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## Application Green Accounting To Sustainable Development Improve Financial Performance Study In Green Industry

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**Abstract:** The goal of this study is to see how green accounting affects both sustainable development and financial performance, as well as how financial performance affects sustainable development and how green accounting affects sustainable development through financial performance. Between 2017 to 2020, the population of this study is a manufacturing business that implements the green sector and is listed on the Indonesia Stock Exchange. Data is collected from 52 different companies through purposeful sampling. Path analysis with EViews was employed as the data analysis technique. Green accounting has an impact on sustainable development, green accounting has an impact on financial performance, financial performance has no impact on sustainable development, and green accounting has a financial performance impact on sustainable development. The use of green accounting and financial performance have become indicators of a company's long-term viability.

**Keywords:** Green Accounting; Sustainable Development; Financial Performance; Green Industry.

**Abstrak:** Tujuan dari penelitian ini adalah untuk melihat bagaimana akuntansi hijau mempengaruhi pembangunan berkelanjutan dan kinerja keuangan, serta bagaimana kinerja keuangan mempengaruhi pembangunan berkelanjutan dan bagaimana akuntansi hijau mempengaruhi pembangunan berkelanjutan melalui kinerja keuangan. Antara tahun 2017 sampai 2020, populasi studi ini adalah bisnis manufaktur yang menerapkan sektor hijau dan terdaftar di Bursa Efek Indonesia. Data dikumpulkan dari 52 perusahaan yang berbeda melalui pengambilan sampel yang bertujuan. Analisis jalur dengan EViews digunakan sebagai teknik analisis data. Akuntansi hijau berdampak pada pembangunan berkelanjutan, akuntansi hijau berdampak pada kinerja keuangan, kinerja keuangan tidak berdampak pada pembangunan berkelanjutan, dan akuntansi hijau memiliki dampak kinerja keuangan terhadap pembangunan berkelanjutan. Penggunaan akuntansi hijau dan kinerja keuangan telah menjadi indikator kelangsungan hidup jangka panjang perusahaan.

**Kata kunci:** Akuntansi Hijau; Pembangunan Keberlanjutan; Kinerja Keuangan; Industri Hijau.

## INTRODUCTION

The business environment is rapidly changing, and organizations are becoming increasingly competitive. How to make the firm prosper, it must sustain short-term success while also considering the organization's long-term viability. Furthermore, corporate stakeholders, such as investors and customers, have placed a higher emphasis on sustainable development methods to achieve economic, environmental, and social sustainability (Chabowski et al., 2011). Sustainability has become a strategic direction, as well as a strategic role in the orientation of the industry as it identifies consistent trends across all human and corporate activities. Corporate sustainable development is viewed at the micro-level as a new management paradigm that recognizes a company's growth and profitability while also requiring businesses to include and pursue unfavorable social goals, especially those related to sustainability issues such as environmental protection (Tien et al., 2020).

Some have criticized Indonesian business people for failing to preserve the corporate environment in keeping with the country's economic expansion because of the industry's rapid development. These threats motivate the company to work hard to enhance its performance. Companies must, however, consider the economic order while avoiding environmental damage to safeguard future generations. As a result, sustainable development is one of the company's attempts to always maintain the progress that leads to human well-being, both today and in the future. That means every business will always be participating in long-term development projects to help the economy and community grow (Loen, 2018).

Sustainable development is essential to a firm's survival in the current competitive business market. Sustainable development refers to the revenue growth that a company can achieve within its financial and operational constraints (Patel et al., 2020). Companies must go beyond the financial baseline to achieve development sustainability, which also stresses a company's performance on social and environmental challenges. Three basic values guide him in this endeavor: environmental purity, social justice, and economic prosperity (Elkington, 1997). Sustainable development is an important idea in the application of business sustainability. Sustainable development is a subset of business activities that are involved in achieving good strategy and performance outcomes. They also recommend that sustainable development should concentrate on enhancing one or more of three major strategic areas: long-term stakeholder support, market development, and financial performance contributions.

Organizations must invest in resource development to have the resources they need to preserve human health and the environment. Sustainable development is defined by the World Commission on Economic Development (WCED) as "development that satisfies current demands without jeopardizing the needs of future generations". In this context, sustainable development refers to efforts to maintain or improve development activities' long-term viability. The availability of long-term resources for development is what ensures the company's long-term viability.

At the global level, the notion of sustainable development is broad, but putting it into practice at the organizational level is difficult (Milne & Gray, 2013). Companies see sustainability as a hurdle since academic literature has defined it as continuity throughout the last few decades. To keep a firm alive, we must fundamentally reinvent accounting,

because while understanding principles is a requirement, it is insufficient to keep the company alive. Sustainable development is a method of achieving a company's objectives. One of the company's supporting instruments is the use of environmentally-based accounting. Green accounting can assist managers in their attempts to enhance the economy, which will contribute to long-term growth.

