani and Astika (2019) state that firm risk is a condition with some possibilities that cause a company's performance to be lower than what the company expects due to uncertain conditions in the future. Financial leverage is the use of debt as a source of funding at the company's expected rate of return (Firmansyah et al., 2021). In terms of debtholders, the use of financial leverage is one of the risks faced by the company. Raningsih and Putra (2015) mention that a high level of leverage ratio reflects that the company has a high risk, especially for the inability to pay off its debts so that investors judge it as not good.

Bhattacharya et al. (2019) state that from an investor's perspective, there are two stakeholders, namely debtholders and equity holders. From

the perspective of equity holders, firm risk can be measured using total risk and idiosyncratic risk (Chakraborty et al., 2019). Further mentioned by Bhattacharya et al. (2019) that the company's risk from the equity holder side contains two risks, namely systematic risk and idiosyncratic risk.

Based on these definitions, firm risk can be interpreted as the possibility of circumstances that bring the company to unexpected conditions. This risk is closely related to the company's capital structure, considering that funding using debt or equity has a negative potential for company performance. Excessive use of debt will lead to default risk, while market and company conditions can affect the volatility of company value.

2.5. TAX RISK

Tax risk is defined as all tax-related risks and uncertainties related to the company's operating, investing, and financing decisions. These uncertainties include tax reporting related to the company's original condition, audit risk by tax authorities, and financial accounting related to income tax payments (Hutchens & Rego, 2013). Guenther et al. (2013) stated that tax risk is the uncertainty associated with future corporate tax payments. Therefore, tax risk has a different view from tax avoidance and tax aggressiveness.

Firmansyah and Muliana (2018) state that the tax risk faced by companies is caused by various company policies used to respond to tax regulations. This response is not always in line with applicable regulations. One example of tax risk faced by a company is the imposition of tax sanctions by the tax authorities if the company is found to have deviated from taxes, such as not reporting part of the sales proceeds or passively increasing deductible expenses (Wardani & Putriane, 2020).

Referring to several definitions that have been described previously, tax risk can be interpreted as all risks faced by companies in connection with fluctuations in corporate tax payments. This risk can be caused by fluctuations in the company's cash flow, changes in tax rules, or company internal policies.

2.6. SHARIA COMPLIANCE

Based on Islamic finance theory, companies that comply with sharia provisions are subject to several restrictions to maintain their compliance status (Alnori & Alqahtani, 2019). Naz et al. (2017) state that the principles of Islamic finance are derived from sharia, Islamic law, a law based on the hadith/Sunnah of the Prophet Muhammad PBUH and the Quran, which directs all aspects of the individual and social life of Muslims.

Companies in issuing sharia securities must meet the provisions that have been set. Becoming a company that has sharia securities has the consequence that the company's activities will continue to be monitored by

the Sharia Board (Tanno & Putri, 2019). Sharia compliance plays an essential role in ensuring that all company activities align with sharia principles (Zakiah M, 2017).

Based on the explanation above, the definition of sharia compliance in this study is conformity with sharia principles that have been determined by the National Sharia Council of the Indonesian Ulema Council (DSN-MUI) concerning the principles of brotherhood (ukhuwah), justice ('adalah), balance, and universal (syumuliyah). Compliance with sharia provisions in the Indonesia Stock Exchange is reflected in the inclusion or absence of issuers in the Indonesian Sharia Stock Index (ISSI) list.

2.7. HYPOTHESIS DEVELOPMENT

An agency relationship exists between two or more parties, one party acts as an agent and the other party acts as a principal (Ross, 1973). In running the company, management is always faced with risk. From investors' perspective, firm risk can be divided into debt holders and equity holders (Chakraborty et al., 2019). The use of debt in the company's capital structure reflects the risk from the perspective of the debtholder. Watts and Zimmerman (1990) state that in the debt covenant hypothesis, companies with a high debt to equity ratio (DER) are predicted to be more likely to use accounting provisions that increase company profits. This is because the higher the DER of a company, the thinner the distance between the company and the limitations in the debt agreement (Kalay, 1982).

The company also encounters risk from the perspective of the equity holder, namely the overall market conditions and events involving the company's management can bring risks that must be borne by the corporation. These various risks can create severe fluctuations in the profitability and price of the company's shares which are generally the basis for calculating bonuses for the board of directors. The bonus program hypothesis states that managers lured by bonuses are more likely to use various accounting methods that can boost company profits in the related period (Watts & Zimmerman, 1990).

A large firm risk will result in management tending to carry out earnings management. It is in line with the results of research by Pradnyani and Astika (2019), Suhartanto (2015), and Religiosa and Surjandari (2021). Therefore, the first and second hypotheses proposed in this study are:
H1: Firm risk (debtholder) has a positive effect on earnings management H2: Firm risk (equity holder) has a positive effect on earnings management.

Agency theory offers a unique view of information systems, outcome uncertainty, incentives, and risk (Eisenhardt, 1989). It can be said that an agency relationship exists between two or more parties, one party acts as an agent and the other acts as a principal (Ross, 1973). One of the hypotheses in Positive Accounting Theory proposed by Watts and Zimmerman (1986) is the political cost hypothesis. In this hypothesis, it is illustrated that management has the intention to carry out earnings management practices to minimize political costs, one of which is the tax burden.

Referring to the previous study, research on taxation factors on earnings management revolves around deferred tax expense, deferred tax assets, and tax planning. There is still no research on the effect of tax risk on earnings management. However, several researchers have studied the effect of tax risk on firm risk, as previously mentioned that Pradnyani and Astika (2019), Religiosa and Surjandari (2021), and Suhartanto (2015) found that firm risk influences management decisions in carrying out earnings management practices. In that study, Guenther et al. (2013) and Hutchens and Rego (2015) agree that tax risk has a positive effect on company risk. Therefore, the third hypothesis proposed in this study is:
H3: Tax risk has a positive effect on earnings management.

An agency relationship is a contract entered into by company owners involving other parties (agents) to carry out several functions on their behalf (Jensen & Meckling, 1976). The existence of two different parties in one entity can trigger different interests. This difference in interest is in line with the opinion of Trisnawati et al. (2015) which states that company owners are motivated to maintain an increase in living standards by increasing company profitability while managers are motivated to maximize economic and psychological needs in the form of obtaining investment, debt, job security, or compensation.

Companies on the Indonesia Stock Exchange can be divided into sharia complaints and non-sharia complaint companies. Ahmed (2009) mentions several specific provisions in sharia provisions, including funding, investment, operations, and risk management practices. Companies that do not follow sharia provisions are not subject to these restrictions. Sharia provisions, which are also aspects of religiosity, are the foundation of morals and ethics (Kanagaretnam et al., 2015).
Management in companies that tend to be religious and comply with sharia provisions can have better morals. Actions that prioritize morals and ethics will further reduce friction between principals and agents, decreasing earnings management practices. This opinion is in line with the research results of Kanagaretnam et al. (2015). Although Hamdi and Zarai (2012) state that Islamic banks still tend to carry out earnings management, there is no statistical evidence of account manipulation that leads to the avoidance of revenue declines. Based on this, the fourth hypothesis proposed in this study is:
H4: Sharia compliance has a negative effect on earnings management.

3. RESEARCH METHODOLOGY

This research uses quantitative methods. The research was conducted using a descriptive study. The type of data used in this study is

secondary data. The data to be processed is pooled data. The population used in this study are companies in the manufacturing sector, including basic industry and chemicals, miscellaneous industry, and consumer goods industry.
Based on the population, the next step is to determine the sample. The sampling technique that will be used is non-probability sampling. Determination of a non-random sample requires that there are criteria that an item must meet in the population. There are four criteria used in determining the sample in this study. The first is manufacturing companies listed on IDX since 2012. The second is the company presenting complete annual financial reports for the 2012-2019 period. The third is the company having a positive net profit during the 2016-2019 period and successfully reversing losses in the beginning becomes profit at the end of the research period. And the fourth is the annual financial statements ending in December.

3.2.1. DEPENDENT VARIABLE

The dependent variable in this study is earnings management. The proxy used to measure earnings management in this study is discretionary accruals from the modified-Jones model. Discretionary accrual was chosen because previous studies suggest that this model gives the best results (Kothari et al., 2005).

$$EM = DTA$$

$$DTA = \frac{TACC_{it}}{TA_{i(r-1)}} - NDA$$

Wibawa et al. (2020) describe the calculation of this proxy as follows:

Explanation:

EM : Earnings management
DTA : Discretionary accruals
TACC : Total accruals
NDA : Non-discretionary accruals

$$TACC_{it} = NI_{it} - CFO_{it}$$

Total accruals are calculated using the following proxy:

Explanation:

TACCit : total accruals of company i in period
tNIit : net profit of company i in period t
CFOit : cash flow operation of company i period t

$$\frac{TACC_{it}}{TA_{i(t-1)}} = \beta_1 \left(\frac{1}{TA_{i(t-1)}}\right) + \beta_2 \left(\frac{\Delta REV_{it}}{TA_{i(t-1)}}\right) + \beta_3 \left(\frac{PPE_{it}}{TA_{i(t-1)}}\right) + \varepsilon_{it}$$

The value of non-discretionary accruals (NDA) is calculated using the following equation:

Explanation:

NDAit : non-discretionary accruals of company i period t
ΔRECit : total receivables of company i period t minus period t-1

3.2.2. INDEPENDENT VARIABLE

$$LEV_{it} = Total\ Debt_{it} / Total\ Asset_{it}$$

This study has four independent variables: firm risk (debtholder), firm risk (equity holder), tax risk, and sharia compliance. In terms of debtholders, leverage reflects the risks faced by the company. Leverage is measured by using the debt ratio. The leverage proxy in this study follows the model used by Titman et al. (2011), Firmansyah et al. (2021), and Pradnyani and Astika (2019),

In this study, firm risk (equity holder) is measured by using total risk. The measurement of total risk follows the model used by Guenther et al. (2013), Firmansyah and Muliana (2018), and Parendra et al. (2020),

$TRISK_{it}$ = annual standard deviation of monthly stock return of company i period t

$$Stock\ Return = \frac{P_t - P_t\text{-}1}{P_t\text{-}1}$$

Which:

Explanation:
P_t : Share price of company i period t Pt-1
: Share price of company i period t-1

The proxy used to measure tax risk in this study is the volatility of cash ETR. Cash ETR volatility is calculated based on the standard deviation of a company's cash ETR as used by Firmansyah and Muliana (2018), Guenther et al. (2013), and Hutchens and Rego (2015),
CETR_VOL$_{it}$= five-year standard deviation of annual cash ETR of company i year t

$$Stock\ ETR = \sum_{t=t-4}^{5} \frac{Cash\ Tax\ Paid_{it}}{Pretax\ Income_{it}}$$

Which:
Explanation:

Cash Tax Paidit: Total tax payment of company i from year t-4 to t Pretax Incomeit: Profit before tax of company i from years t-4 to t

Sharia compliance in this study is measured using a dummy variable. The use of dummy variables follows the model used by Alnori and Alqahtani (2019) and Tanno and Putri (2019),
SHARIA$_{it}$= Dummy variable with a value of 1 if the company complies with sharia provisions and a value of 0 if otherwise
Explanation: The value of 1 in dummy variable is given to companies listed in the Indonesian Sharia Stock Index (ISSI)

$$ROA_{it} = \frac{Pretax\ Income_{it}}{Total\ Asset_{it}}$$

In this study, two control variables are used, namely profitability and firm size. Profitability is one of the crucial parameters in measuring the achievement of company goals (Noor et al., 2020). The proxy used in measuring profitability in this study follows Firmansyah et al. (2021) and Mondayri et al. (2020),

Company size shows how big the company is regarding total assets owned (Januardi & Afrianto, 2017). The proxy used in this study refers to Firmansyah et al. (2021), Mondayri et al. (2020), and Parendra et al. (2020),

$$SIZE_{it} = Log\ (Total\ Asset)_{it}$$

Explanation

$$EM_{it} = \alpha_0 + \beta_1 LEV_{it} + \beta_2 TRISK_{it} + \beta_3 CETR\_VOL_{it} + \beta_4 SHARIA_{it} + \beta_5 ROA_{it} + \beta_6 SIZE_{it} + \varepsilon_{it}$$

Log (total Asset)it : Natural logarithm of total assets of company i year t Based on these variables, the model used in this study is as follows:

Explanation:

EM_{it} : Earnings management of company i period t

LEV_{it} : Leverage of company i period t

$TRISK_{it}$: Total risk of company i period t $CETR\_VOL_{it}$: Cash ETR volatility of company i period t $SHARIA_{it}$: Sharia compliance of company i period t ROA_{it} : Profitability of company i period t

$SIZE_{it}$: Company size of company i period t

α0 : Constant

εit : Error

4. RESULTS

4.1. SAMPLE AND DESCRIPTIVE STATISTICS

The data used in this study are financial statement data of manufacturing sector companies that meet the following criteria:

Table 1 Research Sample

Criteria	Total	Measure
Manufacturing companies listed on IDX at 2019 The company has not registered since 2012 Companies with incomplete financial statements Companies with a financial period that does not endin December Companies that experience losses at the end of theperiod and the entire study period Outlier Total sample Research period Total observation	185 (59) (3) (3) (39) (12) 69 4 276	CompanyCompanyCompany Company Company CompanyCompanyYear Observation

Source: processed data

The results of descriptive statistic analysis for all variables used in this study are presented in Table 2.

Table 2 Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
EM	0.001833	0.001650	0.035890	-0.026447	0.007198
LEV	0.403214	0.378094	0.999261	0.066532	0.179780
TRISK	0.339163	0.269961	1.126638	0.000000	0.218600
CETR_VOL	0.140564	0.068026	1.212866	0.001968	0.184878
SHARIA	0.836957	1.000000	1.000000	0.000000	0.370076
ROA	0.081452	0.070105	0.400191	-0.180379	0.081205
SIZE	28.88534	28.55451	33.49453	25.79571	1.706455

Source: processed data

4.2. REGRESSION RESULTS

Hypothesis testing was carried out using the random effect model presented in Table 3.

Table 3 Hypothesis Test Result

Variable	Prediction	Coeff.	t-Stat	Prob.	
LEV	+	0.006249	2.200012	0.0143	**
TRISK	+	0.002444	1.193702	0.1168	
CETR_VOL	+	-0.001229	-0.477641	0.3166	
SHARIA	-	0.001038	0.832578	0.2029	
ROA		0.019451	3.000710	0.0014	***
SIZE		-0.000152	-0.532559	0.2974	
C		0.000592	0.071523	0.4715	

Source: processed data

4.3. DISCUSSION

4.3.1. EFFECT OF FIRM RISK (DEBTHOLDER) ON EARNINGS MANAGEMENT

The results of research that have been carried out show that firm risk (debtholder) has a positive effect on earnings management. This result is in line with Pradnyani and Astika (2019), which states that firm risk as proxied by leverage has a positive effect on earnings management.

One of the hypotheses proposed by Watts and Zimmerman (1986) is the debt covenant hypothesis. This hypothesis looks at management's efforts to implement accounting policies that maintain the company's debt ratio at a safe level to avoid imposing penalties by creditors. Failure to maintain this debt ratio can lead to default risk for the company. To avoid this, companies tend to take advantage of loopholes in accounting rules that can be exploited to increase company profits.

Companies that use debt in their funding structure place creditors as one of the principals in the company. Management as a representative of the principal should also act in the interests of creditors. However, management who acts as a representative of the company's owner can have different preferences. This misalignment of interests can be seen in agency theory.

Leverage in the form of the use of debt in the company's funding structure provides excellent benefits for management as a multiplier. However, if the debt borne has exceeded the optimal limit, the company will have difficulty paying it off, which can lead to bankruptcy in extreme conditions. The risk of default needs to be anticipated by creditors by using debt covenants. Violation of the debt agreement can cause the company to be categorized as default.

However, corporate steps taken by managers can still take the company beyond the determined limits. This condition makes earnings management practices a promising option. Accounting rules that allow companies to use management discretion in recording methods make company directors try only to practice the favorable conditions, not the ideal provisions based on conservatism. It is reflected in the results of research showing that companies with high leverage use more earnings management strategies in preparing financial statements.

4.3.2. EFFECT OF FIRM RISK (EQUITY HOLDER) ON EARNINGS MANAGEMENT

Based on the study results, it is known that the firm risk (equity holder) has no effect on earnings management. This result is in line with Suhartanto's (2015) research, which concludes that changes in stock prices have no significant effect on earnings management.

From equity holders' perspective, firm risk is reflected in total risk, which is the fluctuation of monthly returns received by shareholders during a period. Highly volatile returns reflect the magnitude of the risk faced by the company's owners. To avoid this, principals set up many provisions and targets that must be achieved by management. The achievement of the targets that have been formulated will make the directors get rewards. This scenario is the first hypothesis Watts and Zimmerman (1986) proposed in positive accounting theory, the bonus plan hypothesis.

The stock return, which illustrates investors' interest, is influenced by macroeconomic conditions and the company's internal conditions. However, the only thing that can be controlled by management is the conditions that occur internally. If macroeconomic conditions do not support operations, management can compensate for this by presenting a brilliant company performance. The easiest thing for management to do is present financial statements, mainly company profits, which are growing positively.

To ensure that the company's conditions are presented satisfactorily, management needs to make some adjustments. These adjustments are carried out at management's discretion by taking advantage of exploitable accounting loopholes. However, the results of this study show something different. Stock returns' fluctuations are not a factor that encourages companies to take advantage of massive earnings management practices. It is probably due to the low level of use of earnings management in the manufacturing sector. Previous descriptive statistics have shown that the average company performs earnings management intending to increase income in a deficient range. This condition causes the rise and fall of a company's stock price does not affect the manager's decision to use earnings management related to the preparation of financial statements.

4.3.3. EFFECT OF TAX RISK ON EARNINGS MANAGEMENT

The results of research that have been carried out show that tax risk has no effect on earnings management. This result indicates that a company's cash ETR volatilities are not a factor the board of directors considers in preparing financial statements' earnings management practices.

Tax payments are transactions involving external parties with high authority (government). This phenomenon is closely related to the third hypothesis in the positive accounting theory proposed by Watts and Zimmerman (1986), the political cost hypothesis. The hypothesis describes management's intention to carry out earnings management practices to

minimize political costs, such as subsidies and tax payments, which the company will bear.

The volatility of cash ETR, the number of tax payments compared to profit before tax in one period, shows how the company faces much tax risk. Changes in the value of the tax deposit will invite the attention of the tax officers. Special attention by tax officers will increase the risk faced by the company. Tax risk can then have an impact on uncertainty in the company's operational activities. These uncertainties include tax reporting related to the company's original condition, audit risk by tax authorities, and financial accounting related to income tax payments (Hutchens & Rego, 2013).

Referring to descriptive statistics in Table 2, the average cash ETR volatility of manufacturing sector companies is only 14.06%. This low volatility puts the company in a less risky position to be examined by the tax authorities, considering that the company's income tax payments are not volatile. It makes tax risk not a factor considered by managers in making decisions regarding the use of earnings management. This condition is further supported by the low practice of earnings management in manufacturing sector companies which shows that only a few companies carry out massive earnings management in the preparation of financial statements.

4.3.4. EFFECT OF SHARIA COMPLIANCE ON EARNINGS MANAGEMENT

Based on the study results, it is known that sharia compliance has no effect on earnings management. This condition indicates that whether or not a company is included in ISSI is not a factor influencing the board of directors to use earnings management.

The relationship between investors and companies can be explained using agency theory. The existence of two interrelated parties, the principal and the agent, will create a conflict of interest. This difference can be seen from the motivation of both parties. The company's owner is motivated to maintain an increase in the standard of living by increasing the company's profitability. At the same time, the manager is motivated to maximize economic and psychological needs by obtaining investment, debt, job security, or compensation (Trisnawati et al., 2015).

The relationship between sharia compliance and earnings management can be estimated from the selection criteria for sharia shares compiled by the Financial Services Authority (OJK). One of these criteria is the provision of financial ratios that issuers must meet, which is that total interest-based debt compared to total assets does not exceed 45%. Suppose this criterion is compared with the composition of company funding that has been presented in table 2. In that case, it can be seen that the average company in the manufacturing sector only has 40% of DER. With this debt- to-asset ratio, the average company in the manufacturing sector does not need to adjust financial data using earnings management to remain included

in the ISSI, which means the company can continue to have more investor coverage. This condition causes sharia compliance does not affect the manager's decision in conducting earnings management.

5. CONCLUSION

This study concludes that the firm risk from the debtholders' perspective has a positive effect on earnings management. Leverage has a multiplier effect which in optimal conditions will boost operating income. However, the use of excessive leverage has the potential to bring the company to default. The potential for bankruptcy can occur if the company passes the agreed limits in the debt covenant. From the perspective of equity holders, firm risk has no effect on earnings management. Stock returns describe how much risk the company faces, both idiosyncratic risk caused by corporate actions and systematic risk influenced by macroeconomic conditions. Of the two risks, idiosyncratic risk is a risk that the company's internal parties can control. However, fluctuations in changes in company stock prices in the manufacturing sector are relatively low. Supported by low earnings management practices, this makes a company's stock return fluctuations not a consideration for managers to take advantage of earnings management strategies.

Tax risk has no effect on earnings management. The low volatility of cash ETR in manufacturing companies makes this variable not a significant consideration for managers in determining the company's operational and business strategy. This low volatility of cash ETR puts the company in a less risky position to be examined by the tax authorities. Finally, sharia compliance has no effect on earnings management. One of the criteria for sharia compliance is providing financial ratios that issuers must meet. Suppose this criterion is compared with the composition of the company's funding. In that case, it can be seen that the average manufacturing company has a DAR lower than the criteria, so there is no need to adjust financial data using earnings management to remain included in ISSI.

This study only measures earnings management with proxy discretionary accruals from the modified Jones model. To get results from the other side, further research can measure earnings management from the perspective of real earnings management. In addition, to produce a more comprehensive measurement of earnings management, it can be considered to use the integrated model developed by Habib (2004). This study measures firm risk (equity holder) with the total risk proxy. The proxy describes the risks faced by the company both systematically and non- systemically. To see which of the two risks affects earnings management more, further research can simultaneously use systematic risk and idiosyncratic risk proxies.

This research has implications for several parties, namely creditors and auditors. Companies with high leverage tend to carry out earnings management so that creditors must be more aware of the company's financial statements. On the other hand, as an independent party that tests the company's financial statements, the auditor can be more aware of companies with high leverage because they tend to use earnings management. It requires more vigilance when conducting audits of related companies.

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09 FINANCIAL DISTRESS IN THE MINING INDUSTRY IN SOUTHEAST ASIA: Revealing Potential Occurrence Through Financial Ratios

Dinda Azzahra
azzahradinda26@gmail.com

Yunus Harjito
yunus.harjito@gmail.com

Agus Endrianto Suseno
agusendriantos@gmail.com
Universitas Setia Budi

1. INTRODUCTION

The company's ability to show the company's financial condition can be determined based on the company's performance. Companies that have improved performance can survive and can even compete with other companies because the company's financial condition is in a healthy state. However, the opposite happens if the company's performance continues to decline, the company will potentially experience bankruptcy or often referred to as financial distress. Platt and Platt (2002) explain that financial distress is a critical or unhealthy condition in a company's financial condition. The initial symptom in the company is that there is financial difficulty which is one indicator of a company heading for bankruptcy (financial distress).

One of the causes of financial distress is the existence of various errors in the company, inappropriate manager decisions, weaknesses related to company management, and lack of supervision over the use of company funds (Brigham and Daves, 2016). The potential for financial distress can be minimized by making predictions and analysis through financial reports and financial ratios (Harahap, 2018). Companies can use the analysis of these financial statements for planning and implementing strategies to survive and thrive in competition between companies.

The potential for financial distress is very large in mining companies. This is due to very fast price fluctuations that occur in the company. Such is the phenomenon that occurred in oil prices which showed a decline in prices to the level of US$ 50 (May, 2017). The main trigger for this phenomenon was the energy revolution in the United States which caused a boom in oil supply. In addition, the drop in oil prices was also caused by the Organization of the Petroleum Exporting Countries (OPEC) maintaining its production level at the end of November 2016 in order to suppress new industry players who maintain market share and without limiting oil production at all.