People have become more conscious of the environment for the sake of future human life. Pollution of the environment has recently become a source of worry (Aminah & Noviani, 2014). Pollution in the environment, such as water pollution, air contamination, and soil pollution, harms the company's operations, impacting the company's operations to maximize profit while minimizing negative environmental impacts (Abdullah & Amiruddin, 2020). On the other side, industrial expansion has a positive impact on labor absorption, which can boost economic productivity, but many enterprises are less concerned about environmental difficulties (Winarno et al., 2016).

Green accounting has a long history Gray (2010) it was commonly recognized that accounting will continue to play a crucial role in tackling fundamental concerns related to human-caused change. Green accounting is a multifaceted phenomenon with a wide range of applications. As indicated by the contrasts made between them in practice and study, green counting, energy calculation, carbon calculation, and resource usage calculation are all subcategories of green counting. Even though much of this field's research focuses on the environment as an externally directed activity (Qian et al., 2012), there is growing interest in environmental management accounting approaches, including accounting procedures used to manage.

Green accounting is a concept in which businesses focus on efficiency and effectiveness in the long-term use of resources in their manufacturing processes to integrate corporate growth with environmental functions and deliver societal benefits. According to Marota (2017), the green notion has a significant impact on the sustainability factor. Because the corporate framework is established in combination with the efficiency of the resources formed, Nakajima (2015) highlighted the necessity to promote environmental awareness in information exchange.

According to Aniela (2012), green accounting is one of the accounting disciplines that focuses on the environment. In the annual report, describe how you collect measurements and how you assess the company's environmental costs. According to Ratulangi et al., (2018) the benefit of a company applying green accounting is that it provides information for companies to establish the strategies that will be employed later to decrease environmental-related expenditures incurred as a result of the company's production operations. Companies must also be able to effectively utilize and manage the trash produced by their industrial operations. According to Fakoya (2014), corporations do not place a premium on precision in the use of natural resources and do not place a priority on being able to correctly utilize and manage their production waste. According to Fakoya (2014), the accuracy that merely prioritizes natural resource utilization is not a priority.

The government evaluates how well the company's environmental management is implemented. The Ministry of Environment and Forestry assesses the company's environmental management, including waste management, using the Company Performance Assessment Program Penilaian Peringkat Kinerja Perusahaan dalam Pengelolaan Lingkungan Hidup (PROPER). PROPER's implementation has ramifications for indigenous peoples and corporate forests in terms of meeting environmental

sustainability standards and preventing industrial waste pollution (Helmi et al., 2020). In reality, there was a drop in PROPER compliance in 2018, aggravated by a lack of care for environmental sustainability. PROPER is a publicly available statistic for a company's environmental performance. Noncompliance, according to certain research, is on the decline. Because there is no financial gain to the corporation, this is correct. Green enterprises have a detrimental influence on a company's commercial growth, but they have a favorable impact on government spending because the government does not have to spend money on environmental sustainability assets (Lukas, 2015).

There is a need for green accounting at the corporate level, according to (Riyadh et al., 2020). Green accounting, for example, at the corporate level assists management in determining if the organization is on track to being responsible for sustainable development while still reaching business objectives. Environmental hazards, on the other hand, might have an impact on financial statements prepared on an accrual basis. Environmental accounting is critical at the corporate level, according to Riyadh et al., (2020) for example, to assist management in determining if the responsibility for sustainable development is aligned with the organization's business goals.

Green industry, according to Indonesian Industry Minister MS Hidayat, is defined as an industry that stresses the efficiency and effectiveness of sustainable resource usage in the manufacturing process. To be able to harmonize industrial development with the long-term viability of environmental functions while also benefiting the larger community. By 2030, MS Hidayat wants 90 percent of large and medium-sized businesses to be green certified. However, because there is still much to be prepared concerning green industry standards by establishing green industry certification bodies to reinforce certification, this achievement is still far away in 2021 (or 0.15 percent).

Field practice, literature review, empirical studies, and academics are all used in this study (Aniela, 2012). Green accounting is well established to have a favorable impact on a company's financial performance, particularly positive consumer perceptions, which leads to greater sales and profits. Green accounting has an impact on increasing environmental performance, both in terms of environmental health and environmental resilience, in addition to financial success. This study differs from the previous one in that it is the subject of research and the proxy used to quantify financial success with return on assets. The research is also expected to make some theoretical contributions. For starters, while prior studies concentrated on the industrial and manufacturing sectors, this study focused on green industry businesses. Second, a better knowledge of the link between green accounting and financial performance, as well as the importance of analysis in long-term growth. Third, the research examines the role of financial success in enhancing long-term sustainability.

## THEORETICAL REVIEW

**Stakeholder Theory.** Stakeholder theory is a theory that focuses on the well-being of corporate stakeholders. Organizational management should take significant action for stakeholders and then report those activities to those stakeholders. According to this understanding, all stakeholders are entitled to receive information about how the company's organizational activities impact the environment (C. Deegan, 2016). Employees, communities, countries, capital markets, and others are all stakeholders in the

organization. This theory assumes that the company conducts its business activities not only for the benefit of the company itself but also for the benefit of stakeholders. Therefore, this stakeholder theory is a strategy made by the company to maintain its relationship with stakeholders (Oktariani, 2013).

According to Mandika & Salim (2015), it focuses not only on improving well-being but also on improving the well-being of stakeholders. According to this understanding, the company must pay attention to the welfare of stakeholders who have an impact on the survival of the company. Established businesses don't just focus on how they can increase their profits by growing profits. Companies should consider how they can benefit their stakeholders. As a result, companies, and stakeholders have a mutually influential relationship.

**Legitimacy Theory.** Legitimacy Theory It states that the organization strives to ensure that its operations adhere to the boundaries and standards of the communities in which they operate. The theory of legitimacy is based on the phenomena of social contact between organizations and society, in which an organization's goals must be compatible with societal ideals. Organizational actions, according to this notion, must have socially acceptable activities and performance. There is a threat to society's legitimacy when there is a disparity (incompatibility) between the two systems. To run the company well, managers must meet the expectations of society, to create a legitimized company status (C. M. Deegan, 2019).

**Green Accounting.** Green accounting is a concept in which businesses focus on efficiency and effectiveness in the long-term use of resources in their manufacturing processes to integrate corporate growth with environmental functions and deliver societal benefits. The implementation of Green Accounting in this circumstance places a high emphasis on the concept of savings, namely material and energy savings (land saving, material saving, and energy saving). It is based on the ecological notion. Green Accounting aims to increase environmental management efficiency by conducting operations from the perspectives of cost (environmental cost) and benefits or impacts (economic benefits), resulting in environmental protection effects. In brief, green accounting can reveal how much a firm or organization contributes, both positively and negatively, to the quality of human life and the environment.

Green accounting has a goal of continuous improvement and environmental control (Mowen et al., 2018). Well-implemented green accounting will improve environmental performance, cost control, environmental use of technology, and the use and manufacture of environmentally friendly products. Green accounting is very useful because there are costs for better environmental management, business strategies that pay attention to the environment, calculate production costs more accurately and find opportunities to reduce environmental costs.

**Sustainable Development.** Even if the issue of sustainable development is discussed in every area, economics makes it a major worry in future development (W. A. Hahn & Knoke, 2010). The term "development" refers to an endeavor to steadily improve the quality of life by intelligently employing the state's resources. One element that must be addressed to achieve sustainable development is how to reduce environmental degradation

without jeopardizing economic progress and social fairness (R. Hahn & Kühnen, 2013).

The Brundtland Report, published in 1987, was the first text to use the phrase "sustainable development" internationally. The document is a World Commission on Environment and Development (WCED) report (WCED). Sustainable development" is defined as "development that meets current requirements without jeopardizing future generations' ability to meet their needs (a development that satisfies current needs without jeopardizing future generations' ability to achieve their wishes.)" (General Assembly of the United Nations, 2015). The United States Environmental Protection Agency defines sustainability as "everything we need for survival and living well-being that is directly or indirectly related to the natural environment" (www.epa.gov).

**Financial Performance.** Financial performance, according to experts, is an assessment carried out to identify the amount that a firm has performed utilizing great and proper financial implementation standards. Financial performance is also forecasted in information on the balance sheet, income statement, and cash flow statement, as well as other items that may help as a driver of the financial performance assessment. The financial performance analysis of Wahlen et al., (2018) covers, among other things, estimating a Return on Asset (ROA).

ROA (Return On Asset) is the net income for that period divided by the average total assets during that period (Easton et al., 2018). Gross profit margin is a ratio compared with other companies in a certain period. High and/or rising gross profit margins are usually a good sign. A narrowing or shrinking gap indicates more competition or a decrease in the popularity of the company's product line or an increase in inventory costs. Gross profit margin is a ratio compared with other companies in a certain period. High and/or rising gross profit margins are usually a good sign. A narrowing or shrinking gap indicates more competition or a decrease in the popularity of the company's product line or an increase in inventory costs. If net profit after tax exceeds total assets or assets, the return or rate of return on profit will be high because the company can make good use of its assets to create profits, but if total assets or assets exceed net profit after tax, the rate of return on profit will be lower.