The trade war between the United States and China has also become one of the triggers for the turmoil in mining companies. Each country issued a policy against the imposition of import duties on several commodities (including energy commodities: crude oil and coal). On June 19, 2018, the price of light sweet oil fell 0.99% to US$65.20/barrel, the price of Brent oil also fell 1.02% to US$74.57/barrel, and coal prices also fell 0.18%. to US$110.62/metric ton (Prakoswa, 2018).

This study wants to reveal the potential for financial distress as seen from the analysis of financial ratios in mining companies listed on the Stock Exchange in Southeast Asia by using financial distress proxies that have been through an accuracy test to determine the most appropriate proxy used to measure the potential for financial distress. distress.

2. LITERATURE REVIEW

Financial distress is a condition where the company's finances are experiencing difficulties. Another definition also explains that financial distress is a condition in which the company experiences financial difficulties due to various errors in the company, inappropriate manager decisions, weaknesses related to the company's management, and lack of supervision over the use of company funds so that the funds used are not appropriate. with the required funds (Brigham and Daves, 2016).

The prediction models used to analyze the potential for financial distress are the Modified Altman Z-Score model and the Springate S-Score model. Altman (1995) found four types of financial ratios that can be combined to see the difference between companies that have the potential to experience financial distress and those that do not have the potential to experience financial distress. The four financial ratios include working capital to total assets, retained earnings to total assets, earnings before interest and taxes, and market value of equity to book value of total debt.

The Springate model was discovered by Gordon L.V Springate (1978) whose function is used to evaluate the probability of a company from going bankrupt. This model is the development of the Altman method using multiple discriminant analysis (MDA). Initially, this method used 19 financial ratios, but after re-testing, Springate finally chose 4 ratios that were used in determining the criteria for companies that were included in the category of companies that did not have the potential to experience financial distress or companies that had the potential to experience financial distress (Wulandari, 2012). The four ratios are the ratio of working capital to total assets, the ratio of profit before interest and taxes to total assets, the ratio of profit before tax to total current liabilities, and the ratio of total sales to total assets.

Analysis using ratios can indeed show better results and is easier to understand. Financial ratio analysis can be used to evaluate the company's financial condition and performance. According to Hery (2016), financial ratios are a ratio calculation using financial statements as a measuring tool used to assess the financial condition and performance of the company. In this study, the financial ratios used are profitability ratios, liquidity ratios, leverage ratios, and operating capacity ratios.

Fahmi (2014) explains that the profitability ratio is a ratio that measures the overall management effectiveness, which is indicated by how much profit is earned through sales and investment. This study uses a proxy for return on assets (ROA) to measure profitability. A low ROA ratio indicates the company is unable to use its assets to generate profits from sales and investments made by the company and indicates the company has the potential to face greater financial distress. Previous research has shown that profitability has an effect on financial distress (Arini, 2010; Hidayat and Meiranto 2014), but the results of this study contradict the research conducted by Ardian (2017). Based on the description above, the following hypothesis can be formulated:

H_1: Profitability ratios have a negative effect on the potential for financial distress.

The company's ability to settle its short-term obligations can be measured by the liquidity ratio as proxied by the current ratio. The current ratio is a ratio that shows the company's ability to meet its short-term financial obligations by using its current assets (Hapsari, 2012). The company is in a liquid state if the company has payment instruments or current assets that are greater than its current liabilities and is able to meet its financial obligations on time. If the company does not add short-term debt and excess current assets, which is indicated by cash and cash equivalents from retained earnings, the company will not experience problems with liquidity.

With a high level of liquidity, the company has a tendency to avoid potential financial distress in the future (Azwar, 2015). This is supported by research conducted by Hapsari (2012), but not supported by research by Baimwera and Muriuki (2014). Based on the description above, the following hypothesis can be formulated:

H_2: The liquidity ratio has a negative effect on the potential for financial distress.

The leverage ratio is used to measure how large the company's assets are funded by debt. Kasmir (2016), explains that the leverage ratio is a ratio used to measure the extent to which the company's debt finances the assets owned by the company. High leverage transactions are the reason companies have the potential to experience financial distress (Waznah et al., 2015). If the company uses more external funds in its funding, especially through the use of debt, it will

increase the company's leverage level. If the level of debt or the company's leverage is higher, this will have an impact on the company's financial condition in the future and the performance capability of the company that is unable to pay off its debts, the company will potentially experience financial distress. This means that the higher the company's leverage, the higher the company's potential for financial distress. This is supported by research conducted by Hanifah and Purwanto (2013), Marfungatun (2017), but is not supported by the research of Putri and Merkusiwati (2014). Based on the description above, the following hypothesis can be formulated:
H_3: The leverage ratio has a positive effect on the potential for financial distress.

The process of analyzing the quality of reported earnings can be done with the operating capacity ratio or also often referred to as the activity ratio. The operating capacity ratio or activity ratio is used to assess whether a company is effective in generating sales with assets in order to create the accuracy of a company's operational performance (Atika et al., 2012). Companies that use their assets effectively in their ability to make sales are expected to provide greater profits for the company. This shows that the possibility of potential financial distress will be smaller due to the better financial performance obtained by the company. Kusanti (2015) and Alifiah et al. (2013) explained that operating capacity has an effect on financial distress. However, it is different from the research conducted by Sari (2015) which states otherwise. Based on the description above, the following hypothesis can be formulated:
H_4: The operating capacity ratio has a negative effect on the potential for financial distress.
From the description of the hypothesis described above, the research model can be made as follows:

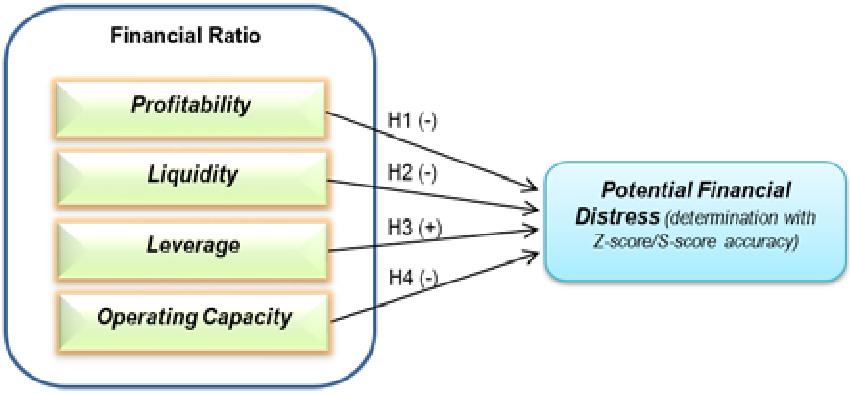

Figure 1. Research Model

3. RESEARCH METHOD

3.1 Population, Sample and Data Collection Techniques

This research is a quantitative research using purposive sampling technique. The population in this study are mining companies listed on the Stock Exchange in Southeast Asia. The sample used in this study were companies in the mining sector listed on the Indonesia, Malaysia, Singapore, Vietname and Philippines Stock Exchanges with the following criteria determined:

a. Mining companies listed on the Stock Exchange in Southeast Asia.
b. Publish financial reports on the Stock Exchange or the website of each company.
c. The required data related to the variables in this study are available in full.

3.2 Operational Definition and Measurement of Variables

The dependent variable used in this study is financial distress and there are four independent variables used in this study, namely profitability, liquidity, leverage, and operating capacity. In detail, the description and measurement of the variables used can be explained as follows:

Table 1. Operational Definition and Measurement of Variables

Varieble	Definition	Measurement
Financial Disteress	is a condition in which the company experiences financial difficulties due to various errors in the company, inappropriate manager decisions, weaknesses related to company management, and lack of supervision over the use of company funds so that the funds used are not in accordance with the funds needed (Brigham and Daves, 2016).	Measured using two (2) models, namely: 1. Altman Model (Z-Score) with the formula: Z = 6,56 X1 + 3,26 X2 + 6,72 X3 + 1,05 X4 X1 = Working Capital to Total Assets X2 = Retained Earning to Total assets X3 = Earning Before Interest and Taxes to Total Assets X3 = Earning Before Interest and Taxes to Total Assets If Z > 2,60 = no potential to experience financial distress If Z < 1,1 = experiencing financial distress If 1,1 < Z < 2,60 = prone to financial distress (grey area). 2. Springate Model (S-Score) with the formula: S = 1,03A + 3,07B + 0,66C + 0,4D A = Working Capital/Total Asset B = Net Profit Before Interest and Taxes/Total Asset C = Net Profit Before Taxes/Current Liabilities D = Sales / Total Asset If S < 0,862 then the company is classified as "failed" (Springate, 1978).
Profitability (ROA)	is a ratio that measures the overall management effectiveness, which is indicated by how much profit is earned through sales and investment.	$\frac{Earning\ Before\ Interest\ and\ Tak}{Total\ Asset}$
Liquidity (CR)	is a ratio that shows the company's ability to meet its short-term financial obligations by using its current assets.	$\frac{Current\ Assets}{Current\ Liabilities}$
Leverage (DR)	is the ratio used to measure the extent to which the company's debt finances the assets owned by the company.	$\frac{Total\ Debt}{Total\ Asset}$
Operating Capacity (TATR)	is the ratio used to assess whether a company is effective in generating sales with assets in order to create the accuracy of a company's operational performance.	$\frac{Sales}{Total\ Asset}$

4. RESULTS AND DISCUSSION

4.1 Research Results

Results of Analysis Level of Accuracy Model

Analysis of the accuracy of the model is carried out to find out what model will be used in this study. The first step in the accuracy test is to calculate the financial ratios of each predictive model to calculate the score of each model based on its cut-off value. Based on the Z-Score model, the company is classified as potentially experiencing financial distress if the cut-off value Z <1.1, the company is classified as potentially prone to experiencing financial distress or is in the gray area if the cut-off value is 1.1 < Z < 2.60, and the company is classified as not having the potential to experience financial distress or in good health if the cut-off value of Z > 2.60. The prediction results of the Z-Score model are listed in table 1 below:

Table 2. Prediction Results of Z-Score Model

	Z-Score Model								
	Potential financial distress			Grey Area			Healthy		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Indonesia	18	16	19	11	11	12	13	15	11
Singapore	2	2	2	0	2	2	7	5	5
Philippines	1	1	1	1	1	4	6	6	3
Vietname	7	8	8	2	1	1	3	3	3
Malaysia	4	5	3	1	2	4	8	6	6

Based on the S-Score model, the company is classified as potentially experiencing financial distress if the cut-off value of S < 0.862 and the company is classified as not having the potential to experience financial distress or in good health if the cut-off Z value is > 0.862. The prediction results of the S-Score model are listed in the following table:

Table 3. Prediction Results of S-Score Model

Country	S-Score Model					
	Potential financial distress			Healthy		
	2017	2018	2019	2017	2018	2019
Indonesia	25	23	24	17	19	18
Singapore	3	3	4	6	6	5
Philippines	4	6	5	4	2	3
Vietname	8	6	6	4	6	6
Malaysia	8	8	9	5	5	4

The next step is to calculate the accuracy of the prediction model between the Z-Score model and the S-Score model. The level of accuracy is calculated by the formula for the number of companies that have the potential to experience financial distress divided by the number of samples and presented in percent. The results of the calculation of the level of accuracy between the Z-Score and S-Score models are listed below:

Table 4. Level of Accuracy Z-Score and S-Score Models

Country	Z-Score			Average	S-Score			Average
	2017	2018	2019		2017	2018	2019	
Indonesia	43%	38%	45%	42%	60%	55%	57%	57%
Singapore	22%	22%	22%	22%	33%	33%	44%	37%
Philippines	13%	13%	13%	13%	50%	75%	63%	63%
Vietname	58%	67%	67%	64%	67%	50%	50%	56%
Malaysia	31%	38%	23%	31%	62%	62%	69%	64%
Average Accuracy Level				**34%**				**55%**

The table above shows that the average accuracy rate of the Z-Score model from 5 countries is 34% and the average accuracy rate of the S-Score model from 5 countries is 55%. Based on the results obtained, in this study the researcher will use the S-Score model as a predictive model for potential financial distress because the S-Score model has a higher level of accuracy than the Z-Score model.

The Result of Different Test

This study also examines the difference test as additional information whether there are differences seen from the point of view of each variable contained in this study for each mining company registered in the countries in Southeast Asia that are sampled in this study. The first step is to test the normality of the data in this study. The next step is to choose a test method for the difference test.

Tabel 5. Mann-Whitney U Test

Country	Asymp. Sig. (2-tailed)				
	S-Score	ROA	CR	DR	TATR
Indonesia – Singapore	0,292	0,770	0,001	0,467	0,816
Indonesia – Philippines	0,237	0,067	0,056	0,000	0,000
Indonesia – Vietname	0,226	0,153	0,001	0,012	0,000
Indonesia – Malaysia	0,085	0,222	0,050	0,980	0,606
Singapore – Philippines	0,131	0,365	0,850	0,023	0,000
Singapore – Vietname	0,978	0,341	0,000	0,041	0,001
Singapore – Malaysia	0,125	0,593	0,000	0,486	0,886
Philippines – Vietname	0,028	0,028	0,008	0,000	0,000
Philippines – Malaysia	0,037	0,408	0,007	0,000	0,000
Vietname – Malaysia	0,114	0,046	0,525	0,018	0,016

1) Different Test of S-Score

   Based on the results of the Mann-Whitney U Test for the S-Score variable, it can be seen that there is a difference for the S-Score variable for each mining company listed on the stock exchange in Southeast Asia because the significance value is less than 0.05. The countries that have differences for the S-Score variable include the Philippines and Vietnam, and the Philippines and Malaysia.

   In addition, it can also be seen that there is no difference for the S-Score variable for each mining company listed on the stock exchange in Southeast Asia because the significance value is greater than 0.05. The countries that do not have differences for the S-Score variable include Indonesia with Singapore, Indonesia with the Philippines, Indonesia with Vietnam, Indonesia with Malaysia, Singapore with the Philippines, Singapore with Vietnam, Singapore with Malaysia, and Vietnam with Malaysia.

2) Return On Assets (ROA)

   Based on the results of the Mann-Whitney U Test for the ROA variable, it can be seen that there are differences for the ROA variable in each mining company listed on the stock exchange in Southeast Asia because the significance value is less than 0.05. The countries that have differences for the ROA variable include the Philippines and Vietnam, and Vietnam and Malaysia.

   In addition, it can also be seen that there is no difference for the ROA variable for each mining company listed on the stock exchange in Southeast Asia because the significance value is greater than 0.05. The countries that do not have differences in ROA variables include Indonesia and Singapore, Indonesia and the Philippines, Indonesia and Vietnam, Indonesia and Malaysia, Singapore and the Philippines, Singapore and Vietnam, Singapore and Malaysia, and the Philippines with Malaysia.

3) Current Ratio (CR)

   Based on the results of the Mann-Whitney U Test for the CR variable, it can be seen that there are differences for the CR variable in each mining company listed on the stock exchange in Southeast Asia because the significance value is less than 0.05. The countries that have differences for the CR variable include Indonesia and Singapore, Indonesia with Vietnam, Indonesia with Malaysia, Singapore with Vietnam, Singapore with Malaysia, Philippines with Vietnam, and the Philippines with Malaysia.

   In addition, it can be seen that there is no difference for the CR variable for each mining company listed on the stock exchange in Southeast Asia because the significance value is greater than 0.05. The countries that do not have differences for the CR variable are, among others, Indonesia and the Philippines, Singapore and the Philippines, and Vietnam and Malaysia.

4) Debt Ratio (DR)

   Based on the results of the Independent Sample t-Test difference test for the DR variable, it can be seen that there are differences for the DR variable in each mining company listed on the stock exchange in Southeast Asia because the significance value is less than 0.05. The countries that have differences for the DR variable include Indonesia and the Philippines, Indonesia and Vietnam, Singapore with the Philippines, Singapore with Vietnam, Singapore with Malaysia, Philippines with Vietnam, Philippines with Malaysia and Vietnam with Malaysia.

   In addition, it can be seen that there is no difference for the DR variable for each mining company listed on the stock exchange in Southeast Asia because the significance value is greater than 0.05. The countries that do not have differences for the DR variable are, among others, Indonesia and Singapore, Indonesia and Malaysia, and Singapore and Malaysia.

5) Total Assets Turnover Ratio (TATR)

Based on the results of the Mann-Whitney U Test for the TATR variable, it can be seen that there are differences for the TATR variable in each mining company listed on the stock exchange in Southeast Asia because the significance value is less than 0.05. The countries that have differences in the TATR variable are, among others, Indonesia and the Philippines, Indonesia and Vietnam, Singapore and the Philippines, Singapore and Vietnam, the Philippines and Vietnam, the Philippines and Malaysia, and Vietnam and Malaysia.

In addition, it can also be seen that there is no difference for the TATR variable for each mining company listed on the stock exchange in Southeast Asia because the significance value is greater than 0.05. The countries that do not have differences for the TATR variable are, among others, Indonesia and Singapore, Indonesia and Malaysia, and Singapore and Malaysia.

Hypothesis Test Results (t test)

The following are the results of the partial test (t test) based on the fixed effect model:

Tabel 6. Hypothesis Test Results (t test)

Variable	Coefficient	t-Statistic	Prob.
C	2,713072	5,433751	0,0000
Return On Assets	2,630503	1,628631	0,1047
Current Ratio	-0,262261	-16,25692	0,0000
Debt Ratio	-3,628184	-4,532173	0,0000
Total Assets Turnover Ratio	0,488394	2,10779	0,0361
R-squared			0,550206
Adjusted R-squared			0,542922
F-statistic			75,53512
Prob(F-statistic)			0,0000

Based on the table above, it is known that the significance probability of the profitability ratio has a t statistic of 1.628631 with a significance value of 0.1047. This shows that the significance value is greater than 0.05, which means that the profitability ratio has no effect on the potential for financial distress, so hypothesis 1 which states that the profitability ratio has a negative effect on the potential for financial distress is rejected. With the rejection of the hypothesis in this study, it can be concluded that the profitability ratio does not affect the potential for financial distress in mining companies listed on the Stock Exchange in Southeast Asia for the 2017-2019 period.

The liquidity ratio has a t statistic of -16.25692 with a significance value of 0.0000. This shows that the significance value is less than 0.05, which means that the liquidity ratio has an effect on the potential for financial distress, so hypothesis 2 is accepted. With the acceptance of the hypothesis in this study, it can be concluded that the liquidity ratio affects the potential for financial distress in mining companies listed on the Stock Exchange in Southeast Asia for the 2017-2019 period.

The leverage ratio has a t statistic of -4.532173 with a significance value of 0.0000. This shows that the significance value is less than 0.05 which means that the leverage ratio has a negative effect on the potential for financial distress, so hypothesis 3 which states that the leverage ratio has a positive effect on the potential for financial distress is rejected. With the rejection of the hypothesis in this study, it can be concluded that the leverage ratio has a significant positive effect on the potential for financial distress in mining companies listed on the Stock Exchange in Southeast Asia for the 2017-2019 period.

The ratio of operating capacity has a t statistic of 2.10779 with a significance value of 0.0361. This shows that the significance value is less than 0.05, which means that the operating capacity ratio has a positive effect on the potential for financial distress, so hypothesis 4 which states that the operating capacity ratio has a negative effect on the potential for financial distress is rejected. With the rejection of the hypothesis in this study, it can be concluded that the operating capacity ratio has a significant negative effect on the potential for financial distress in mining companies listed on the Stock Exchange in Southeast Asia for the 2017-2019 period.

4.2 Discussion

4.2.1 Effect of Profitability Ratios on Potential Financial Distress

The test results show that the profitability ratio variable as proxied by return on assets (ROA) has a coefficient value of 2.630503 with a significance value of 0.1047. The probability sign value of the profitability ratio is greater than 0.05 (<0.05), then the profitability ratio has no effect on the potential for financial distress. Thus, the formulated hypothesis (H1) is rejected. The results of this study are supported by research by Rahmania and Hermanto (2014), Kumalaningrum (2015), Sari (2015), Ardian et al. (2017), and Kusuma and Sumani (2017) which state that the profitability ratio has no effect on the potential for financial distress.

In this study, profitability is proxied by return on assets (ROA). ROA is a ratio used to measure the company's ability to generate profits based on certain asset levels. The profitability ratio is the net end result of various decisions, where this ratio is used as a measuring tool for the company's ability to profit from each sale generated. The regression results show that the profitability ratio has no effect on the potential for financial distress. This shows that high or low profitability ratios do not affect the potential for financial distress. Companies that have a high profitability ratio value can show that the company's performance is well managed. In addition, the company has made efficiencies against financial risks by showing the level of profit it has earned. The level of profit earned by the company also shows the company's ability to finance its operational activities.

4.2.2 Effect of Liquidity Ratio on Potential Financial Distress

The test results show that the liquidity ratio variable as proxied by the current ratio (CR) has a coefficient value of -0.262261 with a significance value of 0.0000. The probability sign value of the liquidity ratio is less than 0.05 (> 0.05), so liquidity has a significant negative effect on the potential for financial distress. Thus, the hypothesis that has been formulated (H2) is accepted. The results of this study are supported by research by Atika et al (2012), Widhiari and Merkusiwati (2015), Cinantya and Merkusiwati (2015), Dewi and Endiana (2019), and Rusli (2019) which state that the liquidity ratio has a significant negative effect on the potential financial distress.

In this study, the liquidity ratio is proxied by the current ratio (CR). Current ratio is a ratio used to measure the company's ability to meet short-term obligations or debts that are due soon. The regression results show that the liquidity ratio has a significant negative effect on the potential for financial distress. The company manages current debt with its current assets well so that the potential for the company to experience financial distress is getting lower.

According to Riyanto (1995), the liquidity ratio provisions that are considered good are standard 200% (2:1), meaning that for every 1 current debt owned by the company, 2 current assets are available to cover it. This provision will further ensure that the company will be able to pay off its current debts that are due in a timely manner and by having the ability to fund the company's operations in meeting short-term debt with its current debt, the company will be able to manage current debt with its assets properly so that the company will avoid potential financial distress. The results of the descriptive statistical test show that the average value of the liquidity ratio of mining companies listed on the Indonesia stock exchange, Singapore stock exchange, Philippines stock exchange, Vietnam stock exchange and Malaysian stock exchange from 2017 to 2019 is 3,764, 4,393, respectively. 9,493, 1,316 and 1,275 so that they are above 1, which means that current assets are able to cover the company's current liabilities.

4.2.3 Effect of Leverage Ratio on Potential Financial Distress

The test results show that the leverage ratio variable which is proxied by the debt ratio (DR) has a coefficient value of -3.628184 with a significance value of 0.0000. The probability sign value of the leverage ratio is less than 0.05 (> 0.05), so the leverage ratio has a significant negative effect on the potential for financial distress. The results of hypothesis testing indicate that the leverage ratio has a negative and significant effect, so the third hypothesis (H3) which states that the leverage ratio has a significant positive effect on the potential for financial distress is rejected. Thus, the formulated hypothesis (H3) is rejected. The results of this study are supported by the research of Alifiah et al. (2013), Eliu (2014), Masdupi et al. (2018), Septiani and Dana (2019) which state that the leverage ratio has a negative effect on the potential for financial distress.

In this study the leverage ratio is proxied by the debt ratio (DR). Debt ratio is a ratio that has the ability to measure how much the company's assets are financed by debt or how much the company's debt affects asset financing. A negative leverage ratio coefficient value indicates that the greater the leverage ratio owned by the company, the less likely the company will experience financial distress. This happens because the debt owned by the company is used by the company's management to invest in its assets. Effective use of assets will improve the performance of the company, so that the company earns a profit. Profits from the effective use of assets indicate that the company has sufficient funds to pay the company's current obligations. If the company has sufficient funds to pay its obligations, both with profits and available assets, the company will avoid potential financial distress.

4.2.4 Effect of Operating Capacity Ratio on Potential Financial Distress

The test results show that the operating capacity ratio variable which is proxied by the total assets turnover ratio (TATR) has a coefficient value of 0.488394 with a significance value of 0.0361. The sign probability value of the operating capacity ratio is less than 0.05 (> 0.05), then the operating capacity ratio has a significant effect on the potential for financial distress. The results of hypothesis testing indicate that the operating capacity ratio has a positive and significant effect, so the fourth hypothesis (H4) which states that the operating capacity ratio has a significant negative effect on the potential for financial distress is rejected. Thus, the hypothesis that has been formulated (H4) is rejected. The results of this study are supported by the research of Kusumawardana (2013), and Fahmiwati and Luhgiatno (2017) which state that the operating capacity ratio has a significant positive effect on the potential for financial distress.

In this study, the ratio of operating capacity is proxied by the total assets turnover ratio (TATR). Total assets turnover ratio (TATR) is a ratio that measures a company's ability to manage its assets effectively to generate sales. This operating capacity ratio involves a comparison between the level of sales and investment in various types of assets. Management of inventory type assets that are too fast and not matched by high sales capacity will result in excess inventory (overstock). The longer the inventory process is sold, it will increase the company's burden and the profit earned by the company will also be lower. That way the company will use its capital to continue its operational activities. This will result in an increased risk of loss to the company. The greater the risk of loss borne by the company, the greater the company will experience potential financial distress.

5. CONCLUSION

This study aims to examine the effect of the variables of profitability, liquidity, leverage, and operating capacity on financial distress in mining companies listed on the Southeast Asian Stock Exchange. The results showed that profitability had no effect on the potential for financial distress. Liquidity and leverage variables have a negative effect on the potential for financial distress. While 1 other variable, namely operating capacity has a positive effect on the potential for financial distress.

5.1 Managerial Implications

The implications of this research include two things, namely theoretical implications and practical implications. The theoretical implications of this study are expected to contribute to the literature and the development of knowledge in the field of financial accounting, especially financial statement analysis on the prediction of potential financial distress. Meanwhile, the practical implications of this research are expected to contribute to the research findings to the decisions that will be taken by stakeholders.

5.2 Keterbatasan dan Saran

This study has limitations including the Adjusted R square value of 0.542922 or 54.29%. This shows that there are other potential variables (45.71%) that have not been used in this study to predict the potential for financial distress. Further research is suggested to dig deeper related to other variables that can affect the potential for financial distress.

In addition, this study takes a sample of companies in the mining sector in general, so that different tests have not been carried out to distinguish one mining sub-sector from another. Further researchers are advised to examine in more detail the mining sub-sector, so that it can be seen the differentiating factors to analyze the potential for financial distress.

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10 Accounting Conservatism on Sustainability Report

Kadek Wisnu Bhuana1, Ria Alfiani[2], Bina Insani University

Abstract

A business entity is built only to maximize profit and maximize the welfare of shareholders. However, in the future, companies must pay attention to ethics in doing business, with work patterns and company work strategies or the application of sustainable management. Research on accounting conservatism on disclosure in sustainability reports has been widely carried out, but the results are still inconsistent. This research uses quantitative research with a causal approach. The quantitative data used for this research is secondary data in the form of Annual Reports, Sustainability Reports, and financial reports from 2015 to 2019. The data processing in this study uses the SPSS 26 application. The population in this study are all companies that have to go public on the IDX. The data collection technique used is purposive sampling. The results of this study indicate that accounting conservatism has a significant negative effect on the disclosure of sustainability reports. This illustrates that the more conservative a company's management is, the less information disclosed in the sustainability report will be.

Keywords: Sustainability Report, Financial Report, Accounting Conservatism.

INTRODUCTION

In the old paradigm, a business entity was built only to maximize profit and maximize the welfare of shareholders. However, in the future, companies must pay attention to ethics in doing business, with work patterns and company work strategies or the application of sustainable management. Article 66 paragraph 2 of Law No. 40 of 2007 concerning limited liability companies states that companies that have gone public must make sustainability reports (Sustainability Reporting). Then Bapepam - LK has also issued a regulation that requires public companies to disclose the implementation of Corporate Social Responsibility (CSR) activities in their annual reports. The Financial Services Authority has also issued OJK regulation number 51/POJK.03/2017 regarding the implementation of sustainable finance for financial service institutions,

Sustainability Report is a non-financial sustainability report that can be used as a reference by companies to view reporting from social, economic, and environmental dimensions. Sustainability Report as evidence that there is a commitment from the company to its social environment whose results can be assessed by the parties who need the information (Suarjana, 2019).

The Sustainability Report is an idea based on the Company's responsibilities in addition to the interests of the Company's owners (shareholders) (single bottom line) but also has responsibilities to interested parties (stakeholders). The background underlying the Company's CSR activities is based on the idea that the Company's responsibilities must be based on the triple bottom line, namely the Company's environmental, social and financial responsibilities.

Corporate Social Responsibility (Corporate Social Responsibility). Corporate social responsibility (CSR) is the Company's commitment in carrying out its operational activities to always make a positive contribution to society, the environment, and shareholders. The implementation of corporate social responsibility (CSR) by the Company can be realized through the disclosure of CSR (Corporate Social Responsibility Disclosure) which is associated with the public in the Sustainability Report or can be combined in the Company's annual report.

Accounting is synonymous with information. Accounting information that is widely used by the company's external parties is the company's financial statements that present information about the company's performance and condition (Savitri, 2016). In presenting quality financial statements, presenters are also faced with conservatism considerations which are the precautionary principle (Nugroho, et.al, 2017).

Conservatism is applied because accounting uses the accrual basis of informing and presenting a company's financial statements. Accrual causes the formation of accounting value not only the real value of financial transactions, both those that flow in and out but also includes a recording of the value of transactions that give rise to the possibility of future cash inflows and outflows, both those caused by past and future transactions. the present (Savitri, 2016).

Principle of conservatism there are still many criticisms that arise but there are also those who support the application of the principle of conservatism so that the principle of conservatism is still considered a controversial principle (Dewi & Suryanawa, 2014).

Research on accounting conservatism on disclosure in sustainability reports has been widely carried out, but the results are still inconsistent. Among them are the results of research by Cho, Kang, Lee, & Park (2020) which found that CSR disclosure is related to the level of accounting conservatism. Malo-Alain, Melegy, & Ghoneim (2019) stated that there is a positive and significant correlation between accounting disclosures in sustainable development and accounting conservatism, the results found can be explained by the fact that increasing sustainability disclosure leads to an increase in the value of accounting conservatism. While the results of research by Kurniawan & Wibowo (2009) there is no clear evidence to support the relationship between conservatism and CSR reporting. Hanan, et. al (2020) revealed that the sustainability report had no significant effect on conservatism and Farha, et.al. (2020) stated that accounting conservatism hurts the disclosure of sustainability reports.

Based on the description of the background above, the problem is formulated as follows:

1. Does accounting conservatism affect disclosure in sustainability reporting?
   In connection with the problems stated above, this research is intended to:
2. To examine whether there is an influence between conservatism on disclosure in the sustainability report.

LITERATURE REVIEW

The research conducted is focused on conservatism towards sustainability reports (case study: companies listed on the Indonesian stock exchange 2015 – 2019). In this study, the dependent and independent variables were used. Accounting conservatism is an independent variable. A sustainability report is a dependent variable. The data obtained were tested using regression.

Agency theory states that agents have an important role in accounting, especially in providing information to stakeholders. This role is often equated with the role of stewardship, where an agent will report to the principal about past events. Often the relationship between the principal and the agent is reflected in the relationship between the owner of capital or the investor as the principal and the manager as the agent. In this case, the agent has more information than the principal, giving rise to information asymmetry.

According to the FASB (Financial Accounting Statement Board) accounting conservatism is a prudent reaction in the face of the uncertainty inherent in the company to try to ensure that the uncertainties and risks in the business environment are adequately considered. Hati, (2011) states that conservatism is a practice that recognizes profits and revenues more slowly, speeds up the recognition of costs or losses, and lowers asset recognition, and increases debt valuation.

According to the GRI standards, sustainability reporting is a practice in measuring and disclosing company activities, as a responsibility to the wider community regarding the organization's performance in realizing sustainable development goals.

According to Cho, Kang, Lee, & Park (2020), CSR disclosure is related to the level of accounting conservatism. Malo-Alain, Melegy, & Ghoneim (2019) stated that there is a positive and significant correlation between accounting disclosures in sustainable development and accounting conservatism, the results found can be explained by the fact that increasing sustainability disclosure leads to an increase in the value of accounting conservatism. While the results of research by Kurniawan & Wibowo (2009) there is no clear evidence to support the relationship between conservatism and

CSR reporting. Farha, et.al. (2020) stated that accounting conservatism has a negative effect on the disclosure of sustainability reports.

Based on the background of the problem, problem formulation, research objectives and literature review as described above, the hypotheses proposed in the study are as follows:
H1: Accounting conservatism has a significant positive effect on the sustainability report.

RESEARCH METHODOLOGY

This research uses quantitative research with a causal approach. The quantitative data used for this research is secondary data in the form of Annual Reports, Sustainability Reports, and financial reports from 2015 to 2019. The causal approach used aims to test hypotheses about the effect of one or several variables (independent variables) on other variables (dependent variable). Data processing in this study using the SPSS 26 application.

The population in this study are all companies that have gone public on the IDX. The data collection technique used is purposive sampling where the sampling is based on certain criteria (Sujarweni, 2016). The sample criteria used are as follows:

Table 1. Sample selection criteria

No	Criteria
1	Companies listed in the Sri-Kehati and ESG Leader index
2	Companies that issue Sustainability Reports and Financial Reports for the 2015-2019 Period
3	Companies that issue Financial Statements in IDR

To examine the accounting conservatism of the sustainability report, there are two variables used in this study, namely:

1. Dependent Variable (Y)

The dependent variable (Y) in this study is the sustainability report. The dependent variable is a variable whose value is determined or influenced by other variables. To see the sustainability reporting practices carried out by the company, the researcher conducted an analysis using the content analysis method which was based on the provisions on disclosure/ reporting that should be carried out by the Sustainability Reporting Guideline and Global Reporting Initiative (GRI) Guidelines. The GRI presents a standardized corporate reporting framework on how to disclose environmental, social, and corporate governance issues in its annual report. Then the results of content analysis from secondary data are analyzed to see how the process of implementing sustainable development and sustainability reporting is carried out by the company. The weighting of the content analysis is based on the completeness of the reports disclosed, which are as follows:

Table 2 Assessment of the Quality of the Sustainability Report

Weight	Information
0	Undisclosed components
1	Disclosed components

The results of the disclosure of items analyzed from each company by giving weights are calculated by the formula:

$$\text{DISCGRI} = \frac{\text{(Number of scores revealed)}}{\text{(Expected maximum score)}}$$

2. Independent Variable (X)

Independent variables or independent variables are variables that explain or affect other variables. In this study, there is 1 (one) independent variable (X), namely accounting prudence. The following is an operational definition used in measuring conservatism adapted from Givolyn and Hayn (2000) Conservatism Based On Accrued Items:

$$CONACC = \frac{(NIO+DEP-CFO)\times(-1)}{TA}$$

Information:

CONACC = Earning conservatism based on accrued items
NIO = Operating profit of the current year
DEP = Depreciation of fixed assets of the current year
CFO = Net amount of cash flow from operating activities of the current year
TA = Book value of closing total assets

3. Analysis Method

Linear Regression Analysis

Testing the relationship between accounting conservatism and sustainability report used a linear regression test tool and with the assumption of the Ordinary Least Square (OLS) method. The OLS method was first introduced by Carl Friedrich Gauss, a mathematician from Germany. The essence of the OLS method is to estimate a regression line by minimizing the sum of the squares of errors of each observation on that line (Ghozali, 2013). The linear regression model used is as follows:

$$Y = \alpha + \beta_1 X_1 + e$$

Information:

Y = Sustainability Report
α = Constant
β_1 = Regression coefficient of each variable
X1 = Conservatism
e = Standard Error

The data used in this research is secondary data. The data sampled from this research are the company's financial reports, annual reports, and sustainability reports contained in the ESG Leader and Sri-Kehati indexes for 2015-2019. This study uses IBM SPSS version 26.0 software in the data processing.

RESULTS AND DISCUSSION

Descriptive statistics

Descriptive statistics are used to provide a description or description of data seen from the average value (mean), standard deviation, maximum, minimum, sum, range, kurtosis, and skewness (distribution of distribution) and the number of cases (Ghozali, 2013: 19).

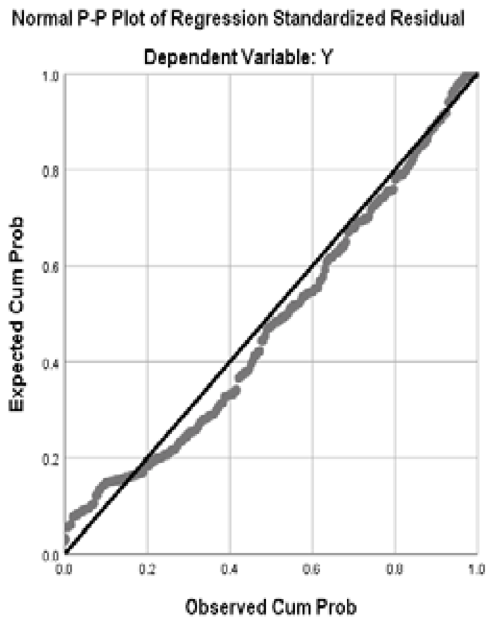
Table 3 Descriptive Statistics

Descriptive Statistics									
	N	Range	Min	Max	Sum	mean		Std. Dev	var.
	stat	stat	stat	stat	stat	stat	Std. Error	stat	stat
Conservatism	234	1.63	-1.41	.22	-51.41	-.2197	.01761	.26941	.073
Sustainability Report	234	.84	.11	.95	91.24	.3899	.00990	.15146	.023
Valid N (listwise)	234								

Source: Financial Report and Sustainability Report (Data processed with SPSS)

Based on the table of SPSS results above, it shows the number of sample data (N) consisting of Conservatism and Sustainability Reports, each of which is 234. From this 234 sample data, the smallest value (Minimum) is -1.41 for Conservatism and 0.11 for Sustainability Report. . The largest value (Maximum) is 0.22 for Conservatism and 0.95 for the Sustainability Report. The Range value is the difference between the minimum and maximum values, which is 1.63 for Conservatism 0.84 for the Sustainability Report. The Sum value is the sum of the sample data for each variable, which is -51.41 for Conservatism, and 91.24 for the Sustainability Report. The average value of the sum of each variable or the Mean is -0.2197 for Conservatism, and 0,

Normality test



Source: Financial Report and Sustainability Report (Data processed with SPSS)

Figure 1 P-Plot Graph

Based on the graph of SPSS results above, it can be seen a P-Plot graph where the distribution of points follows and approaches the diagonal line. The distribution of points that are close to the diagonal line contained in the graph is concluded that the residual probability plot value is normally distributed. Thus the assumption of normality for residual values in simple linear regression in this study. can be fulfilled

Heteroscedasticity Test

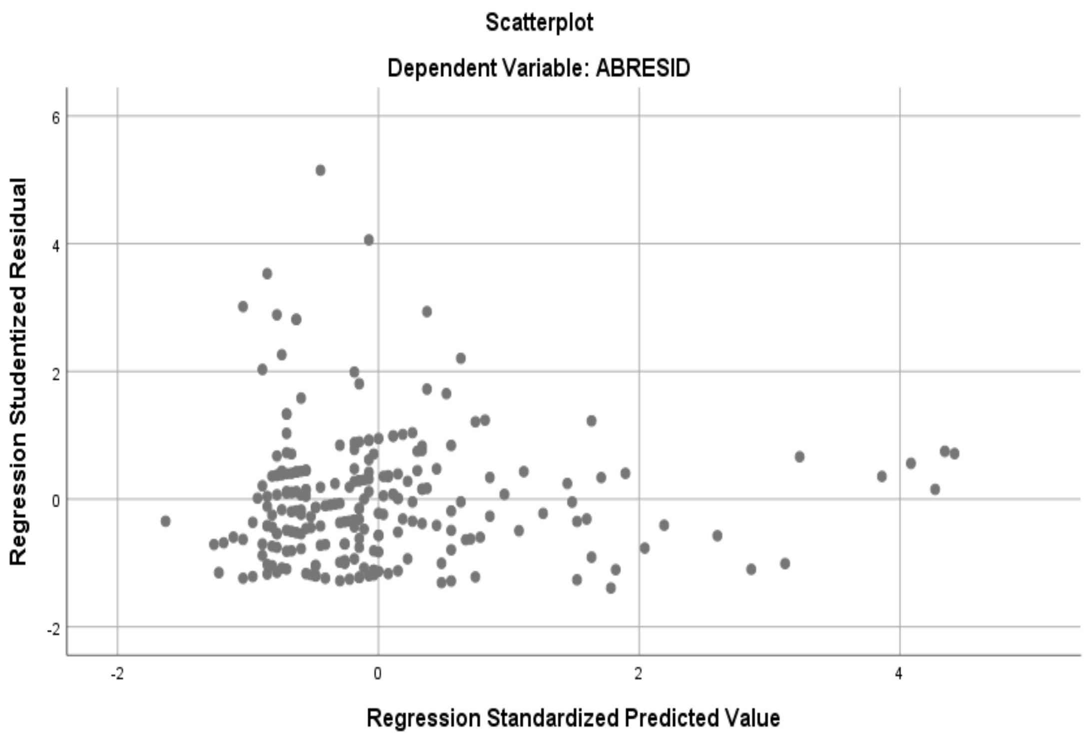
To determine heteroscedasticity can use the Glejser test. The basis for decision making in this test is if the significance value is 0.05, it can be concluded that there is no heteroscedasticity problem, but on the contrary, if the significance value is <0.05, it can be concluded that there is a heteroscedasticity problem. The results of the heteroscedasticity test obtained are as follows:

Table 4 Heteroscedasticity Test

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			
1	(Constant)	.112	.008		14,788	.000
	Conservatism	-.022	.022	-.065	-.995	.321
a. Dependent Variable: ABRESID						

Source: Financial Report and Sustainability Report (Data processed with SPSS)

In the calculation results above, it is known that the significance value of Conservatism is more than 0.05, namely 0.321. Based on this, it can be concluded that there is no heteroscedasticity between independent variables in the regression model. So the above results can be explained by the results of graphic analysis, namely a scatterplot graph, the points formed must be spread randomly, spread both above and below the number 0 on the Y-axis. If this condition is met then there is no heteroscedasticity and the regression model is feasible to use. The results of the heteroscedasticity test using a scatterplot graph are shown in the figure below:



Source: Financial Report and Sustainability Report (Data processed with SPSS)

Figure 2 Scatterplot Graph

By looking at the scatterplot graph above, it can be seen that the points spread randomly, and are spread both above and below the number 0 (zero) on the Y-axis. It can be concluded that there are no symptoms of heteroscedasticity in the regression model used.

Multicollinearity Test

This test is intended to see whether there are two or more independent variables that are linearly correlated. If this situation occurs, we will face difficulties in distinguishing the effect of each independent variable on the dependent variable. To detect the presence of multicollinearity symptoms in the research model, it can be seen from the tolerance value or the Variance Inflation Factor (VIF) value. Tolerance limit > 0.10 and VIF limit < 10.00, so it can be concluded that there is no multicollinearity among the independent variables.

The results of the multicollinearity test in this study are shown in the following table:

Table 5 Multicollinearity Test

Coefficients[a]				
Model	Collinearity Statistics			
	Tolerance		VIF	
1	X	1,000		1,000
a. Dependent Variable: Y				

Source: Financial Report and Sustainability Report (Data processed with SPSS)

Based on the output of "Coefficients" in the "Collinearity Statistics" section, it is known that the Tolerance value for Conservatism is 1,000 which is greater than 0.10. Meanwhile, the VIF value for Conservatism is 1000 < 10.00. Then referring to the basis of decision making in the multicollinearity test, it can be concluded that there are no symptoms of multicollinearity in the regression model.

Autocorrelation Test

Table 6 Autocorrelation Test

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.245a	.060	.056	.14715	1,713
a. Predictors: (Constant), Conservatism					
b. Dependent Variable: Sustainability Report					

Source: Financial Report and Sustainability Report (Data processed with SPSS)

Based on the table above, the DW value can be known as 1.713, this value will be compared with the 5% significance table value, with a sample size of 234 (n) and the number of independent variables 1 (k = 1), then the value of du is 1.7785 and DW value of 1.713 is smaller than the upper limit (du) which is 1.7785 and less than (4-du) or 4 - 1.7785 = 2.2215. So it can be concluded that there is no autocorrelation.

Linear Regression Analysis
Research Model Test

The Testing of coefficient determination is to show how much the dependent variable can be explained by the independent variables.

Table 7 Coefficient Determination

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.245[a]	.060	.056	.14715	1.713
a. Predictors: (Constant), Konservatisme					
b. Dependent Variable: Sustainability Report					

Source: Financial Report and Sustainability Report (Data processed with SPSS)

Based on the table above, shows that the magnitude of the coefficient of determination (R Square) is 0.060. This means that the contribution of Conservatism to the Sustainability Report is 60%, while the remaining 40% is explained by other variables not disclosed in this study.

t-test results
The t statistical test shows how far the influence of one independent variable is individually in explaining the dependent variable. This partial test is done by comparing the value of (alpha) with the p-value. If the p-value < (0.05), then H0 is rejected. So it can be said that there is a partial influence between the independent variable and the dependent variable, and vice versa. The following are the results of the t-statistical test, which can be seen in the table below:

Table 8 t-test

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			
1	(Constant)	.360	.012		28,949	.000
	Conservatism	-138	.036	-.245	-3,852	.000
a. Dependent Variable: Sustainability Report						

Source: Financial Report and Sustainability Report (Data processed with SPSS)

Based on the table above, it is shown that the Conservatism Variable has a regression coefficient value of -0.138, meaning that if accounting conservatism increases by 1%, then the disclosure of sustainability reports will decrease by 0.138. Table 4.7 shows that partially the conservatism variable has a significant value of 0.000 <0.05, and the value of constant (B) is negative (-0.138) meaning that accounting conservatism has a significant negative effect on the disclosure of sustainability reports, so Ho in this study is accepted and H1 is rejected.

The Effect of Accounting Conservatism on Sustainability Reports
The results of the linear regression show that Accounting Conservatism has a significance value of 0.000 <0.05 and has a Beta (B) value of -0.138. These results indicate that conservatism in the sustainability report has a significant negative effect. In other words, Ho in this study is accepted. The results of this linear regression test also show that every 1 (one) increase in sustainability report disclosure will reduce the level of accounting conservatism by 0.138. The results of this study are in line with the results of research conducted by Farha, Lilik, H., & Ni K., S., (2020) which states that accounting conservatism has a significant negative effect on sustainability reporting.

Conservatism is defined as a prudent reaction in the face of uncertainty that occurs in economic and business activities (Susanto & Tiara, 2016). Accounting conservatism plays a role in reducing information asymmetry between agents and principals. The agency theory used in the study is not in line with the results of the study, where the agents who have been appointed by the principal to run the business from the principal apply conservative accounting thereby reducing the amount of information disclosed in the sustainability report.

Disclosure of the Sustainability Report which is still voluntary only measures and discloses the company's activities as a responsibility to the wider community in realizing the goals of sustainable development. To reduce the information asymmetry of agents, it is enough to apply the principle of accounting conservatism to financial reporting.

CONCLUSION

The results of this study indicate that accounting conservatism has a significant negative effect on the disclosure of sustainability reports. This illustrates that the more conservative a company's management is, the less information disclosed in the sustainability report will be.