**The Influence of Green Accounting on Financial Performance.** Green accounting is a step by the company to improve environmental performance, control costs, implement environmentally friendly technology, and promote environmentally friendly products. Green accounting is very useful because there are costs for better environmental management, business strategies that pay attention to the environment, calculate production costs more accurately and find opportunities to reduce environmental costs and increase profitability. According to the findings of Ezeagba et al., (2017) the implementation of green accounting has an impact on the company's profitability, and higher profitability can increase the company's value. Another research by Andries & Stephan (2019) suggests that innovation related to environmental performance is developed as a form of response to public demand even the size of the company. This can expand the relationship between the work environment and its level of profitability. Research conducted by Lestari et al., (2020) states that the effect of the application of green accounting measured using proper has a significant effect on the profitability of the company in manufacturing companies. From the explanation related to previous theories

and research, then the second hypothesis is:

**H<sub>1</sub>:** Green Accounting affects financial performance.

**The Impact of Green Accounting on Sustainable Development.** According to stakeholder theory, Permatasari & Setyarsini (2019) that the company is committed to presenting information related to the environment to stakeholders. Because the stronger the corporate and stakeholder ties, the better the company will be and vice versa. Based on research conducted by Loen (2018) that the implementation of green accounting has a positive relationship with sustainable development. According to Marota (2017) Green concepts and Material Flow Cost Accounting, MFCA have a significant effect on the sustainability dimension. The focus of green concepts is on the application of environmentally friendly production." The application of green accounting for a company certainly takes the company in a better direction. In addition, with the application of green accounting, the company has also indirectly carried out its responsibilities to stakeholders. The first hypothesis can be proposed as follows:

**H<sub>2</sub>:** Green Accounting affects sustainable development.

**The Impact of Financial Performance on Sustainable Development.** Companies with strong financial performance will have an impact on the company's long-term development. Sustainable development is not expected to hurt the company's financial success. Because poor sustainable development may jeopardize a company's financial success. Because there is evidence that there is a link between financial performance and sustainable development (Platonova et al., 2018). As a result, it is critical to first propose its impact on financial performance (Jan et al., 2018). The role of financial performance in the green sector can be understood to comprehend the function of financial performance in the company's long-term development. These inconsistent results make the manager's motivation decrease to implement sustainable development because managers are not sure of the benefits to the company's financial performance. Supposedly, the sustainability of this development will help the company in accelerating its financial performance which will have an impact on investor interest. From the explanation related to previous theories and research, then the third hypothesis:

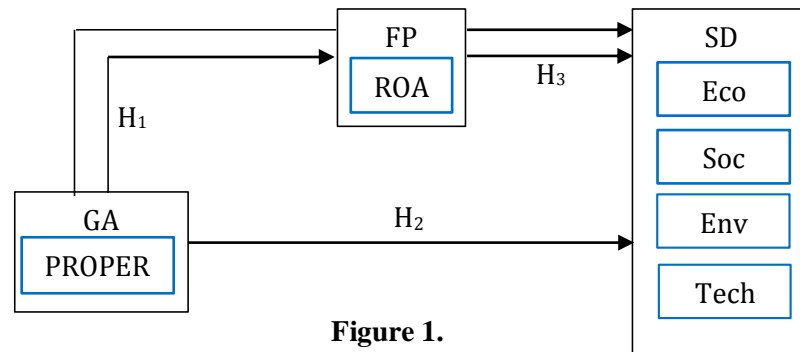
**H<sub>3</sub>:** Financial Performance affects sustainable development.

**The Impact of Green Accounting on Sustainable Development through Financial Performance.** Green accounting applied by the company is used to provide additional information about activities related to financial performance and non-financial performance. Information provided by the company is important to influence the investment decisions of parties outside the company. The more detailed the information about green accounting is, the more the corporation is considered to have carried out and is answerable for the activities carried out by the organization. This condition demonstrates to stakeholders that the company has paid attention to and met stakeholder expectations for the company's long-term success. The fourth hypothesis can be written as follows based on the explanation:



**H4:** Green Accounting affects Sustainable Development through Financial Performance

This study used three variables, represented by green accounting implementation and sustainable development as independent variables, and dependent variables in this study represented by corporate sustainability (sustainable development). While the Intervening Variable in this study is represented by financial performance (return on assets). The conceptual framework can be illustrated using the chart below, which is based on the previous description.



**Figure 1.**  
Research Model

**METHOD**

The population in this study is a manufacturing company (green industry) listed on the Indonesia Stock Exchange for the period 2017 to 2020. The sampling method used is a non-probability method with purposive sampling techniques. Criteria this sampling method is the second company implementing PROPER for the period 2017 to 2020, and the company that uses green accounting practices published in annual reports and financial statements. Based on these criteria, 13 companies were collected. Since the observation period lasted for 4 years, a total of 52 data were processed.