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11 Socially Responsible Investing and Firm Performance: Preliminary Finding in Indonesian Industry During Covid-19

Agung Maulana Rohmawan[1], Yahya Muhamad Rizki[2], Nunik Nurmalasari[3], Estu Widarwati[4]

[1,2,3] Sekolah Tinggi Ilmu Ekonomi Sutaatmadja Subang, Subang, Indonesia

[1]agungmaulana@stiesa.ac.id, [2]yahyarizki1122@gmail.com, [3]nuniknurmalasari90@gmail.com, [4]wie2tdz@gmail.com

Due to the financial crisis that impacted abnormal economy, the role of business in society increases and make firm should behaving socially responsible. Corporate Social Performance clearly important for establishing market proprtions and business development prospects. The study is aim to analyze social and financial performance in non-financial industrial companies listed on the IDX for the 2019-2020 period. This research uses purposive sampling approach and the sample included infrastructure, health, basic material, nom-primer, and insutrial sector of firm listed IDX during 2019-2020. We use corporate social responsibility as proxy social performance and return on asset also return on equity for measuring firm performance. The study results shows that CSR tent increasing during covid-19 and impact to firm performance. A firm should give more attention for CSR disclosure as reporting of firm's socially responsible investing. The firm facilitate social responsibility investing as well as giving assurance to other stakeholders that the firm is a trustworthy steward of those things stakeholders value.

1. INTRODUCTION

The firm's goal is to maximize the prosperity of shareholders and a public firm maximize it market value is the same as maximizing the stock market price. The rise and fall of a firm's stock price determine it value, therefore, the financial performance indicate changes in the firm's strategy and it potential in managing the assets. Financial performance is a description of firm achievement that can be interpreted as the results that have been achieved on various activities carried out. It can be explained that financial performance is an analysis carried out to see how far a company has implemented using financial implementation rules properly and correctly.

The economic conditions are experiencing a slowdown and pressure both regionally and nationally caused during covid-19 and this economic slowdown and anxiety were also followed by stock trading conditions on the Indonesia Stock Exchange since the beginning of 2020, which has experienced significant pressure as indicated by a decline in the Composite Stock Price Index (JCI) by 18.46%. On this basis and the condition of fluctuating stock movements, the government, through other specialized agencies or institutions, is trying to issue various policies in handling and restoring Indonesia's economic conditions, especially in preventing the decline in the JCI during the Covid-19 pandemic.

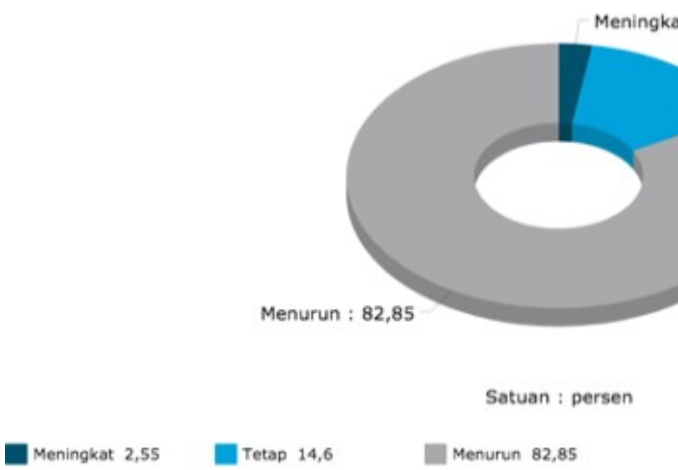


Figure 1. Company Revenue during the COVID-19 Pandemic
Source: Central Bureau of Statistics, 2020

The abnormal economy has an impact on company productivity. The figure 1 shows the results of a survey conducted by the Central Statistics Agency (BPS) in 2020, which 82.85% of firms in Indonesia experienced a decline in revenue during the Covid-19 and 2.55% of firms claim that their revenue is increasing. It means that financial performance information is needed to evaluate potential changes in economic resources to predict the production capacity of available resources so that firms can see prospects, growth, and possible developments that the company has achieved. In addition, firms must be prepared and alert in responding to unpredictable things like this, such as through policies in their social responsibility. A firm must have some objective other than profitability for it sustainability. The extent of interest by investors for investing in firms that are sustainable in the long run and socially responsible investing has been a significant component of the investing (Bradfort et a, 2017). As the persistence of problems, most notably environmental ones associated with climate change, have made a business response more-and- more mandatory, the terminology of corporate social responsibility has evolved. As mentioned by Wahyudi (2008 in Wahyuningrum 2014) Corporate Social Responsibility or corporate social responsibility is a company's commitment to carry out its obligations. Based on decisions to take policies and actions by taking into account the interests of stakeholders and the environment where the company carries out its activities based on the provisions applicable law.

In connection with the current Covid-19 pandemic situation, firms are also forcing to adapt to uncertain conditions because the Covid-19 pandemic also impacts the implementation of CSR for several firms. Pramaditia & Paramita (2020) stated that during this pandemic, the firm primarily impacted recalculation of all CSR program designs prepared for the future because this pandemic affected the target recipients of CSR, which were increasingly expanded.

About the government, CSR is highly recommended for every firms. The government regulates social and environmental responsibilities aimed at realizing sustainable economic development to improve the quality of life and the environment beneficial for the local community and society in general. As well as the firm establishes a harmonious, balanced, and environmentally compatible Company relationship, values, norms, and culture of the local community.

Sustainability reporting has emerged as a friendly investment practice business because investors are becoming sensitive to how the firm in which they invest perform sustainably. An increasing number of firms are investing time and effort into producing reports that describe their sustainability practices (Bradfort et al, 2010).

In previous studies, it was said that the relationship of social performance to firm's financial performance in various perspectives. However, the research results have not shown a consistent relationship between the research variables. Rakhiemah and Agustia (2009) and Pujiasih (2013) reveal that environmental performance does not affect financial performance. However, Nurhudha and Suwarti (2015) prove that the ecological version has a significant positive effect on financial performance. Several studies show the inconsistency of the relationship between environmental performance and financial performance.

In this study, we analyzise firms in non-financial industrial sector listed the IDX that performing their social performance and managing CSR practise during the pandemic.. We examine the social practice on firm performance which using CSR as proxy social practice This study implicates the strongness of evidence the important role of firm's friendly investment practice in Indonesian industry for sustainability performance.

2. LITERATURE REVIEW

Firm Performance

Performance is the achievement of results on the implementation of specific tasks. Firm performance is the level of achievement of results to realize the company's goals. Performance management is the overall activity carried out to improve the performance of the firm or organization. The development of a company, performance determinant model, is urgent for corporate finance researchers. Repeated global crisis events have focused the focus on finding the detection of performance degradation factors to minimize the possible risks faced by the company.

According to Kaplan and Norton (2000), non-financial performance is a performance that shows firm growth. Firm can find out their level of success by using non-financial performance analysis. The firm's non-financial performance can be seen through employee performance analysis, work performance, product quality, firm development, and work environment. Non- financial measures cannot replace financial measures. They are complementary.

Financial performance is a description of the conditions and circumstances of a company that is analyzed with financial analysis tools to know the good and bad economic conditions and financial achievements of a company within a particular time (Wibowo and Faradiza, 2014). The company's financial performance is reflected in the financial statements of a specific year or used as a comparison with previous years so that developments or declines that occur from year to year can be seen and how much the difference is to determine the consistency of at least the firm (Soelistyoningrum and Prastiwi, 2011).

Other side, to meet stakeholder expectations, every firm tries to improve the company's social performance from time to time, and simultaneously the economy/finance can be improved. Waddock and Graves (1997) put forward two theories to explain deviant resource theory and good management theory. According to the eccentric resource theory, a firm is well-positioned to play a role in the company's social performance. The implementation of social performance requires some funding which results in successful financial performance. According to this theory, a firm seen by its stakeholders as having a good reputation will make it easier for the company to pass market mechanisms to get an excellent financial position.

Socially Responsible Investing

A new approach of sustainability investing is labeled environment, social, and governance (ESG) and firms being expected to provide detailed information about their accomplishments about the environment, the community and society that the way which they are governed Responsible investors recognize that sustainability encompasses these three areas, and are seeking to invest in companies that communicate clearly that they recognize this.

Concomitant to the growth in sustainability investing is the development of systems of reporting information about firm's sustainability performance. Unlike financial reports, which have been shaped by centuries of business and financial practices, reports on the results of sustainability performance have yet to reach the structured status of financial report (Bradfort et al, 2017).

Socially responsible investing lead to corporate social responsibility (CSR) that is a mechanism for a company to voluntarily integrate attention to the social environment into its operations and interactions with stakeholders, which goes beyond social responsibility in the legal field (Darwin 2004). The firm's commitment to disclose CSR sustainably brings many benefits. First, as a social investment that becomes a source of competitive advantage to strengthen the firm. Third, accountability and positive appreciation from the investor community, creditors, suppliers, consumers, government, and society. Fourth, increasing commitment, work ethic, efficiency, and employee productivity. Fifth, decreasing resistance from the surrounding community. Sixth, improve reputation, goodwill, and long-term company value (Lako, 2011). Some of the disclosures are mandatory, i.e., disclosure of information must be carried out by companies based on specific regulations or standards. There are voluntary ones, which are disclosures of information exceeding the minimum requirements of the applicable rules.

Though the performance elements have changed over time and lead to the terminology "TBL"that emphasizes three basic elements of performance deemed most relevant for CSR/sustainability. TBL reporting is intended to provide information to the various stakeholders that will permit them to assess the performance of any corporation with respect to each of economic, social, and environmental performance (Bradfort et al, 2017).

The disclosure standards for corporate social responsibility (CSR) developing in Indonesia refer to the standards set by GRI (Global Reporting Initiatives). This responsibility's disclosure indicators include economic performance, environmental performance, and social performance measured by Corporate Social Responsibility Disclosure Index of companies (CSRDI).

Socially Responsible Investing and Firm Performance

The stakeholder theory expects firm management reporting activities to stakeholders, which contains the impact of these activities on their firm, even though they later choose not to use the information. Firm's operational activity certainly requires the best management in every aspect. The demands for disclosure of financial statements, annual reports, and the implementation of corporate sustainability require proper direction so that company goals can be achieved. Because of this, an efficient strategy in managing firm's activities needs to be carried out. Firm sustainability attempts to balance economic growth against issues such as environmental protection and social responsibility with the intent of achieving an improved quality of life for both current and future generation (Yilmaz, 2013)

Socially Responsible Investing → **Firm Performance**

Source: developed from Yilmaz (2013) and Bradford et al (2017)

Bradfort et al (2017) state that companies are encouraged to report their sustainability activities under the various dimensions in order to provide consistency and comparability with respect to assessing social and environmental values fulfillment. Socially Responsible Investing refer to CSR that demonstrating the inclusion of social and environmental concerns in business operation and in interaction with stakeholder (Kraus and Brtitzelmaier, 2012). Empirical studies in German show that only few state having a comprehensive implementation of corporate sustainability and there is an acute nedd for action, in order to avoid a loss of credibility.

In Indonesia, Rakhimah (2013) and Kamaludin (2010) examined corporate social responsibility (CSR) disclosure and financial performance of manufacture industry during normal period 2004-2006, with a and finds significant impact CSR disclosure on the financial performance. We develop the hyphotesis in this study that socially responsible investing affect firm performance.

3. DATA AND METHODOLOGY

This paper explores data from annual report and sustainability report of non-financial industry firms listed on the Indonesia Stock Exchange in 2019-2020 such data of CSR disclosure and finnacial performance . The sample selected by specific criteria consisted of new IDX-IC industry are non-primer sector, healthy sector, basic material sector, and infrastructure sector. As for delisting, relisting, moving other areas, mergers or acquisitions and no CSR disclosure excluded from the sample.

The dependent variable firm performance (FP) is measured by return on asset, and also return on equity (ROE) as proxies for firm's management efficiency of firm asset follow Yimaz (2013) Our independent variable is socially responsible investing which proxied by social responsibility index (CSRDI) for each aspects and also do robust test following Bradfort et al (2017).

The model expressed as follows:

$$FP_{i,t} = \beta_0 + \beta_1 SRI_{i,t} + \varepsilon_{i,t}$$

FP is the firm performance measured by ROA and ROE and SRI is the socially responsible investing proxied by CSR which measured CSRDI .

4. RESULTS AND DISCUSSION

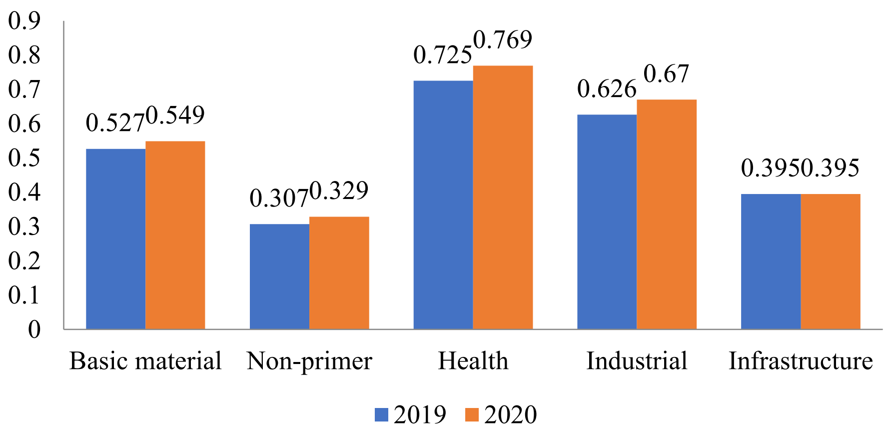
Table 1. present the detail reviews of the cross-industry distribution of the socially responsible investing. We observe data of CSR disclosure during 2019-2020 from basic material, infrastructure, health, industrial, and non-primer industry. Detailed three dimension of CSR descriptive data in those industry shows the average of Corporate Social Respobsible Disclosure Index (CSRDI) is 0,5292 and Indonesian industry seem get more attention of social aspect in CSR disclosure better than others, while the highest value of CSR's indicator is still about economic indicator. Specially, health sector has average CSR in all indicators of CSR.

Table 1. Industry Distribution of Social Responsible Investing

Industry	Economic	Social	Environment	Human Right	Society	Product Responsibility	CSRDI
Basic Material	0.769	0.662	0.536	0.448	0.378	0.399	0.538
Non Primer	0.33	0.31	0.29	0.16	0.54	0.33	0.318
Health	0.89	0.81	0.655	0.955	0.54	0.78	0.747
Industrial	0.725	0.68	0.67	0.67	0.495	0.385	0.648
Infrastructure	0.67	0.5	0.2	0.33	0.54	0.56	0.395
Mean	0.6768	0.5924	0.4702	0.5126	0.4986	0.4908	0.5292
Modus	0.89	0.75	0.58	0.58	0.45	0.56	-

CSRDI is corporate sustainability disclosure index based on GRI.G40

During covid-19 in 2020, socially responsible investing in Indonesia firms tend to increasing the participation. Bradfort et al (2017) state firm activities reported will describe the firm situation as a sustainable or socially responsible company just as an income statement permits situating the company as a profitable or unprofitable one. Many reports would facilitate social responsibility investing as well as giving assurance to other stakeholders that the firm is a trustworthy steward of those things stakeholders value. Activities reported should imply firms are pursuing the same objectives across stakeholder groups. Our data shows that the average CSR is 0,5292 which economic dimension is 0,6768, average environment dimension is 0,4702 and the social dimension is0,5924. Below the data of CSR in non financial sector of Indonesian industry.



Graph 1. Average CSR Per Sector
Source: Data Processing Results, 2021

For firm performance, our data shows that Indonesian industry had decrease it value during covid-2020 both ROA and ROE. The highest performance is health sector, while other industries had decreased their performance and infrastructure industry has the lowest average value (minus). Corporate sustainability implies are stakeholders have a moral relationship to firm, as well as whatever economic ones they might have. This moral relationship is the deciding factor for investors engaged in socially responsible investing. However, meaning of the socially responsible actions was important to the subjects and not simply those actions permissibility as actions contributing to corporate sustainability (Bradford et al, 2017).

Table 2. Industry Distribution of Firm Performance

Industry	ROA	ROE
Basic Material	0.001483	0.02145
Non Primer	0.0104	0.0134
Health	0.2225	0.251
Industrial	0.0823	0.153
Infrastructure	-0.1815	-1.232
Mean	0.0270366	-0.15863

ROA is return on asset and ROE is return n equity

The value of firm performance describes the effectiveness, efficiency, and stability of the firm. Tabel 2 shows that a firm with a negative value means that company is unstable but a positive performance refer to firm sustainability. ROA and ROE reflect the level of effectiveness of the company's management in using assets and equity for profit. The higher the percentage of ROA and ROE, of course, the more effective management performance, reflecting the company's excellent fundamentals.

Furthermore, the data of socially responsible investing (CSR) linked to ROA describes that the higest CSR in health sector and the lowest is infrastructure sector (minus). It is in line with concept of firm performance which health sector has the highest value. We argument the abnormal economy such covid-19 lead the firm have unpreditable risk linked to their market then deacrease their participation of CSR. Our data confirm that non financial sector of Indonesian industry tend decreased socially responsible investing during covid-19 in 2020.

Table 3. Results of regression and robust test analysis

Firm Performance	Dependent variable: ROA	Dependent variable: ROE
Socially Responsible Investing (CSR)		
economic	0,313 (14.014)	0,069 (0,913)
social	0,272 (0,779)	0,408 (0,585)
Society	0,566** (0,768)	0,587** (0,596)
Human Right	0,557** (0,362)	0,488*** (0,301)
Product Responsibility	0,649**(0,563)	0,559**(0,485)

* significant 1%, ** significant 5%, ***significant 10%, exposed values are standard errors.

Hypothesis testing shows socially responsible investing measured by CSRDI has postive effect on firm performance both ROA and ROE except economic and social indicator. The finding of this study is same with Yilmaz (2013) that firm's CSR activities not impact to firm performance.

As previously stated above, the subjects of socially responsible investing evaluated sustainability efforts as primarily efforts of being a good citizen with sustainability an end in itself rather than as constraint to be respected in achieving profitability goals.

5. CONCLUSIONS

Based on the results and discussion of the research that has been done, it can be concluded that the socially responsible investing in this study tend increasing in abnormal economy such covid-19 period. The participation and responsibilities that the firm has carried out towards the surrounding it sustainability performance.

Corporate social responsibility as proxy of firm's socially responsible investing in this study show that Indonesia industry each has different values of CSR's indicators and the assessment is seen from the economic, social, environment, human right, product responsibility, and society elements. The high CSR value indicate that firm facilitate social responsibility investing as well as giving assurance to other stakeholders that the firm is a trustworthy steward of those things stakeholders value.

However, this study finds that a firm with a negative performance refer to unstable, while positive performance refer to firm sustainability. ROA and ROE reflect the level of effectiveness of the company's management in using assets and equity for profit. The higher the percentage of ROA and ROE, of course, the more effective management performance, reflecting the firm's excellent fundamentals. Furthermore, socially responsible investing (CSR) impact on firm performance both Return on Assets (ROA) and Return on Equity (ROE) especially linked to environment, human rights, society, and product responsibility aspect. This research implies that the proper application of Corporate Social Responsibility can help financial performance. Then the company can implement efficient management of each of its business activities.

There are very few companies that issue annual reports and Sustainability Performance consecutively from 2019-2020, so this study has limited the sample. Furthermore, in analyzing the data, several firm have incomplete data, so it must be calculated manually. It is recommended to develop this research further to know the extent of the influence of socially responsible investing on firm performance. Next research could add some control variable such firm characteristic, market risk, and other variabel into CSR model for better analysis about determinant of firm performance. In addition, it needed long periode for analyzing the difference of firm CSR activities during abnormal period and also do robust test of CSR measuring for next research.

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12 The Implementation of Corporate Social Responsibility and its Effects Through Company Performance Using Content Analysis at PT. Pertamina (Persero) in Indonesia

Lili Wardani Harahap
Universitas Negeri Medan
Email : liliwardani7808@gmail.com

The purpose of this study is to identify the implementation of CSR and its Effects through company performance at PT. Pertamina (Persero) in Indonesia. The method of collecting data in this study use secondary data, namely data that obtained from the Annual Report and documentation at PT. Pertamina (Persero) in Indonesia. This study uses a Content analysis approach. The results of this study consist of : (1) CSR can provide added value to company by informing profits as the company performance in achieving sustainable business, (2) CSR can increase company value, where social aspects become one of the factors that used in arranging the company's business strategy, (3) CSR has a corporate voluntary program by showing the company's concern for social issues that occur and assist in solving community problems.

Key words : CSR, Company Performance, Business Strategy

Abstract

Tujuan penelitian ini adalah untuk mengidentifikasi implementasi CSR dan pengaruhnya terhadap kinerja perusahaan pada PT. Pertamina (Persero) di Indonesia. Metode pengumpulan data dalam penelitian ini menggunakan data sekunder yaitu data yang diperoleh dari Laporan Tahunan dan dokumentasi pada PT. Pertamina (Persero) di Indonesia. Penelitian ini menggunakan pendekatan analisis content. Hasil penelitian ini terdiri dari : (1) CSR dapat memberikan nilai tambah bagi perusahaan dengan menginformasikan laba sebagai kinerja perusahaan dalam mencapai bisnis yang berkelanjutan, (2) CSR dapat meningkatkan nilai perusahaan, dimana aspek sosial menjadi salah satu faktor yang digunakan dalam menyusun strategi bisnis perusahaan, (3) CSR memiliki program sukarela perusahaan dengan menunjukkan kepedulian perusahaan terhadap isu sosial yang terjadi dan membantu penyelesaian masalah masyarakat.

Kata kunci : CSR, Kinerja Perusahaan, Strategi Bisnis

1. INTRODUCTION

Corporate Social Responsibility (CSR) first appeared since Howard R. Bowen published his book titled Social Responsibility of The Businessman in 1953. The basic ideas of CSR was stated by Bowen refer to the obligations of businesses to carry out their business in line with the objectives to be achieved by the company. Basically, the company aims to obtain the maximum possible profit so that the company will growand sustainable.

Indonesia has issued The Law of Perseroan Terbatas Number 40 in 2007 on Corporate Social Responsibility (CSR) or obligations to be done by the company to the public. Through this law, the company is obligated to implement it. In addition, the government has issued BUMN Law Number 19 of 2003, namely CSR can provide added value to company by informing profits as the company's performance in achieving sustainable business. This law can be used as a reference or guideline in implementing company obligations to the community in the CSR programs.

PT. Pertamina (Persero) is one of the largest state-owned company in Indonesia that produces oil and gas. In addition, Pertamina operates a new and renewable energy business in an integrated based on strong commercial principles. In PT.Pertamina (Persero) Marketing Operation Region (MOR) in CSR activities to do for the Partnership Program and Community Development through the support of education and training (24.4 %), medical aid societies (10.9 %), environmental (12.2%), empowerment (52.8%), trade (11.1%), fisheries (15.2%), animal husbandry (4.3%), agriculture (2.2%), plantation (58.9%), industry (5.8%), services (2.4%), the preservation of nature (4,9%), places of worship (19,1%), sosial alleviation of poverty (4.9%), general infrastructure (34.9%), natural disaster (4%), and Other Sectors (0.1%). The CSR, Partnership Program and Community Development have been implemented by Pertamina since 1993 (PT. Pertamina (Persero) Annual Report, 2018). Researchers used the program as a basis for identifying the implementation of CSR in the Partnership Program and Community Development at PT Pertamina (Persero) in Indonesia. CSR can affect for company performance by using CSR Disclosure Index based on General Reporting Initiatives (GRI) G4, while company performance is proxied on profits.

Based on BUMN Ministerial Regulation No.4 of 2007, namely CSR fund is obtained from the company's profit of 4% after tax determined in the General Meeting of Stakeholders used for the Partnership Program of 2% and Community Development of 2%. BUMN Minister Regulation No.4 of 2007 is used as a reference or guideline in determining the allocation of CSR fund to realize the implementation of the Partnership Program of 2% and Community Development of 2%. To fund CSR managed through the Division of Community Development or Business Partnership Division. Accountability of these funds directly to the Ministry of BUMN with a separate report. The fund of the Partnership Program treatment such as revolving fund must be returned by the partners, while the Community Development treatment such as grants that do not need to be returned. To increase the value of CSR in Pertamina, the companies can innovate through the use of new technologies, operating methods, and management approaches, the results of which can increase production so can expand the company's market share. This research is different from previous studies. The research uses the Annual Report at PT. Pertamina (Persero) in Indonesia with research methods Content Analysis. The purpose of this study is to identify the implementation of CSR and its effects through company performance at PT. Pertamina (Persero) in Indonesia. In addition, this research contributes to develop model by using content analysis on the implementation of CSR and its effects can increase company performance at PT. Pertamina (Persero) in Indonesia .