The research is based on quantitative data and uses explanatory research strategies. Explanatory studies seek to find out the magnitude of the interrelationships and implications of dependent variables (Ghozali, 2016). Explanatory research, on the other hand, aims to explain the relationships between variables to test research hypotheses and explain findings of the occurrence of the phenomenon under study. This explanation leads to the conclusion that the purpose of this kind of research is to describe the influence of independent variables (green accounting) on dependent variables (sustainable development) and financial performance as intervening. Secondary data, or data collected through intermediaries, was used in the study. Secondary data in the form of financial statement documents of the Indonesia Stock Exchange. The data analysis technique used is path analysis processed with EViews. The equations used are:

$$FP = \alpha + \beta_1 GA + \varepsilon_1 \dots \dots \dots (1)$$

$$SD = \alpha + \beta_2 GA + \beta_3 FP + \varepsilon_2 \dots \dots \dots (2)$$

Information:

$\alpha$  = Constant

$\beta$  = Regression Coefficient

GA = Green Accounting  
 FP = Financial Performance  
 SD = Sustainable Development  
 ε = Error

**Definitions and Variable Measurements**

**Green Accounting.** Green accounting is the result of the company's work on the environment to preserve the environment which refers to how much impact and damage the company has caused to the business activities carried out. According to Bahri & Cahyani (2021), environmental performance variables can be measured using the Company Performance Rating Assessment Program (PROPER) in Environmental Management which is an instrument of the Ministry of Environment and Forestry (KLHK) as a way to assess a company's capabilities in environmental management. Based on the color classification in the Company Performance Rating Assessment Program (PROPER) can be used Likert scale measures the level of the environmental performance of the company is as follows:

**Table 1.** Green Accounting Assessment Scale

Level	Information	Score
Gold	Excellent	5
Green	Better	4
Blue	Good	3
Red	Pretty Good	2
Black	Bad	1

**Financial Performance.** Return on Assets (ROA) was used to estimate financial performance in this study. Because ROA can describe a company's ability to generate net income from total assets, and ROA can assess how an entity uses its assets to earn profits and investment levels using all of its assets, ROA is an important metric. The ROA ratio can be determined using the following formulas, according to (Wahlen et al., 2018):

$$ROA = \frac{Net\ Income\ After\ Tax}{Total\ Assets} \times 100 \dots\dots\dots (3)$$

**Sustainable Development.** The amount of profit made by a corporation determines its long-term viability. Companies that experience increased profits indicate that the greater the company's opportunity to continue to grow into the future. This measurement refers to research conducted by Marota (2017) namely:

$$Sustainable\ Development = Economic + Social + Environment + Technology \dots\dots\dots (4)$$

Information: (1) Economic dimensions in the annual report are seen in investment, net income, and sales. (2) The social dimension of the annual report can be seen in the cost of Corporate Social Responsibility, salary payment fees, and severance payment fees. (3) Environmental dimensions are indicated in utility costs (costs associated with use) and infrastructure for the company's production, such as energy costs and PDAM costs) and

K3. (4) The dimension of technology is seen in research and development in terms of technology (costs incurred due to the company conducting quality research and development)

## RESULTS

Table 2 shows the calculation of the number of samples used in this research.

**Table 2.** The Results of Sample Selection Based on Purposive Sampling Method

No	Information	Amount
1	Manufacturing companies listed on the Indonesian Stock Exchange 2017-2020	169
2	Companies implementing PROPER for the period 2017-2020	(131)
3	Companies that do not use green accounting practices published in annual reports and financial statements	(25)
<b>Number of the companies that can be used for this research</b>		13
Number of years of research (2017 to 2020)		4
<b>Total sample observed</b>		52

### Results of Descriptive Statistics

Table 3 indicates the results of descriptive statistics of each variable.

**Table 3.** Results of Descriptive Statistics

Variable	n	Minimum	Maximum	Mean	Std. Deviation
Green Accounting (GA)	52	3.00	4.00	3.2308	.42967
Financial Performance (FP)	52	6.45	12.58	8.5112	2.06736
Sustainable Development (SD)	52	-6.03	24.26	3.9881	6.43977

Based on table 3, it can be seen that the total observation data processed in this study amounted to 52 observations spread across four years of research. Throughout the research period, between 2017 to 2020, the lowest green accounting assessment was 3 while the highest was worth 4. Overall, the average green accounting assessment owned by the entire green industry reached 3.2308 with a standard deviation of data of 0.42967. Based descriptive statistical data seen from green accounting variables show that the company's awareness of the environment is still not optimal so it needs efforts to increase environmental awareness in each environmental element in each company.

The financial performance of the research period from 2017 to 2020, showed that the lowest value held reached 6.45. The resulting financial performance value shows that there are still companies that have low financial performance, while the highest financial performance value owned by the green industry is 12.58. Overall the financial performance value of the green industry is 8.5112 with a standard deviation of 2.06736. Based on descriptive statistics variables the financial performance of green industries has a relatively large composition of total assets.

Sustainable development from 2017 to 2020 saw that the lowest value owned by this variable reached -6.03 while the highest value was 24.26. Overall, the average value of the sustainable development variable reached 3.9881 with a standard deviation of 6.43977. Based descriptive statistical data seen from sustainable development variables show that it

is still not fully the company in improving its survival from the profit generated.