According to Hasan Fauzi et.al (2009) whose research on "Corporate Social Performance of Indonesian State Owned and Private Companies" with finding, there is no significant difference between companies state-owned and private companies in Indonesia. In addition, the correlation test shows that there is no relationship between corporate social performance and good financial performance in SOCs and POCs.

According to Juhani Ukko et.al, (2019) whose research on "Sustainability strategy as a moderator in the relationship between digital business strategy and financial performance" with this type of research uses a structured survey questionnaire. The finding in this study is to find the relationship between digital business strategies, sustainable strategies and financial performance. According to Aliffianti et.al, (2019) whose research on " Board Diversity and financial performance firm on consumer goods industry in Indonesia" with the research method is quantitative and uses secondary data. The finding in this study is to show the results that the differences in the board of commissioners and the board of directors simultaneously have a good influence on the company's financial performance.

2. LITERATURE REVIEW

According to Ingrid S. Spangler and Donnalyn Pompper (2011) analyzed "The Corporate Social Responsibility and Oil Industry : Theory and Perspective Fuel a Longitudinal Vision". The finding of this study have a deep understanding theoretically about CSR, which offer four main proposition for the development of the theory of CSR : (1) The management of CSR from inside to outside, (2) Getting the trust of the public and the media, (3) Giving feed back to community of citizens, and (4) The community is the partnership. This research has conducted interview with three

Public Relationson managers of US oil companies in decision making and CSR practices for five decades (1966-2010) in North American waters. The finding show that CSR theory provides a complex perspective on public relations in the literature.

According to Dan S. Dhaliwal, Oliver Zhen Li, Albert Tsang, and Yong George Yang (2011) analyzed Voluntary Nonfinancial Disclosures and Cost of Equity Capital : Initiation of Corporate Social Responsibility Reporting. This finding is to find that companies with a cost of capital in the previous year tend to carry out CSR activities for the current year and companies that have superior performance can reduce the cost of capital. In addition, the company can attract investors, especially in the field of analysts. Researchers have exploited the benefits of the cost of capital associated with CSR.

According to Hoje Jo, and Maretno A. Harjoto (2012) analyzed "The Causal Effect of Corporate Governance on Corporate Social Responsibility". The finding of this study is to test the empirical relationship between corporate governance (CG) and socially responsible corporate (CSR) to investigate the influence of causality. The researcher found that CSR'S lag did not affect the CG variable, and the lag of the CG variable was positive and of could influence CSR involvement that could control company characteristics. In addition, the researchers showed that CSR engagement positively affects The Corporate Financial Performance (CFP), and support the hypothesis of the resolution conflict that based on the theory of stakeholders. Furthermore, CSR involvement in the community, environment, diversity, and employees plays a significant positive role in increasing CFP.

According to Pek Karin Purnomo, and Luky Patricia Widianingsih (2012) analyzed The Influence of Environmental Performance on Financial Performance with Corporate Social Responsibility (CSR) Disclosure as a Moderating Variable : Evidence from Listed Companies in Indonesia. The findings of this study indicate that : (1) environmental performance has a positive effect on financial performance, (2) CSR disclosure is not able to strengthen the effect of environmental performance on financial performance. This is because the market in Indonesia is still not efficient and market players do not use a comprehensive annual report. Environmental ratings accompanied by disclosures can be a negative signal for the market.

According to Christina Tri Setyorini and Zuaini Ishak (2012) analyzed Corporate Social and Environmental Disclosure : A Positive Accounting Theory View Point. The findings of this study are to provide an examination of the social and environmental disclosures of companies in Indonesia in the perspective of Positive Accounting Theory (PAT). Regression analysis shows that corporate social and environmental conditions in Indonesia are associated with : ROA, firm size, and firm earnings management. Thus, the results support the bonus plan hypothesis and the political cost hypothesis, whereas the debt/equity hypothesis cannot be supported.

According to Mariana Cristina, GANESCU (2012) analyzes Corporate Social Responsibility, a strategy to create and consolidate sustainable businesses. The findings of this study are to identify the role of strategy in the creation and strengthening of a sustainable business. In addition, using the Dunphy model as a starting point in developing a typology for CSR strategies that can support organizations in creating and strengthening sustainable businesses. The implementation of CSR strategy is important because it can achieve added value through the creation and strengthening of a sustainable business.

According to Henri Servaes, and Ane Tamayo (2013) analyzed The Impact of Corporate Social Responsibility on Firm Value : The Role of Customer Awareness. The findings of this study indicate that corporate social responsibility (CSR) and corporate value are positively related to companies with high customer awareness, as indicated by advertising spending. For companies with low customer awareness, the relationship is negative or insignificant. In addition, the researchers found that the effect of awareness on the value of CSR has an inverse relationship in companies with a previous bad reputation as corporate citizens. This evidence is consistent with the view that CSR activities can add value to companies but only under certain conditions.

According to Michael Fontaine (2013) analyzing Corporate social responsibility and sustainability : The New Bottom Line ?. The findings of this study are to examine the relationship and effectiveness of CSR. The case is Royal Dutch Shell Plc, a global energy and petrochemical company. And, the researcher explores the convergence of Corporate Social Responsibility (CSR) and Corporate Sustainability (CS) by examining several Starbucks corporate practices.

According to Roberto Fernandez-Gago, Laura Cabeza-Garcıa, Mariano Nieto (2014) analyze Corporate Social Responsibility, board of directors, and firm performance : an analysis of their relationships. The findings of this study are that the percentage of independent directors influences the company's CSR activities, and the effect is moderated by the resources available to the company (measured by return on assets). In addition, CSR has an intermediary role in the relationship between board of directors independence and firm value. These results were tested for other board characteristics (board size and women as directors).

According to Duygu Türker (2015) analyzing Contrasting Instrumental Views on Corporate Social Responsibility : Short-term versus Long-term Profit Orientation Approach. The finding of this study is to investigate whether the theoretical difference between short-term and long-term earnings orientation can affect CSR. Researchers conducted a survey with a sample of managers of business organizations in Turkey. The results show that short-term earnings have a negative impact on CSR involvement to employees, government, society, and ethical issues while CSR involvement with the environment has a positive impact. The long-term profit approach has a positive impact on the involvement of CSR to employees, the environment, government, society, and ethical issues.

According to Hasan Fauzi (2016) analyzing CSR, Sustainability, Governance, And Accountability : The Current Position In The Body Of Knowledge And Their Research Directions. The findings of this study are for the contribution of each study to the body of knowledge so that it can be clearly demonstrated. And the multiplier effect of this stage can be contributed to teaching activities and industrial practice (downstream impact of research).

According to Simone R. Barakat Giuliana Isabella João Maurício Gama Boaventura José AfonsoMazzon (2016) analyzed the influence of Corporate Social Responsibility on employee satisfaction. The findings of this study are showing that CSR is positively related to job satisfaction, and the image of the organization as a mediator in this relationship. In addition, this study proves that CSR carried out by companies can lead to a better organizational image and employee satisfaction,

According to Zana Prutina (2016) analyzing The Effect of Corporate Social Responsibility on Organizational Commitment. The findings of this study are to identify two elements of organizational culture, namely CSR values and employee involvement in CSR which are treated as mediators of this relationship. Respondents from 196 survey participants confirmed the previous finding that employees' perceptions of CSR positively affect organizational commitment, but indicated that each of the mediators affected this relationship, and had a strong influence when both mediators were included in the model.

According to Motilewa Bolanle Deborah, Worlu Rowland EK, Moses Chinonye Love & Adeniji Chinyerem Grace (2017) analyzed "Corporate Social Responsibility as a Determinant of Sustainability of Small Medium Enterprises (SMEs)". The finding of this study is the company will advance of the community in operating through Corporate Social Responsibility (CSR) activities. Although The House of Tara's Makeup has not developed such as MAC, Maybelline, Dior, Mary Kay and others, but the market share is quite large in the industry in Nigeria, because some consumers buy their products by looking at the quality or price of these products. In addition, consumers are interested in the company's vision of CSR activities. This research recommends to SMEs because it is still lack of resources such as labor, technology, and capital, so that the potential must increase acompany's CSR investments.

According to Li-Chuan Chou, Ta-Cheng Chang, John Darcy & Yun - Chia Yan (2017) analyzed The Impact of Social Responsibility on Corporate Performance : Evidence from Taiwan. The findings of this study are that : (1) there is a positive and significant interaction between CSR and CFP, (2) has a high score on corporate CSR, and (3) the dimensions of CSR governance are more significant and positive with stock price returns when compared to other dimensions. (community, employees, and environment).

According to Kafigi Jeje (2017) analyzing An Overview of Corporate Social Responsibility. The findings of this study are that Corporate Social Responsibility has attracted attention in the business, social and economic literature. This has brought many benefits to business organizations and society and its implementation. This fact must have a combination of key aspects with corporate social responsibility which will be the guideline for knowledge development tools, corporate decisions and policy development. In addition, this study provides a variety of literature on the meaning, reasons, creation, forms, benefits, challenges, and solutions.

According to Rifat Kamasak, and Meltem Yavuz (2018) analyzed "Revisiting The Corporate Social Responsibility (CSR) And Performance Relationship Through A Dynamic Resource Management View". The finding of this study show that CSR practices are significantly related to company performance, indicating that the larger amount of CSR can improve financial performance. In addition, companies with higher Strategic Flexibility skill can obtain better economic performance from the company's CSR activities.

According to Abdulaziz Alhammadi (2018), he analyzed Corporate Social Responsibility : Concepts, Perspectives, and Links With Corporate Performance : Literature Review. The findings of this study are the company and management, it is important to know whether CSR activities can generate financial and non-financial benefits. This paper reviews the concept of CSR, the definition and relationship between the concept and company performance.

According to Riana Horn, Marna de Klerk, and Charl de Villiers (2018), they analyzed the association between corporate social responsibility reporting and firm value for South African firms. The findings of this study indicate that there is no significant relationship between CSR disclosure and firm value, but it has a significant negative relationship between CSR assurance and firm value in companies not listed in the CSR Investment index.

According to Juniati Gunawan, SeTin (2018) analyzed the Development of Corporate Social Responsibility in Accounting Research : Evidence From Indonesia. The findings of this study are that : (1) 75 percent of CSR research is in the areas of financial accounting, capital markets, tax accounting and corporate governance ; (2) The most widely used variables related to CSR are financial performance ; (3) More than 80 percent of CSR research uses annual reports as a data source and 19.23 percent uses sustainability reports ; (4) 65.38 percent is used for CSR disclosure on the Global Reporting Initiative (GRI) measurement.

According to Fusion Kuang-Hua Hu, Sin-Jin Lin, Jau-Yang Liu, Fu-Hsiang Chen and Shih-Han Chen (2018) analyzed the Multi-Dimensional Effect of CSR through a Characteristic Approach in Determining Firm Value. The findings of this study are that the literature study provides inconclusive results regarding the relationship between CSR and firm value because it ignores the multi-dimensional characteristics of CSR, namely using a single indicator as a proxy to represent company performance. In addition, this study created an intelligence-based (AI) fusion model, based on the fusion learning theory that aims to complement the mistakes made by a single model, to examine the relationship between the multi-dimensional characteristics of CSR and firm value.

According to David Weitzner, and James Darroch (2019) analyzed "The Comprehensive Framework for Strategic CSR : Ethical Positioning and Strategic Activities". The finding of this research develop the framework with a comprehensive approach to CSR's strategy which as bridging the gap of field of strategic management based economy and business ethics. This framework base on normative and deskriptif.

According to Sehar Zulfiqar, Rabeea Sadaf, József Popp, Jolita Vveinhardt and Domicián Máté (2019) analyzed An Examination of Corporate Social Responsibility and Employee Behavior : The Case of Pakistan. The findings of this study are to provide contextual insight and empirical evidence on how CSR can influence employee behavior.

According to F. O. Uchehara (2019) analyzing Building a Corporate Competitiveness through Corporate Social Responsibility Drives. The findings of this study are for examine the role of Corporate Social Responsibility (CSR) in building competitiveness companies in the consumer goods sector in Nigeria using panel data obtained from 12 companies in the period 2015 to 2017. There are two models that represent namely Return on Investment and Return on Sales developed in the CSR investment variable. The results of this study use OLS regression analysis, namely revealing that CSR has a positive and significant effect on company's Return on Sales (ROS) and Return on Investment (ROI). In addition, CSR as a management strategy to improve the company's business competitiveness in Nigeria. This study recommends that companies should include CSR into the company's strategic plan.

3. THE METHOD OF RESEARCH

a. **The Research of design**
   This study applies qualitative research with a content analysis.
b. **The Research of object and Sample Selection**
   The Research of object is the CSR Program through company performance at PT. Pertamina (Persero) in Indonesia . The sample selection in this study are CSR Managers and CSR implementers.
c. **The Method of Collecting Data**
   The method of collecting data in this research is by using secondary data. The data Is obtained from the Annual Report and Documentation at PT. Pertamina (Persero) in Indonesia.
d. The Data analysis
   The data analysis in this study use a content analysis approach. Content Analysis namely research that is indepth discussion of the content of written or printed infor - mation in the mass media. Content Analysis is usually used in qualitative research.

4. RESULTS AND ANALYSIS

4.1. Company Performance

PT. Pertamina (Persero) is a world class national energy company in accordance with Pertamina's vision and was established in 1957. PT. Pertamina (Persero) operates in the field of State Oil and Gas Mining in Indonesia. Until now the Pertamina company is still operating well, because PT. Pertamina (Persero) has projected further business development capable of optimizing Indonesia's natural wealth by starting a study on the development of a Green Refinery in Indonesia. In addition, Pertamina strengthens its commitment to carry out business development in new and renewable energy and business diversification. Pertamina has values as the company's foundation to realize its vision and mission based on global standards and the implementation of corporate governance. Pertamina's values, known with 6C, consist of Clean, Competitive, Confident, Customer Focus, Commercial and Capable, must be known and become guidelines for all workers in their daily activities. Understanding and implementing the 6C Values will shape the behavior that becomes a culture, as Pertamina's characteristic among other companies. Each individual worker at Pertamina must ensure that humans behave in accordance with the 6C Values (PT. Pertamina (Persero) Annual Report, 2018).

Pertamina has 25 subsidiaries to improve the company performance with business fields, data on total assets, operating revenues and profits for the last 2 years until the end of 2018, are presented in the following table :

Table.4.1.1. Subsidiary Performance

No	Company Name	Business Fields	Total Assets 2018	Total Assets 2017	Operating Revenues 2018	Operating Revenues 2017	Profit 2018	Profit 2017
1.	PT.Pertamina EP	Eksplorasi & Produksi Minyak & Gas	7.499	7.622	3.161	2.770	756	615
2.	PT.Pertamina Hulu Energi	Eksplorasi & Produksi Minyak & Gas	4.532	4.781	2.528	1.999	474	249
3.	PT.Pertamina Geothermal Energy	Eksplorasi & Produksi Panas Bumi	2.556	2.405	661	622	107	96

No	Company Name	Business Fields	Total Assets 2018	Total Assets 2017	Operating Revenues 2018	Operating Revenues 2017	Profit 2018	Profit 2017
4.	PT.Pertamina Drilling Services Indonesia	Jasa Penge - boran Minyak & Gas	560	574	237	235	21	18
5.	PT.Pertamina EP Cepu	Eksplorasi & Produksi Minyak & Gas	2.993	2.608	1.779	1.329	842	662
6.	PT.Pertamina EP Cepu ADK	Eksplorasi & Produksi Minyak & Gas	13	19	0	0	-11	-58
7.	PT.Pertamina Internasional Eksplorasi & Produksi	Eksplorasi & Produksi Minyak & Gas	5.839	5.803	1.192	1.162	-40	143
8.	PT.Pertamina Hulu Indonesia	Eksplorasi & Produksi Minyak Gas	1.510	305	2.210	0	780	-2.65
9.	PT. Elnusa Tbk	Jasa Survey Seismic, Logistic Base, Telekomunik	391	358	465	372	19	19
10.	PT.Pertamina Hulu Rokan	Eksplorasi & Produksi Minyak & Gas	785	-	-	-	-	-
11.	PT.Pertamina Power Indonesia	Produksi Tenaga listrik	115	101	0.04	0	-1.5	-1.7
12.	PT. Nusantara Regas	LNG regasification	241	277	683	569	54	49
13.	PT.Perusahaan Gas Negara Tbk	Perdagangan Minyak & Gas Bumi	7.939	8.183	3.870	3.571	305	197
14.	PT. Kilang Pertamina Internasional	Produksi, Minyak, Gas Bumi & Energi Baru	1.84	-	-	-	0.01	-
15.	PT.Pertamina Patra Niaga	Jasa Perdagangan & Industri	869	915	1.572	1.391	36	84
16.	PT.Pertamina Retail	Penyalur Bahan Bakar	203	151	903	892	14	11
17.	PT.Pertamina Trans Kontinental	Jasa Pelayaran & Maritim	308	287	144	133	20	14
18.	PT. Pertamina Lubricants	Pengolahan & Pemasaran Pelumas	417	501	778	719	125	134
19.	PT. Pertamina Internasional Shipping	Jasa Pelayaran Komoditi Minyak - Gas	296	209	405	100	53	15

No	Company Name	Business Fields	Total Assets 2018	Total Assets 2017	Operating Revenues 2018	Operating Revenues 2017	Profit 2018	Profit 2017
20.	PT.Asuransi Tugu Pratama Indonesia Tbk	Jasa Pelayaran Komoditi Minyak - Gas	1.204	1.092	179	183	18	15
21.	PT. Pertamina Pedeve Indonesia	Jasa Asuransi	62	71	8	15	6	35
22.	PT.Patra Jasa	Penyertaan Modal	241	236	98	76	9	3
23.	PT.Pelita Air Service	Jasa Pelayanan	60	66	49	57	- 0.6	9
24.	PT.Pertamina Bina Medika	Jasa Transportasi Udara	106	111	91	99	0.6	3
25.	PT.Pertamina Training & Consulting	Jasa layanan Kesehatan	40	41	112	106	3	4

Source : PT.Pertamina (Persero) Annual Report, 2018.

In 2018, Pertamina has carried out a company performance assessment based on the Superior Performance Assessment Criteria with criteria adopted from the “Malcolm Baldridge Criteria For Performance Excellence” conducted by the BUMN FEB Assessor.

The assessment process includes clarification, verification and site visit activities from 6 (six) main focuses of the Superior Performance Assessment Criteria, namely :

a. Leadership
b. Strategic Planning
c. Customer Focus
d. Workforce Focus
e. Operation Focus
f. Results

The Superior Performance Assessment Criteria BUMN is a tool that can be used to assess or measure all elements of the company’s management system and the factors for improving processes as well as improving results as a consideration when conducting an assessment. Based on the results of the 2018 BUMN Superior Performance Assessment Criteria, Pertamina obtained a score of 755.75 in the “Industry Leader” category, an increase compared to the previous year (in 2017) which was 739.50.

Pertamina as a national energy company supports and is fully committed to the development of New and Renewable Energy. As regulated in Government Regulation Number 79 of 2014 concerning National Energy Policy, the government sets the target of the National Energy Mix in order to realize National Energy security, where the proportion of New and Renewable Energy will gradually increase, namely 5% in 2015, 23% in 2025, and 31% in 2050. Pertamina’s New and Renewable Energy with the most significant development progress is geothermal energy which is managed by PT. Pertamina Geothermal Energy.

4.2. The CSR Program

BUMN Minister Regulation No.4 of 2007, namely CSR fund obtained from the company’s profit of 4% after tax is determined in the General Meeting of Stakeholders (GMS). CSR fund is used for partnership programs of 2% and community development of 2%. The Partnership Programs are used to increase the economic activities of small businesses and social empowerment of the community so that they become strong and independent. The Partnership

Programs are real embodiment of the synergy's results from empowerment and independence of community. In addition, Pertamina provides loans or revolving fund to Pertamina's partnership, namely individuals with a cluster system or group given capital for Small and Medium Enterprises (SMEs). The capital can be used for many activities such as exhibition activities, training, workshops and the other activities. Pertamina has implemented the partnership programs since 1993.

Table 4.2.1. The Realization of Partnership Programs Fund

No	Type of business	The Realization ofPartnership Programs Fund (% of total realization)
1	Industrial Sector	5.8
2	Trade Sector	11.1
3	Agriculture Sector	2.2
4	Animal Husbandry Sector	4,3
5	Plantation Sector	58.9
6	Fisheries Sector	15.2
7	Service Sector	2,4
8	Other Sectors	0.1
	Total	100.0

Source : PT.Pertamina (Persero) Annual Report, 2018.

Community Development is intended to provide logistical fund to community which affected by the earthquake that occurred on 5 August 2018 in Lombok (www.pertamina.com). These natural disasters have a great impact on the surrounding community. One of Pertamina's programs in improving the quality of education for the younger generation is Sobat Bumi scholarships which is given to the student clever. In addition , Sobat Bumi scholarships are given to athletes, people with disabilities, children whose parents have had work accidents and recipients in Eastern Indonesia. One of Pertamina's health programs is Pertamina Sehati which includes the revitalization of posyandu that aimed for pregnant, breastfeeding, infants and toddlers. Pertamina Sehati has a target of 0.08 % to maternal mortality ratio in 2020. There are two (2) programs carried out by Pertamina in implementing nature conservation, namely the Mangrove and Biodiversity Planting Program. The well Mangrove Planting Program can be used as a source of livelihood for citizen around the area and agro-tourism. Another program is Biodiversity which aims to preserve and increase natural wealth in the form of flora and fauna in Indonesia.

Table 4.2.2. The Realization of Community Development Fund

No	Type of Help	The Realization of Community DevelopmentFund (% of total realization)
1	Natural Disaster	4.0
2	Education and Training	24.4
3	Community Health	10.9
4	Public Infrastructure	34.9
5	Place of Worship (Waqaf& ZIS)	19.1
6	Nature Conservation	1.9
7	Poverty Alleviation Social	4.9
	Total	100.0

Source : PT.Pertamina (Persero) Annual Report, 2018.

5. CONCLUSION :

BUMN Ministerial Regulation No.4 of 2007 namely CSR fund obtained from the company's profit of 4% after tax is determined in the General Meeting Stakeholders (GMS) used for partnership programs of 2% and community development of 2 %. CSR can provide added value to company by informing profits as the company performance in achieving sustainable business. CSR can increase company value, where social aspects become one of the factors that used in arranging the company's business strategy. In addition, CSR has a corporate voluntary program by showing the company's concern for social issues that occur and assist in solving community problems.

The Limitation of Research is the limited time to research directly in the field because of the Covid Pandemic. The suggestions for conducting future research is cost or benefit analysis can be used as a strategic tool for optimizing company activities. The implementation of benefit analysis effectively, managers must consider the responsibility of the company as a different service and analyze the demand and supply. By analyzing the right condition of supply and demand, the manager can make decision strategically or economically. The cost analysis can be used for further research as a tool of decision making in the company's strategy.

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13 LSTM Algorithm Analysis of Banking Sector Stock Price Predictions

Rina Nopianti [1] (0812 8320246), Andreas Tri Panudju [2], Angrian Permana [3], Leni Triana [4]

[1]Accounting Department, Bina Bangsa University,
[2]Industrial Engineering, Bina Bangsa University,
[3,4]Management Departement, Bina Bangsa University,
rinanopianti.binabangsa@gmail.com,
Panudju2002@gmail.com, mr.angrianpermana@gmail.com, lenitriana.binabangsa@gmail.com

Abstract

Investing, buying or selling on the stock exchange demands data analytical expertise and skill. Because the stock market is so dynamic, it takes data modelling to predict stock prices accurately. Machine learning can currently process and forecast data with high accuracy. We proposed using the Long-Short Term Memory (LSTM) algorithm to model data to anticipate market prices. This study's primary goal is to assess the machine learning algorithm's accuracy in forecasting stock price data and the optimal model construction epochs. The RMSE value of the LSTM method and the data model obtained the variation of the epochs value.