**Inductive Analysis.** By the formulation of the problem and the hypothesis, the purpose of this research is to analyze the effect of green accounting, financial performance on sustainable development in the green industry to get empirical contributions of results, inductive analysis is carried out through a statistical approach processed using Eviews as seen in the sub-chapter below:

**Panel Regression Model Pre-Requisite Test.** Before the hypothesis testing stage is first carried out prerequisite testing, namely as follows:

Regression Equation. Based on the regression test that has been done obtained a summary of the results seen in tables 4 and 5 below:

**Table 4.** Regression Result Structure 1

Dependent Variable: Y <sub>1</sub>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.76923	1.480162	8.626913	0.0000
GA	-1.333333	0.455634	-2.926325	0.0030

**Tabel 5.** Regression Result Structure 2

Dependent Variable: Y <sub>2</sub>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.776815	6.893211	-0.692974	0.4927
GA	7.394366	1.365595	5.414759	0.0000
FP	-1.704225	0.439221	-3.880106	0.7859

Based on the results of the regression equation for Table 4 of the regression result structure, the results for the dependent variable Y<sub>1</sub> show that the coefficient value shows 12.76923, the standard error value is 1.480162, the t statistic value 8.626913 and probability is 0.0000.

Meanwhile, based on the results of the regression equation for Table 5 regression result structure, the results for the dependent variable Y<sub>2</sub> show that the coefficient value shows -4.776815, standard error is 6.983211, t statistic value is -0.692974 and probability is 0.4927.

Likelihood Test Ratio (LR test). Based on the LR test that has been done obtained a summary of the results seen in tables 6 and 7 below:

**Table 6.** Likelihood (Fixed Effect) Test Results Substructure 1

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	22.216252	12.38	0.0000
Cross-section Chi-square	250.17245	42	0.0000

**Table 7.** Likelihood (Fixed Effect) Test Results Substructure 2

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	12.167429	9	0.0023
Cross-section Chi-square	27.23308	2.4	0.0003

In tables 6 and 7 it can be seen that the resulting chi-square prob cross-section value is 0.000. In the test, the error rate used is 0.05. The results obtained showed that the prob value of 0.000 is less than alpha 0.05 so it can be concluded that the independent variables used and formed into the panel regression model are said to be precise or feasible, so that further data processing stages can continue to be carried out.

Hausman Test. The second pre-requisite test that must be met when researchers choose to use the Random Effect Model is the Hausman test. Based on the results of the test that has been done obtained a summary of the results seen in tables 8 and 9 below:

**Table 8.** Hausman Test Substructure 1 Test Results

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.771327	1	0.3798

**Table 9.** Hausman Test Substructure 2 Test Results

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.167429	2	0.6254

The results of the test that has been carried out obtained a prob value of 0.3798. In the data processing process, an error rate of 0.05 is used. The results obtained in the Husman Test test show that a prob value of 0.6254 greater alpha 0.05 can be concluded that panel regression testing can also be carried out with the REM (Random Effect Model) approach.

### Classic Assumption Testing

**Residual Normality Testing.** Based on the results of normality testing that has been done, a summary is obtained in table 10 below:

**Table 10.** Normality Test Results

Variable	Prob	Alpha
Green Accounting (GA)	0.729	0.05
Financial Performance (FP)	0.416	0.05
Sustainable Development (SD)	0.143	0.05

The results of the Jargue-Bera normality test per variable show that each variable has a probability value greater than alpha 0.05, implying that all study variables that will be checked in the statistical testing stage are normally distributed.

**Multicollinearity Test.** Based on the results of the test that has been done obtained a summary of the results is seen in table 11 below.

**Table 11.** Multicollinearity Test Results

Variable	Correlation Coefficient	Information
Green Accounting (GA)	0.6069	Didn't Happen
Financial Performance (FP)	0.3993	Didn't Happen
Sustainable Development (FP)	0.1323	Didn't Happen

The results of multicollinearity testing show that each research variable used in the study is free of multicollinearity symptoms because each independent variable has a correlation coefficient of less than or equal to 0.80. It can be concluded that all independent variables used in the current research model are free of multicollinearity symptoms, allowing for immediate completion of further hypothesis testing stages.

**Autocorrelation Testing.** Autocorrelation testing aims to determine the pattern of interference errors in each data observation period. Autocorrelation testing is performed using Durbin Watson (DW) testing. Based on the results of autocorrelation testing that has been done obtained a summary of the results is seen in table 12 below.

**Table 12.** Autocorrelated Test Results

Information	Coefficient
DW Stat	1.632

Based on the results of Durbin Watson's test that has been done, a DW value of 1.632 was obtained. The test obtained a du value of 1.591. The earned Du value is searched using  $df = n - 1$  at an error rate of 0.05. The results obtained showed that it can be concluded that all research variables used in this study are free from positive or negative autocorrelation symptoms, so that further data processing stages can be carried out immediately.