Keywords: *LSTM Algorithm, Stock Price, Analysis Prediction, Machine Learning*

INTRODUCTION

A country's monetary policy has a significant impact on its economy. This financial instrument facilitates the purchase and sale of securities and serves as a source of funds for business and investment. Modal is a significant economic driver in some countries with a market economy, providing alternative funding for businesses. Besides that, the business now sells Bruto Produk (PDB). Thus, increasing PDB can help a developing country's economy (Nathaniel & Butar Butar, 2019).

Shares involve companies or business entities in the capital market (Rustam et al., 2018). The banking industry has solid and stable prospects year after year. In Forbes 2000 The World's Biggest Companies, three state-owned banks are listed: Bank Rakyat Indonesia, Bank Negara Indonesia, and Bank Mandiri. Due to daily fluctuations in stock prices, investors should pay attention and check historical banking data as a strategy for trading. This is very important because investors can assess the possible stock price of the company. In addition, investors can analyze the fundamentals of future investment banks. So, forecasting or forecasting methods are the best way to complete the analysis(Zhang et al., 2017).

There are many approaches to predicting stock prices. Methods for predicting stock prices include machine learning. Machine learning is a part of AI that aims to improve knowledge or performance (Cavalcante et al., 2016). Recurring Neural Network (RNN) is a machine learning algorithm. RRN is quite good at forecasting time series data (Kwang Gi Kim, 2019). The Short Term Memory Algorithm (LSTM) is based on the RNN algorithm and can extract information from data (Zhang et al., 2017).

Predicts models with LSTM algorithms for some variation of the times. Using 20 epochs, MSE is 0.00019 and RMSE is 0.014 (Fauzi, 2019) . Based on the variety of times, MSE and RMSE values have not changed much. (Chen et al., 2015) use three stages of prediction: preprocessing, data training, and testing. The RNN approach is not good at predicting stock prices. MSE values increase with various data used in SVM. LSTM generates the same MSE value even when using different data ranges (Dwiyanto et al., 2019). With small error numbers, LSTM can overcome long-term dependency and accurately predict stock prices.

As such, the research will include preprocessing, LSTM data modelling, data training, data testing, and data visualization. Initially, the share data of state-owned banks (BRI, BNI, BTN, and Mandiri) was obtained from yahoo finance. Stock data is 2016-2020. The second phase involves sharing training and testing data, with 80% (1006 data) going to training and 20% (251 data) to be tested. We tested Adam, RMSProp, and SGD. The trial also used epochs 25, 50, 75, and 100. The final stage displays the trial data as training, actual, and predictable.

RESEARCH METHODE

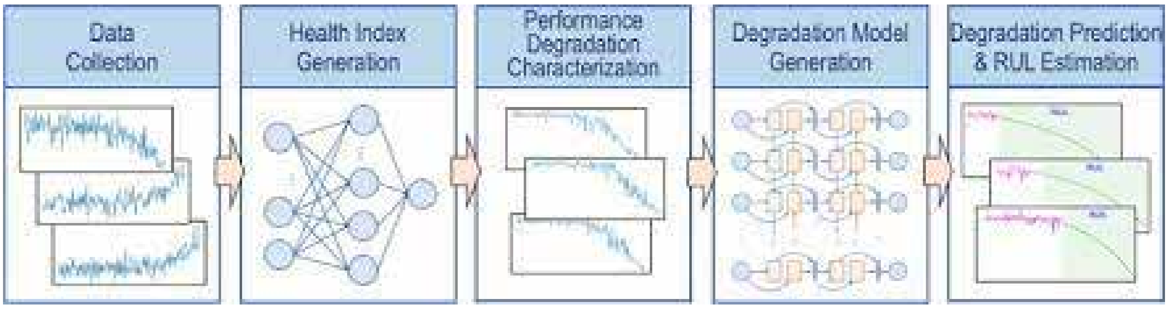


Figure 1. Data Processing System Design

Dates are sourced from Yahoo Finance and include BRI, BNI, BTN, and Mandiri from January 2016 to December 2020. Data includes date, price, volume, closing adj, and plit shares. Data will be used in preprocessing data segmentation. After that, the LSTM model is used, which is a type of Recurring Neural Network (RNN). After data modeling, data training and data testing were conducted by 80% and 20% respectively.

Data Collection

Tabel 1. BRI Stock Data

Date	Open	High	Low	Close*	Adj. Close**	Volume
27/12/202	4.380	4.440	4.380	4.430	4.263,68	56.465.900
26/12/2020	4.420	4.450	4.400	4.410	4.244,43	50.234.000
23/12/2020	4.450	4.470	4.360	4.450	4.282,93	123.276.700
06/01/2016	2.310	2.325	2.300	2.305	1.334,90	65.091.500
05/01/2016	2.320	2.340	2.315	2.320	1.343,59	49.569.000
02/01/2016	2.305	2.345	2.305	2.330	1.349,38	45.155.000

Yahoo Finance has banking stock statistics for BRI, BNI, BTN, and Mandiri. Date, open, close, high, low, close adj, volume column taken. When the stock market opens, the date is the date, month, and year for stock data. Open is the stock price data for the first day of trading. Daily price changes to sell or buy shares rationally. Close is the stock price at the end of the trade. Adj Close is the closing stock price that affects dividends and stock splits. The total number of shares or lots in a given period. The study used the daily closing stock price as a reference or data input for training and testing.

Data Preprosesing

The process of retrieving data in yahoo finance will be segmented or grouped in the data preprocessing step. Bank data is 1257 rows and 7 columns.

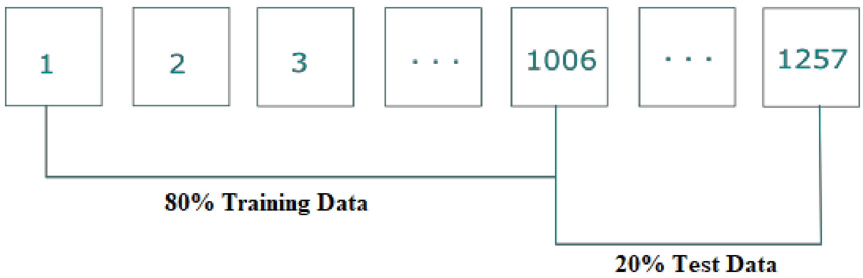


Figure 2. Segmentation of Training Data and Test Data

LSTM Model Design

Long Short Term Memory (LSTM) is a type of RNN used to solve hidden layer problems. The LSTM algorithm works by incorporating non-linear and dependent controls into an RNN cell (Gao et al, 2017), while maintaining a gradient of the destination function. LSTM overcomes vanish gradients or states where the gradient is 0 or close to 0. (Pulver &Lyu, 2017). That is, it takes into account past and present data. LSTM can record long-term reliance on efficiency.

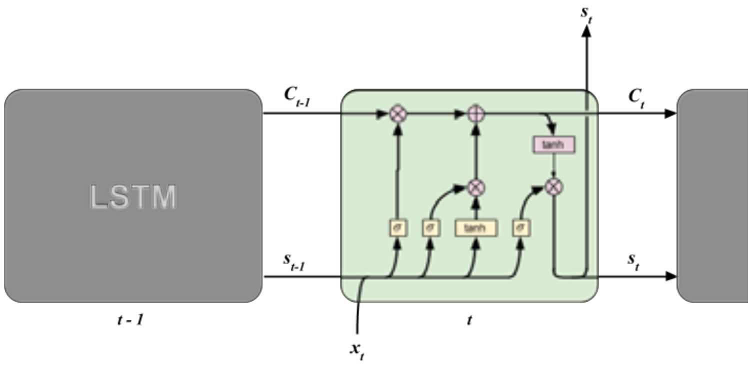


Figure 3. Long Short Term Memory Algorithm Design

In figure 3, it appears that LSTM has 3 gates including:

- Forget gate (ft) is used to determine the information to be eliminated from the cell using the sigmoid layer by activating the Relu function.
- Input gate (it) is used as a tool to forward information from the sigmoid layer that is done at the renewal and at the stage of the layer will be changed a vector to be updated.
- Output gate is used to display the contents of memory cells in the LSTM output process.

The initial stage in the LSTM method is to forget the information from C_{t-1}. This gate reads the values S_{t-1} and *Xt* and returns a value between 0 and 1 for each element in C_{t-1}. It is formulated, it is as follows:

$$f_t = \sigma (W_f \, . \, [S_{t-1} , X_t] + b_f) \; \ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

It is possible to store temporary subject gender information in element C_{t-1} to use the correct pronouns. The previous subject in C_{t-1} can be omitted from Ct1.

The input gate determines which values to update. Create a new context vector candidate for the layer. So it will be combined between the two for further context updates. So, in this example, the process is:

$$i_t = \sigma (W_i . [S_{t-1}, X_t] + b_i) \quad (2)$$
$$\tilde{C}_t = tanh (W_c . [S_{t-1}, X_t] + b_c) \quad (3)$$

When it will be done to update the old context C_{t-1} into the new context C_t. To eliminate things that have been decided then the process of forget gate (*ft*) in the equation (1) multiplied by the old context in the equation (2) and equation (3). Then, a new equation will be obtained as follows:

$$C_t = ft * C_{t-1} + i_t * \tilde{C}_t \quad (4)$$

In the output gate process, updates will be performed on the cell and sigmoid layer to decide what parts of the context will be generated. So that the following equation will be obtained

$$o_t = \sigma (W_o . [S_{t-1}, X_t] + b_o) \quad (5)$$
$$S_t = O_t * \tanh (C_t) \quad (6)$$

Where for sigma (σ) is a sigmoid activation function with a range of values between -1 and 1 then *tanh* is a target activation function with a value (-1,1) while *Wt, Wi, Wc, Wo* is the matrix weight and for is the previous hidden state and *bt, bi, bc, bo* is a vector can.

RESULTS AND DISCUSSIONS

Discussion of the study findings using the SOE banking dataset from 2015 to 2019, with 80% training data and 20% testing data focusing on stock data. The LSTM algorithm is separated into various processes using Adam, SGD, and RMSprop optimizers with variations of 25, 50, 75, and 100 epochs.

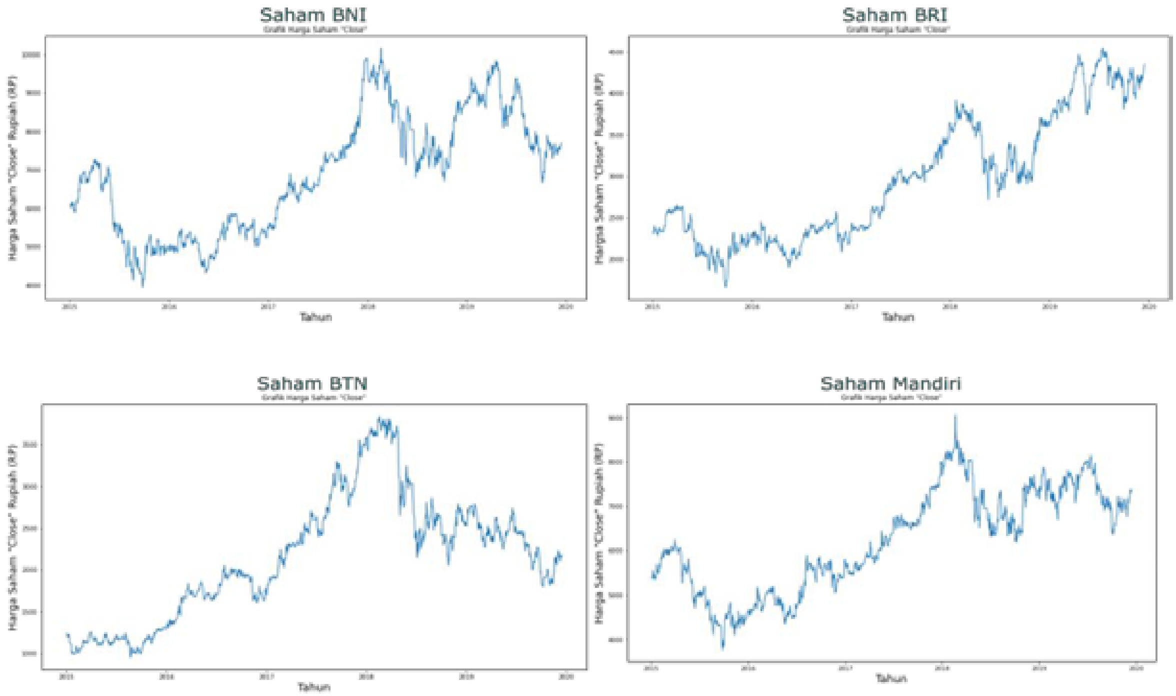
Banking Stock Dataset

The data used in the study was sorted from January 1, 2016 to December 30, 2020. The data analysis procedure that uses machine learning is focused on the price closing column, where this is the daily closing price for each stock data.

Table 2. Close Banking Stock Data

Date	BRI-(Close)	BNI-(Close)	BTN-(Close)	Mandiri-(Close)
27/12/202	4.430	7.925	2.150	7.750
26/12/2020	4.410	7.950	2.130	7.800
23/12/2020	4.450	7.925	2.120	7.725
06/01/2016	2.305	6.025	1.195	5.362
05/01/2016	2.320	6.025	1.220	5.400
02/01/2016	2.330	6.100	1.225	5.412

Figure 4. Actual Data of BNI, BRI, BTN and Mandiri Shares



The data in this study is displayed as a graph with horizontal lines representing close stock prices and vertical lines representing the year. The share prices closed the four lowest banks in 2016 and the highest in 2019. However, in contrast to the other four banks, BRI's share price continued to rise from 2016 to 2020, from about Rp. 1,300 to Rp. 4,500 per share. The other three banks also had their ups and downs, resulting in average prices or in the middle of the range.

Comparing Between Three Optimization Models

Table 3 examines optimization models, age variations, losses, and accuracy using stock data from four banks. The greater the value of the times, the lower the value of the resulting losses, which affects the accuracy of the optimization model. However, experimental data from four banks showed that each optimization model produced different accuracy statistics, requiring a separate investigation.

First, the SGD optimization model data shows it. In experiments, greater age values resulted in reduced loss rates and higher accuracy. Although a certain value displays an up and down value. This data shows that when epochs 100, there is a loss of 0.0013 in BRI bank data. The best accuracy of this optimization model is 61%. This is shown in three banks with a value of 100, namely BRI, BNI, and Mandiri, but not in BTN.

Second, Adam's optimization model shows it. The greater the value of the times, the lower the rate of loss. These second data losses are substantially smaller than the losses of the SGD optimization model. As can be seen from the four banks, the accuracy is always increasing, and practically everything is above 90%. The value of 25 gives BRI the lowest accuracy percentage of 89 percent, while the value of 100 gives BRI and Mandiri the highest accuracy rate of 95 percent.

Third, the RMSprop model shows it. By comparison, the trial losses of four small banks relative to the two optimization models. However, accuracy data varies by age. This optimization model can be inaccurate if the times variation is large enough.

Table 3. Stock Loss and Accuracy Data Testing

Optimization Model	Epochs	BRI		BNI		BTN		Mandiri	
		Loss	Accuracy	Loss	Accuracy	Loss	Accuracy	Loss	Accuracy
SGD	25	0,0014	57%	0,0023	57%	0,0021	49%	0,0021	55%
	50	0,0015	52%	0,0022	52%	0,0017	61%	0,002	56%
	75	0,0014	57%	0,0022	57%	0,0017	60%	0,0016	59%
	100	0,0013	61%	0,0019	61%	0,0017	58%	0,0017	61%
ADAM	25	4,28E-04	89%	6,27E-04	90%	5,40E-04	90%	6,43E-04	92%
	50	4,75E-04	92%	5,48E-04	91%	4,18E-04	91%	6,00E-04	92%
	75	3,76E-04	93%	5,89E-04	92%	3,95E-04	92%	5,09E-04	94%
	100	3,44E-04	95%	4,97E-04	92%	4,31E-04	92%	4,92E-04	95%
RMSprop	25	5,51E-04	95%	8,11E-04	92%	7,14E-04	84%	7,54E-04	86%
	50	4,67E+00	85%	6,54E-04	91%	5,90E-04	86%	6,85E-04	91%
	75	4,48E+00	53%	5,99E-04	79%	5,31E-04	90%	5,95E-04	88%
	100	4,44E+00	46%	5,52E-04	78%	4,91E-04	92%	5,63E-04	86%

Table 4 shows how the number of epochs, optimization models, computing times, and RMSEs affect data during training and testing. The greater the value of the times, the more computing time is generated. The RMSprop optimization model in Bank Mandiri's shares calculates in 103 seconds when epochs 25 years. The longest calculation time is 619 seconds in epochs 100 in BRI bank stocks.

However, when evaluated from RMSE data, values vary, with some showing up and down trends, and others showing monotonous declines. Monotonous declines indicate more accurate prediction data. First, in the SGD optimization model, RMSE data decreases, but not always, as stock data increases. The RMSprop optimization model is similar. However, because the RMSE data adam optimization model is more stable or monotonously lowered, the resulting prediction model is more accurate.

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Table 4. Computing Time Stock Data Testing and RMSE

Optimizer	Epochs	BRI		BNI		BTN		Mandiri	
		Computing Time	RMSE	**Computing Time**	RMSE	**Computing Time**	RMSE	**Computing Time**	RMSE
SGD	25	138	149,06	125	325,82	113	141,51	128	240,71
	50	274	162,73	249	316,28	241	108,26	253	236,15
	75	423	145,18	360	317,16	313	111,46	387	214,76
	100	619	134,99	501	291,62	493	116,94	490	219,97
ADAM	25	131	79,17	122	140,22	109	62,74	126	155,72
	50	253	75,71	220	167,81	225	64,16	262	126,21
	75	382	65,12	383	139,12	293	57,86	352	121,97
	100	524	57,31	505	140,24	433	48,32	447	116,64
RMSprop	25	125	57,39	114	136,04	113	105,49	103	146,41
	50	232	83,11	211	137,85	204	56,91	243	114,83
	75	394	179,51	376	194,68	311	51,44	329	127,91
	100	494	219,57	486	194,77	430	48,82	475	140,15

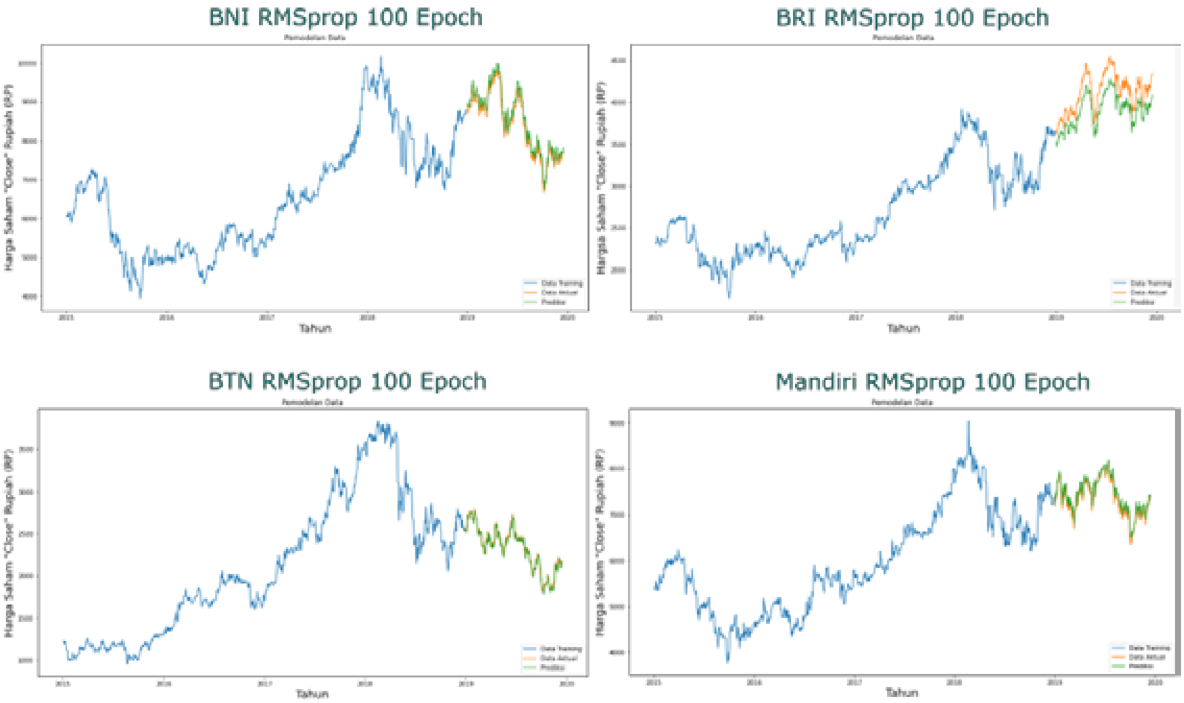

Figure 5. BNI, BRI, BTN and Mandiri Stock Prediction Data with Adam optimization model with 100 epoch

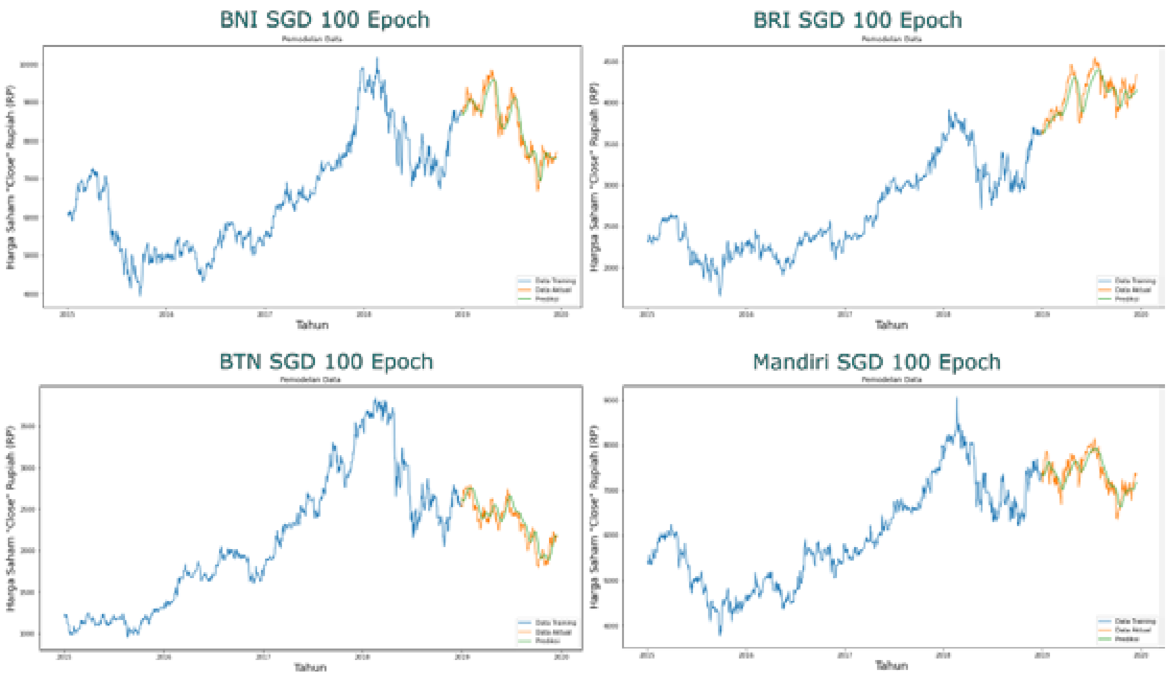

Figure 6. BNI, BRI, BTN and Mandiri Stock Prediction Data with RMSprop optimization model with 100 epoch

This is shown in Figure 6 using the RMSprop optimization model with epochs 100. The four charts show the difference between the actual and expected bri stock prices. Table 4 shows that bri bank's RMSE is 219.57, which is very high. As a result, the predicted and actual data lines are few. These estimates are less accurate in forecasting.

The experiment used an SGD optimization model with 100 epochs shown in Figure 7. Table 4 shows that the prediction model is less accurate between 100 and 300 RMSE. That is, the SGD optimization model is not accurate enough to check close stock data.

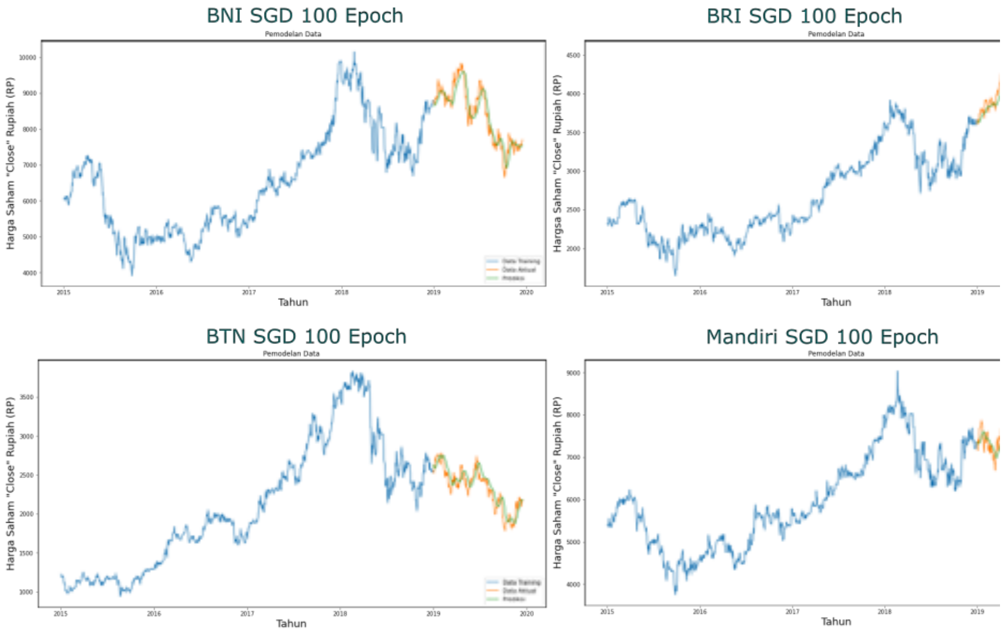

Figure 7. BNI, BRI, BTN and Mandiri Stock Prediction Data with SGD optimization model with 100 epochs

CONCLUSION

Optimization models, age variations, computing time, loss and accuracy values, and RMSE values were all examined in the study. The higher the value of the times, the longer it takes to complete the LSTM algorithm. Optimization models affect the effect of age variations on loss values and accuracy. According to Adam's optimization model, the higher the times, the lower the losses. The lower the value of the loss, the better the accuracy of the prediction of the stock data. RMSE is also substantially influenced by age value variations and optimization models, but Adam's model with age variations features the most stable RMSE decline from low to high age. Thus, utilizing Adam's optimization model on the LSTM algorithm results in a monotonously declining RMSE and high stock prediction value.

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14 Bumdes's Efforts to Support the Implementation of Villages SDGS Program

Ni Kadek Sinarwati[1]; ADI, Nyoman Rasmen[2]
[1]Faculty of Economics, Universitas Pendidikan Ganesha, nikadeksinarwati@undiksha.ac.id,
[2]Faculty of Economic and Business, Universitas Pendidikan Nasional Denpasar, rasmenadi@undiknas.ac.id

Abstract

Village Owned Enterprises (BUMDes) were established with the main aim of improving the welfare of rural communities. The presence of BUMDes together with other microfinance institutions in the village such as cooperatives, Village Credit Institutions made efforts to develop villages. Sustainable Development Goals (SGDs) were implemented starting from the village level. Village development support through village funds was expected to be able to be enjoyed by all village communities, and become the background for the SDGs implemented at the village level called the Village SDGs. There were eighteen indicators for implementing the Village SGDs program. Efforts made by BUMDes to support the Village SDGs program implementation were serving the basic needs of rural communities based on village potential, providing soft loans to micro-enterprises in the village, overcoming waste problems by empowering women in villages, establishing partnerships with bank financial institutions and farming communities, conducting market innovations village and village pawnshops to reduce unemployment.

Key words: BUMDes, Villages, Sustainable, Development, Goals

Abstrak

Badan Usaha Milik Desa (BUMDes) didirikan dengan tujuan utama meningkatkan kesejahteraan masyarakat desa. Kehadiran BUMDes bersama dengan lembaga keuangan mikro lainnya di desa seperti koperasi, Lembaga Perkreditan Desa melakukan upaya-upaya membangun desa. Tujuan Pembangunan Berkelanjutan/Sustainable Development Goals (SGDs) dilaksanakan mulai dari tingkat desa. Dukungan pembangunan desa melalui dana desa diharapkan mampu dinikmati oleh seluruh masyarakat desa dan menjadi latar belakang SDGs dilaksanakan di tingkat desa yang disebut SDGs Desa. Terdapat delapan belas indikator implementasi program SGDs Desa. Upaya-upaya yang dilakukan BUMDes mendukung implementasi program SDGs Desa yaitu melayani kebutuhan pokok masyarakat desa berdasarkan potensi desa, memberikan pinjaman lunak kepada pelaku usaha mikro di desa, mengatasi masalah sampah dengan memberdayakan perempuan di desa, menjalin kemitraan dengan lembaga keuangan bank dan komunitas petani, melakukan inovasi pasar desa dan pegadaian desa untuk mengurangi pengangguran
Kata Kunci: BUMDes, Tujuan, Pembangunan, Berkelanjutan, Desa

INTRODUCTION

Sustainable Development Goals/SDGs were the development agendas of countries around the world set from 2016 to 2030. This agenda was a continuation of the Millennium Development Goals/MDGs program which ended in 2015. The ultimate goal to be achieved from the declaration of the SDGs was the life of a just, and prosperous world community. The achievement of a prosperous community life as the ultimate goal of economic development requires the creation of the main conditions, namely: an economy that grows sustainably, a solidly created economic sector, and inclusiveness of socially just economic development (Sutopo Agus (Badan Pusat Statistik), 2014). The Government of the Republic of Indonesia has a strong commitment to implementing the SDGs program as evidenced by the issuance of Presidential Regulation Number 59 of 2017 which regulates Procedures for Achieving the Sustainable Development Goals stages of achieving SDGs that were aligned with national development targets.

The Sustainable Development Goals aim to maintain a sustainable increase in the economic welfare of the community, maintain the sustainability of the social life of the community, maintain the quality of the environment as well as inclusive development and the implementation of governance that was able to maintain the improvement of the quality of life from one generation to the next (Yusuf Sukman, 2017). The implementation of the Sustainable Development Goals in Indonesia was carried out starting from the central level to the regional level even up to the village level which was called the Village SDGs. The SDGs indicators to be achieved at the village level were: 1). village without poverty; 2). village without hunger; 3). healthy and prosperous villagers; 4). quality village education; 5). women's involvement in village development; 6). clean water and proper village sanitation; 7). renewable energy available in the village; 8). village economy grows evenly; 9). innovation and village infrastructure as needed; 10). no inequality in the village; 11). comfortable and safe village settlements; 12). Environmentally conscious village consumption and production, 13). Climate change responsive village; 14). Villages care about marine ecosystems; 15). Villages care about terrestrial ecosystems; 16). Village of peace and justice; 17). Collaboration to achieve Village development; 18). Dynamic Village Institutions and Adaptive Village Culture (Taufik, 2020).

The village is a legal community unit that has territorial boundaries that have the authority to manage government affairs, the needs of the community in its territory based on community initiatives, origin rights, and/or traditional rights that are recognized and respected in the government system of the Unitary State of the Republic of Indonesia (Undang-Undang Republik Indonesia No. 6 Tahun 2014 Tentang Desa, 2014). Chapter X Article 87 of the Village Law states that Villages can establish Village-Owned Enterprises (BUMDes). BUMDes was a legal entity owned by the village, which was established with two main considerations, namely managing the potential of the village and based on the needs of the village community. BUMDes has two missions, namely 1) an economic mission to improve the village economy and 2) a social mission to solve social problems in the community, so that BUMDes were called social entrepreneurial institutions. As a social entrepreneurship institution, BUMDes should not be a competitor and should not be a predator of rural community businesses. Community and village governments interest in Indonesia to establish BUMDes was increasing from year to year. Data on the development of the number of BUMDes in Indonesia from 2014 to 2020 is presented in Table 1

Table 1
Development of number of BUMDes in 2014-2020

Year	Number of BUMDes	Percentage Enhancement%)
2014	8.189	
2015	14.463	76,61
2016	28.595	97,71
2017	43.339	51,56
2018	49.213	13,55
2019	51.091	3,82
2020	51.134	0,08

Source: Ministry of Village, 2020

Data Table 1 showed that the number of BUMDes has increased from 2014 to 2020. The increase in numbers was due to the availability of a legal umbrella for the establishment of BUMDes. Another reason for the increase in the number of BUMDes was that the government, especially the Ministry of Villages, Development of Disadvantaged Regions and Transmigration, pays serious attention to the development of BUMDes. The Ministry of Village's serious concern is the BUMDes Revitalization program and the Village Cash Intensive Work program. The BUMDes revitalization program was carried out with activities to increase capital, increase capacity and strengthen BUMDes institutions (Rahmawati, 2020). To describes BUMDes's effort in supporting the implementation the village SDGs program was the purpose of writing this article.

LITERATUR REVIEW

The Village SDGs was an integrated effort to accelerate the achievement of the Sustainable Development Goals through the realization of eighteen Village SDGs implementation indicators. The situation and conditions of the village that were expected to be realized were 1). Each village can find out the condition of each village 2). The recommendations for all medium-term and annual planning refer to the SDGs data, and were directed to achieve the SDGs in villages, sub-districts, districts/cities, and provinces. Targets set 1). There was a direction of village development planning based on factual conditions 2). Intervention of local government (provincial, district/city) and private sector to support village development. The final target set was the achievement of sustainable national development goals/national SDGs (Taufik, 2020). The achievement of the final target of the national SDGs starts from the Village SDGs by involving the role of BUMDes as one of the economic actors and social entrepreneurs in the village.

BUMDes was a village economic institution that receives capital participation from the village government. BUMDes, especially those engaged in savings and loan businesses, was one of the microfinance institutions in the village, along with other microfinance institutions such as savings and loan cooperatives, the Village Credit Institution (LPD) as the basis for village economic development. The presence of BUMDes was expected as a way to achieve economic growth in the village (Swandari et al., 2017). OVOP (One Village One Product) institution similar to BUMDes was able to increase the independence and creativity of rural communities in the city of Jambi (Rosmeli, 2018). The presence of BUMDes in Karangansem Regency was able to reduce population movement from villages to cities and was able to create jobs in villages(Ni Kadek Sinarwati, 2019). A different finding was conveyed by (Wicaksono et al., 2019) who examined village funds and BUMDes in Indonesia which stated that the overall presence of BUMDes have no impact on employment in villages. BUMDes resources consisting of the amount of capital, the number of workers and the quality of the workforce contributed positively but not significantly to the craftsmen in Karangasem Regency. The contribution of BUMDes which has not been significant to entrepreneurship, performance and welfare because the existence of BUMDes was not widely known by the community/craftsmen, there were still BUMDes that used the village office as the BUMDes office so that only people who came to the village office know of the existence of BUMDes (Ni Kadek Sinarwati, Marhaeni AAIN, I Made Suyana Utama, 2020)however, this problem still occurs in Bali Province. Data from its Industry showed a gap in SME performance between cities, with the lowest performance of MSE in Karangasem Regency. The objective of this research was to analyze: the effect of Village Own Enterprise (VOE. The presence of BUMDes was expected to improve the welfare of rural communities and reduce inequality in urban and rural development. Efforts to achieve goals can be carried out through synergies between BUMDes and small micro-enterprises owned by the community in the village. The institutionalization of BUMDes was able to become a driver of village economic potential in poverty alleviation efforts (Sayuti, 2011). BUMDes in Gunung Kidul District, Yogyakarta Regency were found not to provide significant benefits to the welfare of residents directly, but BUMDes were found to bring changes in the social and economic fields(Anggraeni, 2016).

METHOD

This research is a literature review study. The data of this study were quantitative and qualitative data. The quantitative data was the number of BUMDes and number of BUMDes who had registered in village ministry website in Indonesia. The qualitative data was the BUMDes's effort to support the implementation of SDGs program. Data was collected through documentation methods and literature review by collecting information related to SDGs and BUMDes program obtained through articles in journals, books, newspapers, webinar materials, official ministerial circulars and leaflets obtained through the management WA Group and BUMDes academic forums. The data were then analyzed using descriptive analysis, by describing the BUMDes's effort to support the implementation of village SDGs program.

RESULTS AND DISCUSSION

BUMDes Efforts in Supporting the Village SDGs Program

Grounding the Global SDGs at the village level was motivated by the increasing number of village funds every year so that it was hoped that these funds can be enjoyed by all villagers, especially the lowest class. Village funds were expected to have an impact on improving the economy and improving the quality of human resources in the village. There were four types of villages according to the Village SDGs, namely: 1) Villages without poverty and hunger (indicators 1 and 2); 2) Health care village (indicator 3,6,11); 3) Villages that care about education (indicator 4) and 4) Villages that were friendly to women (indicator 5). Examples of implementing the Village SDGs were as follows, for example the first Village SDGs indicator was a village without poverty. The village target in 2030 was the poverty rate to reach 0 percent. The measurements used were the village poverty rate, the percentage of the population below the village poverty line and the percentage of families who have family assets. Indicators at the individual level were housing conditions, total family income in the last month and spending below the poverty line(Supraedi, 2020).

World bank data showed that poverty in Indonesia has increased by 3.5 percent due to the COVID-19 pandemic. At the village level, the increase occurred from 12.9 to 16.4 percent or an increase from 14.96 to 19.02 million people. Efforts that have been made to overcome the problem of increasing poverty in villages were to intensify 1.8 million hectares of agricultural land located in 3.2 million hectares of transmigration areas. Agricultural intensification was carried out in the areas of Mesuji Lampung, Telang Banuasing-Bangka Belitung, Malao-East Kutai, Boalemo-Gorontalo, Bungku-Central Sulawesi. This program received village fund support by involving BUMDes (Bisnis et al., n.d.). Indicators of the Sustainable Development Goals/SDGs at the village level that were observed involving the role of BUMDes include the participation of BUMDes in realizing villages without poverty, villages without hunger, healthy and prosperous villagers, clean water-worthy villages, partnerships for village development.

BUMDes's efforts in several villages to support the Village SDGs program include those carried out by BUMDes in Tajun Village in Buleleng Regency, Bali, conducting business activities in providing products for the needs of the Tajun village community, and managing clean water businesses. Another Tajun Village BUMDes business unit was to receive land and building tax payments, BPJS payments were an effort to support the SDGs program, the third indicator village was a healthy and prosperous village and the seventeenth indicator was partnerships to build villages. BUMDes in Tembok Village, Buleleng Regency, Bali in collaboration with the Petani Muda Keren community to help sell the villagers' agricultural products and reduce the dependence of villagers on the monopolistic practices of middlemen. This effort was a manifestation of the implementation of the tenth SDGs indicator, namely villages without gaps. The BUMDes collaboration with the Petani Muda Keren community was an effort to support the seventeenth SDGs indicator, namely partnering to build villages. The BUMDes Panggung Hardjo in Yogyakarta solves the village waste problem. The slogan of turning waste into a blessing was a form of support for the third village SDGs indicator, namely a healthy and prosperous village.

BUMDes Arta Dharma Duta in Menanga Village, Rendang District, Karangasem Regency collaborated with Republik Indonesia Bank through the Brilliant Village program as a form of implementing the seventeenth Village SDGs indicator, namely partnerships to develop villages. The development of Iyya Tekki BUMDes in Tebara Village, Sumbawa Regency was able to reduce poverty in the village. Village innovations carried out by involving BUMDes were: Development of Iyya Tekki BUMDes for the management of tourist destinations, development of tourist areas supporting Wee Boro lake, village pawnshops, village granaries, development of village markets and village cooperatives (Bira, n.d.). Poverty reduction data were presented in Figure 1

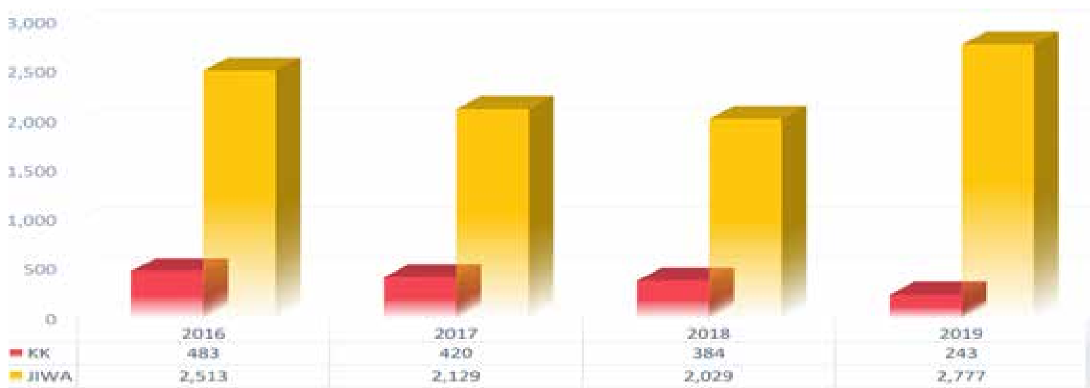

Figure 1
Poverty Reduction Impact of Village Innovation and Involvement of Iyya Tekki BUMDes
Source: R. Bira, 2020

Bina Usaha BUMDes in Rawaurip Village, Pangenan District, Cirebon Regency was supported by community service activities by lecturers from Padjadjaran University empowering young women and PKK women in the village to overcome the waste problem by establishing a waste bank(STAN, 2020). The BUMDes activity to establish a waste bank to solve the waste problem by involving young women and PKK women was an effort by BUMDes to support the village SDGs program, especially the fifth indicator, namely the involvement of village women. BUMDes Arta Krama Mandiri provides soft loans to micro-economic actors in Antiga Kelod village, so that with loans received from BUMDes, the community was free from moneylenders (Ni Kadek Sinarwati, 2019).

The high enthusiasm of BUMDes managers to strengthen BUMDes institutions after Government Regulation number 11 of 2021 registering to the Ministry of Village website showed a strong desire to build villages in realizing Village SDGs. Data for BUMDes that have registered on the Ministry of Village website to obtain a legal entity certificate were presented in Table 2

Table 2
Data of BUMDes and BUMDes Ma* Registered in Village Ministry website

BUMDes		BUMDes Ma	
The Number of Named Registered	**10.019**	The Number of Named Registered	**604**
Number of verified name	9.229	*Number of verified name*	120
Number of Revision	529	*Number of Revision*	476
Number of Final Name Verified	261	*Number of Final Name Verified*	44
Number of Legal Entity Registered	**743**	Number of Legal Entity Registered	**25**
Number of verified name	135	*Number of verified name*	0
Number of Revision	368	*Number of Revision*	17
Number of Final Name Verified	240	*Number of Final Name Verified*	8

Source: Ministry of Village, Update data 14th July 2021
*BUMDesMa is a group of BUMDes from more than one village

Government Regulation Number 11 of 2021 concerning BUMDes provides institutional strengthening that previously BUMDes were not in the form of a legal entity to become a legal entity (if you have registered on the Ministry of Village website and received an e-certificate from the Ministry of Law and Human Rights). Four months after the issuance of the Government Regulation concerning BUMDes, 19.60 percent (10,019/51.134) BUMDes have registered their names on the Ministry of Village website in order to obtain a legal entity certificate. The seriousness of the managers in developing the BUMDes business is a form of support for the acceleration of village development towards achieving the Village SDGs.

CONCLUSION

Countries in the world, including Indonesia, have agreed to set a Sustainable Development agenda that has been set from 2016 to 2030, known as the Sustainable Development Goals/SDGs. The Government of the Republic of Indonesia regulates the implementation of the SDGs through Presidential Regulation Number 59 of 2017. There were seventeen goals/indicators of achieving the SDGs. With regard to the increasing number of funds that have been handed over to the village through village funds, it was hoped that village funds can be enjoyed by all village communities to improve the welfare of all village communities. The Village SDGs were a means to realize the welfare of the entire village community. BUMDes, as social entrepreneurship in villages have made efforts to support the Village SDGs implementation program. Efforts made by BUMDes in order to support the Village SDGs program include managing village potential to meet the needs of village communities; provide soft loans to village micro-enterprises; overcoming the waste problem by empowering women in the village; establish partnerships with bank financial institutions and farming communities in developing villages; provide clean water; and carry out village innovations such as village markets and village pawnshops.

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15

Study of the Process and Development of Economic Opportunities of Pineapple Leaf Woven Fabric in Cijambe Regency, Subang, West Java Seen From the Interior Products Industry

Hayu Puspasari Saputri[1]
[1]Department of Interior Design, Petra Christian University, Siwalankerto 121-131, Surabaya, Indonesia
[2]Department of Interior Design, Petra Christian University, Surabaya, Indonesia
*Corresponding author: hayu.puspasarisaputri@gmail.com

Keywords: production, sustainability, pina fabric

Abstract: Indonesia is a tropical country that has abundant flora biodiversity. One of the plant that were able to grow well in Indonesia is Pineapple (Ananas Comosus). Indonesia also occupies the 6th position in the world based of the plantation area and the production of pineapples. Pineapple has many functions and uses. Most people only know pineapple plants as a food source, even though pineapple leaves also have considerable potential as fibre producing materials and can be used as an alternative processed. So far pineapple leaves have not been widely utilized commercially, especially in the interior field. In this research was conducted by observation methods, interviews and literature studies to obtain data on the fabric process and the development of economic opportunities for woven fabrics from pineapple leaves in order to be utilized as an eco interior product to the maximum and encourage innovation for interior products with certain markets. The result of the research process will be the design of concepts and product prototypes by utilizing pineapple leaf fibre material by sticking to the 17 Sustainable Development Goals, regarding sustainable cities and communities focusing on the use of local human resources as well as local materials.

1. INTRODUCTION

Indonesia is one of the tropical countries that have abundant flora biodiversity. One type of plant that could grow well in Indonesia is Pineapple (Ananas Comosus). Indonesia also occupies 6th place in the world based on the plantation area and the production capacity of pineapples. Pineapple production in Indonesia reached 1.84 million tons with a productivity speed of 117.5 tons per hectare. Along the Indonesian archipelago, pineapples can grow fairly easy but the largest pineapple production centres in Indonesia are in Lampung, Jambi, North Sumatra, East Java and West Java. Pineapple has many functions and uses. Most people know pineapple plants as a food source, even though pineapple leaves are also had considerable potential as fibre producing materials and can be used as alternative produce. So far pineapple leaves fibres have not been widely utilized commercially, especially in the interior field. There is an abundant supply of pineapple leaves waste that has a favourable selling value if used as a composite material and is very profitable for producers.

Every 3 months the pineapple plant will be replaced with a new one. This resulted in an abundant waste of pineapple plants. Pineapple plants annually produce harvestable leaves up to 125 tons per hectare, consisting of 40% green leaves (50 tons) and 60% wet stems (75 tons). From wet stems, it would be able to produce .5% (2,625 tons) dry fibre and 16% (12 tons) waste (Ludhiantora S, 2009). The waste produced by the pineapple plant leaves is then processed into fibre and then used as a craft material. Pineapple fibre itself has a strong character & aesthetic because of its shiny look and has economic value potential because the selling price of fibre is quite expensive which is Rp 115,000.00 / kg. Currently, the interior products industry has not used pineapple leaves as an alternative material in the manufacture of its products. It is considered very important to develop this pineapple leaf material in a more appropriate direction so that the utilization of this material can be done optimally, so it will be able to improve the public awareness of the potential that is available in the pineapple fibres. In addition, it is expected that this research will encourage the utilization of pineapple leaf waste to become a substitute product for fabric materials that are less environmentally friendly such as polyester to create a more sustainable environment.