**Heteroskedasticity Testing.** A white test is used to determine heteroskedasticity. A summary of the outcomes is shown in table 13 below, based on the results of the tests that have been performed.

**Table 13.** Heteroskedasticity Test Results

t-statistic	Obs*R-squared	Prob. Chi-square
1.74790	15.780	0.0716

By the results of heteroskedasticity tests that have been carried out using the white test, an Obs\*R-square probability value of 15.780 was obtained. The results demonstrate that the probability value achieved is 15.780 times higher than alpha 0.05, indicating that all study variables utilized are devoid of heteroskedasticity symptoms, allowing for immediate data processing stages.

**Hypothesis Testing.** After all research variables are distributed normally and free from all symptoms of classical assumptions, the hypothesis testing stage can be done immediately. Based on the results of hypothesis testing that has been done obtained a summary of the results seen in the sub-chapters below:

T-statistical testing. T-statistical testing aims to determine the influence of independent variables on dependent variables. Based on the results of the t-statistical test that has been done obtained a summary of the results is seen in table 14 below:

**Table 14.** Hypothesis Testing Results

Variable	Sig	Alpha	Information
Green Accounting (GA)	0.0030	0.05	Significance
Financial Performance (FP)	0.0000	0.05	Significance
Sustainable Development (SD)	0.7859	0.05	Insignificant

The results of the first hypothesis test using the green accounting variable against sustainable development obtained a probability value of 0.0030. In the test stage, an error rate of 0.05 is used. This shows that  $H_1$  is accepted, meaning that green accounting has a significant effect on sustainable development in the green industry.

The results of the second hypothesis test using variable green accounting against financial performance obtained a probability value of 0.0000. The data processing process is carried out using an error rate of 0.05. This shows that  $H_2$  is accepted, meaning that green accounting has a significant effect on financial performance in the green industry.

In the third hypothesis testing stage using financial performance variables against sustainable development, a probability value of 0.7859 was obtained. The statistical data testing process is carried out using an error rate of 0.05. The results obtained show that  $H_3$  is rejected, meaning that financial performance does not affect sustainable development.

Two Stage Least Square Test. Testing the influence of three green accounting variables on sustainable development through financial performance is carried out using two stages at least square as follows:

**Tabel 15.** Two Stage Least Square Test Substructure 1

variable	Coefficient	Std. Error	t-Statistic	Prob.
GA	1.900000	0.616820	-3.080316	0.0034
C	14.60000	2.009677	7.264851	0.0000

Dependent Variabel : FP

**Tabel 16.** Two Stage Least Square Test Substructure 2

variable	Coefficient	Std. Error	t-Statistic	Prob.
GA	9.141610	1.697620	5.384956	0.0000
FP	0.381549	0.356834	1.069262	0.2902
C	-28.07062	7.270138	-3.861084	0.0003

Dependent Variabel : SD

The results of the two stage least square test showed that the direct influence value was 9.141610 and the indirect influence was 0.724943. The results show that  $H_4$  is accepted, then financial performance variables can mediate the relationship of green accounting with sustainable development.

Determination Coefficient Analysis. Determination testing aims to determine the variation in contributions that independent variables can make in influencing dependent variables as measured by percentage. Based on the results of the assessment that has been done obtained a summary of the results is seen in table 13 below.

**Table 17.** Determination Coefficient Test Results

Information	Coefficient
R-square	0.163

Based on the R-square value of 0.163 obtained from the determination coefficient test, the results show that the green accounting variable, financial performance, contributes 16.30 percent to influencing sustainable development, while the remaining 83.70 percent is explained by other variables not used in the current study.

Model Equation From statistical testing, the equation is obtained as follows:

$$FP = 2.755687 + 0.554634GA$$

$$SD = -2723308 + 9.450189GA + 0.105656FP$$

## DISCUSSION

**The Influence of Green Accounting on Financial Performance.** The results of this study revealed that the assessment of green accounting through the green industry PROPER for the period 2017 to 2020 affects financial performance projected by return on assets. This means that companies that implement green accounting will support the company's financial performance. Financial performance reporting needs to pay attention to the disclosure of the results of its environmental activities in the form of accounting data. With this implementation, the company will voluntarily comply with government policies in



carrying out its business related to the environment. Additionally, it is followed by an increase in good community attitudes, which can improve public loyalty to the company, resulting in increased sales and profits.

Green accounting has a considerable impact on financial performance, according to Putri et al., (2019); Chasbiandani et al., (2019); Sulistiawati & Dirgantari (2017). This means that the company has disclosed good things related to green accounting disclosure information. This study also agrees with Ezeagba et al., (2017); Andries & Stephan (2019); Lestari et al.,(2020) that the effect of green accounting application measured using proper has a significant effect on the company's profitability in manufacturing companies. But this research is contrary to Rokhmawati et al., (2015) and Wiranty & Kartikasari (2018) proper rating is still less popular among the public and investors. For investors who are looking for company information, they will go directly to other websites or media, while information about proper rankings as an effort to preserve the company's environment is within the realm of the Ministry of Environment and Forestry. This can happen because of the lack of public knowledge of government awards from efforts to preserve the environment.