Therefore, this study was done to explore the potential of pineapple fabric deeper. In addition, knowing the manufacturing process of woven fabric from pineapple leaves can increase the appreciation of the community for the products manufactured. In this particular research, the data was collected through observations, interviews and literature studies on the production of pineapple leaf fibre woven fabric and the development of economic opportunities for the object to be utilized as an eco-interior product to encourage innovation and utilization of fibre materials for a certain target market.

2. METHODS

Research on the study of processes and the development of economic opportunities of pineapple leaf woven fabric was carried out in Cijambe Regency, Bandung, West Java during the month of October in the year of 2021 using qualitative research methods. Qualitative research method is a research method used to describe and analyze phenomena, events, social activities, attitudes, beliefs, perceptions and people, both individually and in groups (Sukmadinata, 2009) This research is qualitative research that uses the Interview Literature Studies, and Observation Method. This method is used because this method can make it easier for the topic to be relevant to the needs of the user because it goes through the stages of understanding directly. Through this method, data obtained about the process of manifacturing woven fabric from pineapple fabric which will then be analyzed for their potential in the economic market.

2.1 Literature Studies

The first stage of research is literature studies. The purpose of this stage is to understand the initial basis that must be understood by researchers to conduct further learning on the topic discussed to be written and analysed. Literature studies are carried out by reading books, journals or articles related to research.

2.2 Interview

The second stage of the research process is the interview. After processing the data obtained through literature studies, the interview process is carried out to deepen the knowledge of researchers on the topics carried out. Through interviews can help researchers to understand design needs through the user's perspective.
The interviewee choosen for this research is the MSMEs Alfiber owner and their workers. The interview will be overviewing the processing stages of the fibre, the community around the MSME, and the economic potential of the products produced.

2.3 Observation

Observation is an important part of data collection. Observation means collecting data directly from the field (Semiawan, 2010). In the observation stage is also a process that was done through observing the object and then going through systematic, logical, objective, and rational recording of various phenomena in actual situations, as well as artificial situations (Kristanto, 2018). The key to the success of observation as a data collection technique is very much determined by the observer themself, because the observer sees, hears, smells, or listens to a research onjek and then he concludes from what he observes. Observers are the key to the success and accuracy of research results (Yusuf, 2014).

The observation subject in this research is the SME Alfiber worker, and the community surrounding it. It is done to understand more about the impact and how the product that was manufactured able to help the surrounding community.

2.4 Documentation

Documentation comes from the word 'document', which means written goods. Documentation method means the procedure of collecting data by recording existing data. Documentation methods are data collection methods used to trace historical data. Documents about people or groups of people, events, or events in social situations that are particularly useful in qualitative research (Yusuf, 2014).

Engineering or documentation studies is a way of collecting data through archival relics and includes books on opinions, theories, propositions or laws and others related to research problems. In qualitative research, the main data collection is due to the proof of the hypothesis proposed logically and rationally through opinions, theories, or laws, either supporting or rejecting the hypothesis.

The subject of the documentation is the fibre processing stages and also the workers of the MSME Alfiber. This process resulted in several videos and photos that were able to capture the real-time situation in the MSME Alfiber.

3. RESULTS AND DISCUSSION

Through research methods conducted produce data that can be processed to answer the main questions of this study.

3.1 Field Data

This research is a case study that facilitates attention to a case in an intensive and detailed manner, or in this case, is the target of the research:

Figure 1: Location of Research Site. Source: Google Maps

The target of the research is SMEs (Small and Micro Enterprises) in Cijoged Village, RT 1 RW 1, Cikadu, Cijambe Subang District, West Java, namely SMEs Alfiber. SMEs Alfiber is a Small Industry managed by Alan Sahroni who is engaged in the production of pineapple leaf waste treatment into strands - fibre strands (pineapple leaf fibre). and now it has developed in the process of making pineapple leaf fibre fabric. Pineapple leaf fibre can be used for various raw materials such as textiles, fashion, and crafts. Starting from concern for the environment of the area around the residence, where there is a lot of pineapple plant waste (pineapple leaves) that have not been utilized properly, then came the idea to establish a business oriented to the utilization and treatment of pineapple leaf waste under the name of Alfiber.

VISION

Making Subang Regency as a producer area of Pineapple Leaf Fibre and various typical products made from Pineapple Leaf Fibre.

MISSION

- Establishing cooperation with pineapple farmers in Subang Regency
- Increase the *added value* of pineapple leaves by processing them into pineapple leaf fibre products and into the final product.
- Introducing pineapple leaf fibre as a raw material for various textile, fashion and craft industry products that are environmentally friendly
- Expanding the market share of pineapple leaf fibre to various regions in Indonesia
- Processing pineapple leaf fibre into various craft products or creative industries.
- Creating jobs for the surrounding communities

3.2 Literature Studies

3.2.1 Natural Fibre

There are two types of fibre used as industrial raw materials, natural fibre and synthetic fibre. Synthetic fibers are fibers made by humans. Meanwhile, natural fibre (natural fibre) is the types of fibre as raw materials of the textile industry or others, obtained directly from nature.

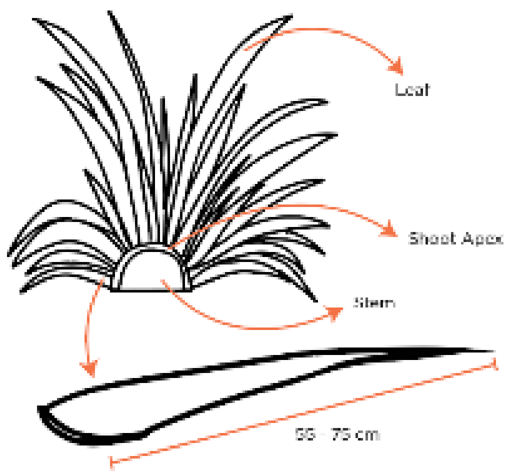
Based on its origin, natural fibers can be classified into several groups, namely fibre derived from animals (animal fibre), mining materials (mineral fibre) and plants (Kirby, 1963).

Natural fibers derived from animals, including wool, silk, cashmere, ilama and camel hair. Fibre derived from mining raw materials, such as asbestos fibers. While fibre derived from plants can be grouped again according to the origin of the fibre taken. Fibre taken from seeds (seed fibres), such as cotton fibre and kapok. Fibre taken from the stem (bast fibres), such as fibre jute, flax, hemp, and ramie. Fibre taken from leaves (leaf fibres), such as abaca, henequen, sisal, pineapple leaves and sansevieria. Chemically, all the fibre derived from plant main elements present in the fibre is cellulose, although other elements that vary in number are also contained in it, such as hemicellulose, lignin, pectin, ash, waxes and other substances (Kirby, 1963).

3.2.2 Pineapple Leaf Fibre

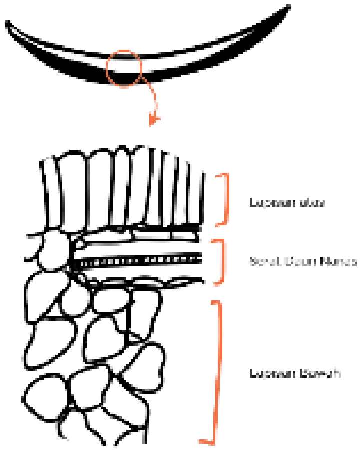
Pineapple-leaf fibres are one type of fibre derived from plants (vegetable fibre) obtained from the leaves of pineapple plants. Pineapple plants that also have another name, namely Ananas Cosmosus, (included in the family Bromeliaceae), generally categorized as seasonal plant. Historically, this plant originated in Brazill and was brought to Indonesia by Spanish and Portuguese sailor around 1599. In Indonesia, the plant has been widely cultivated, especially on the islands of Java and Sumatra which among others are found in subang, Majalengka, Purwakarta, Purbalingga, Bengkulu, Lampung and Palembang, which is one of the potential natural resources.

3.2.3 Pineapple Leaf Shape



Pineapple leaves are sword-shaped, blackish green and on the edges of the leaves there are thorns that protrude. The size depends on the variety can reach 55-75 cm with a width of 3.1 - 5.4 cm. Each pineapple leaf has a bunch of fibers that can be utilized as a new material for sustainable products.

Figure 2: Pineapple Leaf Diagram. Source: Author,2021



Pineapple leaves have an outer layer consisting of the top and bottom layers, Between these layers there are many bonds in the form of fibers that are bound to each other by a type of adhesive substance contained in it.

Figure 3: Pineapple Leaf Cut Diagram. Source: Author,2021

3.2.4 The processing stages of pineapple fibre

Pineapple leaf fibre produced by Alfiber, obtained from 4 groups of local farmers in the areas around the MSME area, namely the villages of Cijambe and Cikadu. Through MSMEs Alfiber local farmers were able to get extra income from selling unused pineapple leaves. From the 4 groups of farmers, MSMEs Alfiber can get approximately 400 kilograms of pineapple leaves.

The process of supply by farmers is done carefully by workers from MSMEs Alfiber. Pineapple leaves that are delivered must meet various standard criteria for export delivery that must be met. First, the pineapple leaves to be processed must meet the criteria. The leaf length size is should be more than 65 cm. According to the owner, in actuality all of the sizes of pineapple leaves can be processed into fibre, but because MSMEs must meet the standards of the exporter, they must follow these conditions. Second, pineapple leaves must be fresh; not rotten or dry. According to the workers, if the pineapple leaves have been rotten or dried, it will produce blackish-brown fibers that do not meet the standards provided by exporters. Exporters wants to get pineapple fibre that is white in color and clean. Third, the leaves that are delivered are leaves of pineapple from a certain type. Pineapple that is commonly used is the forest pineapple that is, Quin Pineapple. Although, the owner sometimes receives fibre supplies that came from the leaves of the garden pineapple. Garden pineapple is quite long fibers but this is considered not ideal even though it is easier to process. According to the workers at MSMEs Alfiber, although garden pineapple fibers are easier to process than quin fibre, the quin pineapple fibers is not as fragile as the garden pineapple fibers. In addition, quin pineapple leaf fibre is able to maintain the white color it has for a longer time compared to the fibre of the garden pineapple leaves which are certainly preferred by the exporter because they went through a lengthy delivery process.

Figure 4: Fibre processing plant by Alfiber Source: Author, 2021

During this lengthy sorting process, 3-4 quintals of Pineapple leaves was sorted and then would be processed in the Alfiber's factory and went through various long stages that was carried out by the workers from MSMEs itself; carefully and skillfully. MSMEs Alfiber has 8 workers who work in the fibers leaf processing stage who were trained to run the existing machines.

Figure 5: Fibre Scraping Process Source: Author, 2021

The processing stage requires workers who are resilient, fairly strong, and are meticulous in looking for deficiencies of leaves. In the process, workers at Alfiber used decorticator machines. MSMEs Alfiber has 5 decoticator machines provided from companies that cooperate with Alfiber to supply pineapple leaf fibre. The process of processing the leaves is divided into 2 major stages, namely the stage of separation of leaf meat and the stage of fibre mashing. In the first stage, the separation of leaf meat is usually done by one worker who is then assigned to work on a batch of pineapple leaves using one decorticator tool who then take turns with other workers to use the machine.

Figure 6: Decorticating Process with Decorticator Machine. Source: Author, 2021

While waiting, the other workers will do the process of scraping and washing fibre to clean the flesh of pineapple leaves that are still attached to the fibre. The scraping process is done using a scraping tool; the leaf meat is scraped and then rinsed using a bucket of water.

The fibre that has been washed will then be reprocessed into the decorticator machine to be cleaned thoroughly. Fibre that has been processed at this stage is then dried for 1-2 days or until the fibre is completely dry. The drying stage is very important to keep the color of the fibre clean and not change color to brown.

Figure 7: Fibre Drying Process Source: Author, 2021

Fibre that has been dried, then reprocessed into the the decorticator machine. This stage aims to produce pineapple leaf fibre that is quite smooth and can then be processed into woven threads. If the fibre still feels too hard or rigid, then the process of mashing will be repeated until the fibre becomes smooth. At this stage, the mashed pineapple fibers will produce fine cotton like residue which will then be discarded. If done properly, the result of this process, is a strong, clean, smooth and glossy fibers.

Figure 8: The Rest of The 'Cotton' Processing of Pineapple Fibers on the Decorticator Machine Source: Author,2021

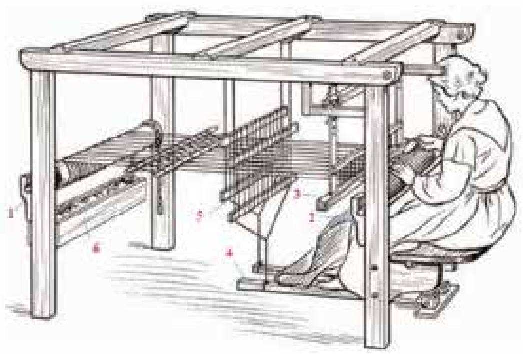
Figure 9: Comparison of Fibers Before and After Mashing Source: Author, 2021

The fibre that has been smoothed then goes into the combing stage. This stage is done manually by 6 housewives who come from the area around MSMEs. This stage is done to clean the residue of the processing from the pineapple fibre leaves and smooth the ends of the pineapple leaf fibre that has been processed. The process of cleaning takes maximum of 30 minutes for one fibre bunch. This process still uses a simple tool in the form of cloth scissors and iron combs. In this process, the quality control process is carried out in the form of checking the appearance of fibre. If there are fibers that change color, tangled or can not be combed; it will be cut and discarded. At this stage, only about 85% of the fibre produced can be exported because it does not meet the international shipping standards that have been set.

Figure 10: Combed and Uncombed Fibers and The Residue of the Combing Process. Source: Author, 2021

Figure 11: Fibre Combing Tools Source: Author, 2021

3.2.5 The process of fabric weaving



The process of fabric weaving in MSMEs Alfiber uses a modified Non-Machine Loom (ATBM) called ATBM Dogan where the process is crossing between lusi yarn with feed yarn. ATBM is a tool to perform human-driven woving activities. ATBM Dogan is a specially designed ATBM with several advantages to make fabric using human power (Alan, 2021). ATBM Dogan was created with the aim to improve the ability of gedogan looms and simplify the shape and function of ATBM Dogan. ATBM can be used while sitting (common in the small and traditional textile industry) and standing. In the large textile industry, ATBM is impossible to use. ATBM can accelerate and facilitate the manufacture of woven fabrics that previously only used traditional looms or gedokan looms.

Figure 12: Illustration of Non-Machine Looms Source: Addyah, 2017

1. Boom lungsi:
   which is used to roll the lungsi thread
2. Fabric boom:
   used to roll up woven fabric
3. Guun:
   used to control and move the lungsi thread so that the lifeboat can enter in between the lungsi thread
4. Stamp Guun:
   used to set guun
5. Comb:

u sed to regulate the density of lungsi threads

6. Ballast rolls of lungsi thread:
   it is used to keep the firmness of the threads stable.

The process of making Pineapple Leaf Fibre Cloth in MSMEs Alfiber is done by empowering the community, especially housewives in the MSME Alfiber community both in the spinning process and the weaving process. The process of spinning or making yarn still uses manual methods. They spliced each strand of fibre using hands with special techniques (weaving link). Since the fibres is connected manually, the resulting thread has a knot from each connection, so that the manifactured fabric also has a uniqueness and characteristics that are the existence of small knots that appear on the fabric.

Figure 13: The Joining Process of the Fibre into A Thread. Source: Author,2021

Figure 14: ATBM Dogan at MSMEs Alfiber Source: Alan,2021

3.2.5 Economic Opportunity

Economically, the activities carried out by MSMEs Alfiber are one of the businesses that can increase family income because the products produced can have a fairly high selling value. Pineapple Leaf Fibre products that have not been utilized or usually discarded, can be processed into Pineapple Leaf Fibre by extraction, either by using a machine or manually, so it has added value that is different from ordinary products. Considering on the cycle of pineapple plants when the fruit is harvested, the leaves must be discarded so that the new buds able to grow properly. So far this pineapple leaf fibre has not been utilized properly. According to the owner of MSME Alfiber currently, the usage of pineapple leaves limited as animal feed or natural fertilizer. The leaves were cut into pieces; the rest were left to rot, and not infrequently also thrown or burnt, of course this is very unfortunate considering that pineapple leaves can actually be processed into pineapple leaf fibre as raw materials for textiles and crafts and have high economic value.

Currently, MSMEs Alfiber have 5 Decorticator Machine, they were able to process pineapple leaves as much as approximately 500 kilograms every day and is able to produce Dry Pineapple Leaf Fibre; on average 8-11 kg / day. Although this current situation is still very limited, the potential of pineapple leaf processing business in Subang Regency is very wide open, with the potential of pineapple plantation land with an area of 3,253 hectares and in Cijambe 133 hectares with the potential of pineapple leaves produced from 1 hectare as much as 10-15 tons. With the increasing demand for pineapple leaf fibre and processed products, this produce is increasingly potential to be developed. The price of fabric sold can reach Rp. 250,000,00 and higher if processed properly.

Now Alfiber has began to improve the optimization of the utilization of pineapple leaves through the processing of pineapple leaf fibre into pineapple leaf fibre cloth, thus increasing the selling value and creating new business opportunities, namely the process of spinning fibre threads and woven fabric.

The benefits of this pineapple leaf processing business include the following:

1. Increasing Value

Pineapple Leaf Fibre Making Business is able to provide added value from pineapple leaves. Where pineapple leaves are usually only used as animal feed or discarded, after becoming fibre pineapple leaves can have a higher economic value because it can be used as textile raw materials such as yarn, cloth and raw materials of various types of crafts. This material can be used into various interior products, especially in decoration products, and chairs.

2 Creating a New Product

Economic opportunities from the existence of pineapple leaf fibre can be seen from its utilization or function. This business is able to create other products in addition to the Pineapple Leaf Fibre that already being produced, namely animal feed and natural fertilizers that came from leaf meat extracts, that also can be used for natural dyes derived from fibre washing water. In other words, the business of Making Pineapple Leaf Fibre is able to provide benefits in the field of livestock, agriculture and textiles. In other words, the business of Making Pineapple Leaf Fibre is able to provide benefits in the field of livestock, agriculture and textiles.

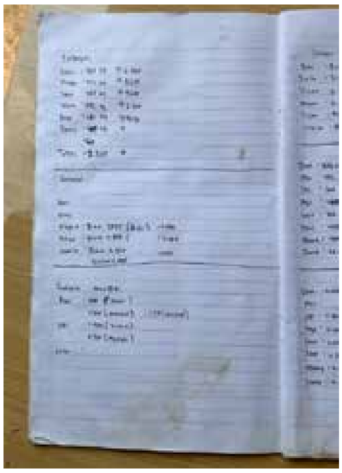
Currently, pineapple leaf fibre is mostly used as a fashion textile product or as a ship rope material. The potential of this pineapple fabric bring a great opportunity for manufacturers to develop this material further. Currently, interior manifacturer have not made much use of pineapple fibre as a material although it has a great potential. The development of this pineapple fibre will certainly bring benefits for workers and MSMEs owners because fibre itself and woven fabric is very versatile. Thus, the survival of the livelihoods of the workers will be maintained. Their knowledge of the function of the fabric will also improve following innovations result. With the production of woven fabrics, the product's potential to be developed into interior products is also wide open.

3. Providing Additional Income of Pineapple Farmers

Pineapple Leaf utilization business is also able to provide additional income to pineapple farmers, where usually after harvesting the waste of leaves is discarded, it can now be sold to Alfiber. Now farmers can earn income from selling pineapples and pineapple leaves. Alfiber only able to cooperate with 4 Pineapple Farmers community in the procurement of raw materials, this is due to the limited capacity and machinery owned by Alfiber.

4. Absorbing Labor and Creating New Business Opportunities

The worker of MSME Alfiber admitted that Pineapple leaf waste utilization efforts are also able to absorb labor coming from the surrounding community, ranging from raw material procurement labor, production process (extraction and finishing), thread spinning to weaving of pineapple leaf fibre fabric. So that this business also creates new business opportunities in the process of processing Pineapple Leaf Fibre into textile and craft products. Alfiber's hope is that their business is growing and thriving, so that Alfiber were able to absorb more labor and has a positive impact on the environment, especially in the economic sector of the community itself.



This especially shows in regards of the current events. Covid-19 has affected a lot of the part-time workers living in Cijambe, they are unable to enter the city to look for jobs and get any form of income. Through MSMEs Alfiber, they are able to work daily and able to be paid fairly every week. The worker said that they are able to fullfill their daily needs with ease and able to feed their family and also save some of their income for other needs. The workers were paid around Rp. 100.000,00 each day. This payment system was closely related to their sum of fibre that they collectively able to process together. Summed up, the workers were able to be paid as much as Subang's Regional Minimum Wage which was around Rp. 2,9 Million (CEO,2021). This proves that MSME Alfiber were able to support the community around their factory to thrive.

Figure 15: The Weekly Income Calculations in MSME Alfiber Source: Author, 2021

5. Harnessing the functionality and the aesthetics of the fibre

The economic opportunity of pineapple leaf fibre woven fabric can also be seen in terms of the uniqueness of the fabric's existing textures. Pineapple leaf fibre fabric products have a unique texture because the threads are connected by being tied together, this resulted in an unusual prominent texture. In interior product design, visual stimulation is a very important factor (Song, 2010). The texture of this pineapple fibre fabric, will give a beautiful rustic impression on interior products that were designed using fabric made from this pineapple leaf fibre. The imperfections of the thread in the fabric of pineapple leaf fibers due to the bonding of the joint will catch the eye of the users, so it is a suitable material to be applied in product that requires subtle visual stimulus such as lampshades or room dividers.

According to the owner, they never thought of applying their product into interior products this proves that pinapple leaf fibre was not explored enough by interior designer as a material options. Although, the owner admitted they are optimistic that their fibre was strong enough to be applied into a lot of products. Although they needed extra support such as using thicker materials as an additional layer for some of interior products such as chairs or sofas. Figure 16: The Small Knots that Appears on the Woven Fabric Source: Author,2021

3 CONCLUSION

The processing stages of pineapple leaf fibre woven fabric is a long and thorough process. Starting from the preparation of the pineapple leaves and processing of the material, and preparation of ATBM Dogen weaving equipment, every step was ensured to keep the quality of the fabric and fibre to be able to fulfil the needs of the exporter. Several criteria need to be fulfilled to produce high-quality fibres such as the length of the leaves, the freshness of the leaves, the type of pineapple plant that the leaves came from. There are 2 major stages of fibre leaf processing, leaf meat separation and fibre mashing both use the decorticator machine. The weaving process of the fibre uses the modified Non-Machine Loom or called the ATBM Dogen.

The Economic opportunities of pineapple fibre leaves were shown in several sectors The effort to use pineapple leaf fibre woven fabric pineapple leaf waste pineapple leaves were able to absorb labour from the surrounding community, ranging from raw material procurement labour, production process (extraction and finishing), thread spinning to the weaving of pineapple leaf fibre fabric. Accumulatively, 14 workers worked in MSME Alfiber that came from the village where the MSME is. They do every stage and process together in a community to fulfil the demands and also to fulfil their economic needs. This especially shows in regards to the current events in the Covid-19 era that has affected a lot of the part-time workers living in Cijambe, they are unable to enter the city to look for jobs. Through this MSME they were able to earn enough income to feed their family and keep the community prosper. In addition, the potential of this pineapple fabric brings a great opportunity for manufacturers to develop this material further. Currently, the interior manufacturer has not made much use of pineapple fibre as a material although it has great potential The emerging economic potential can also be felt through the peculiarities of the texture of pineapple leaf fibre material. Pineapple leaf fibre fabric products have a unique texture that matches the design needs of interior products. Visual stimulation is a very important factor in designing an interior product. The fabric texture of this pineapple fibre will be able to give an attractive rustic impression which was suitable to be applied to interior products.

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