**The Impact of Green Accounting on Sustainable Development.** Based on the results of testing the second hypothesis found that green accounting has a significant effect on sustainable development. In this analysis model, it is identified that the position of green accounting has a positive effect on sustainable development, thus that the greater the company implements its green accounting such as allocating costs for environmental preservation, the company can increase its sustainable development which is then disclosed in its annual report. With the allocated costs, it is expected to form a healthy and sustainable environment. Because green accounting is one of the most crucial indicators of a company's success in achieving sustainable development, In addition, the costs allocated to the environment can generate income through waste from a product. With it, companies that implement green accounting will bring the company in a better direction as a form of responsibility to stakeholders.

The results obtained in this first test are in line with Loen's (2018) research that green accounting has a significant effect on the sustainability dimension that green accounting can support the company's development of the overall environmental management system. Marota's (2017) research agreed that green accounting disclosures will increase the value of shareholders because of concern for environmental preservation. Shareholders can more easily and quickly get information so that it can make it easier to make decisions.

**The Impact of Financial Performance on Sustainable Development.** The results of this study revealed that the financial performance assessment of manufacturing companies for the period 2017 to 2020 does not affect sustainable development. This means that there is no influence of financial performance in the green industry in understanding the role of financial performance for the company's sustainable development. Because managers are not sure of the benefits of the company's financial performance practices in implementing the company's sustainable development. Managers should understand that sustainable development can make it possible to achieve higher performance. So there is no doubt to know the importance of a sustainability development index that can publish its performance to strengthen the quality and reputation of the company (Charlo et al., 2015).

This research is in line with the research of Cuadrado-Ballesteros et al., (2014) and Jan et al., (2018) state that financial performance is not significant in sustainable development because of the difference between the sustainable model of companies related to market development and the level of orientation carried out by stakeholders, especially agents involved in an organization. Therefore, the company only focuses on maximizing shareholder wealth by excluding its sustainable development.

**The Impact of Green Accounting on Sustainable Development through Financial Performance.** Based on the results of the research found that the relationship between green accounting and sustainable development through financial performance is significant. This means that indirectly green accounting through financial performance influences sustainable development. Financial performance mediates the influence of green accounting on sustainable development. The better the company applies green accounting can show that the company cares about its environment so that it can improve its sustainable development if supported by companies that have good financial performance. A company that implements green accounting is a company that discloses information related to the environment in the company's annual report. Disclosure of information by this company is a form of social and environmental responsibility for the company's business activities. This is no longer voluntary but is an obligation that must be carried out by companies registered in Indonesia. Through this report, it can be seen the company's contribution to achieving sustainable development. This reporting provides information for stakeholders about sustainability for the main business activities carried out by the company and the startups taken by the company in dealing with these impacts.

Currently, sustainability development can be achieved without having to reduce the needs of future generations to achieve a need. Sustainable development does need to be implemented because the implementation of the economy at this time is dominant in damaging ecosystems globally and hindering the needs of the next generation. With this, it is necessary to hold the involvement of all people around the world individually and collectively for the achievement of sustainable development (Muhammad et al., 2018).

## CONCLUSION

Based on the findings of hypothesis testing, it can be concluded that green accounting affects sustainable development and financial performance. Green accounting, on the other hand, does not have a considerable impact on sustainable development. Green accounting, on the other hand, has an impact on long-term development through financial performance. Green accounting and financial performance can be factors for investors when deciding whether to invest in a company or not. As is known, the use of green accounting and financial performance is an indicator of the company's long-term survival. As a form of corporate concern for the environment, companies must pay attention to financial performance and the use of green accounting. Green accounting and financial performance can be factors for investors when deciding whether to invest in a company or not. As is known, the use of green accounting and financial performance is an indicator of the company's long-term survival. As a form of corporate concern for the environment, companies must pay attention to financial performance and the use of green accounting. However, the company's business processes must take resources from nature so that it hurts

the environment and the community that feels the impact. Companies are better off creating a green environment so that it will have a more positive impact on the environment or industry. In addition, the positive image of the community is very helpful for the company to increase its company profit in encouraging increased sales and then increasing the company profits and for companies that gain social legitimacy is companies that are environmentally friendly to the government and the community so that the company's reputation increases and adds to the company's image.

So the advice for industry players is not to hesitate to apply green accounting because it is proof of benefits for companies and the community. And further research is expected to expand the research period because the study period is only four years, and it is hoped that researchers can better use more complete statistical testing and increase the number of samples so that the test results obtained are more valid.

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