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The Influence of Green Finance Management Implementation and Firm Size on Return on Assets

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ABSTRACT: This study investigates the impact of green finance management implementation and firm size on Return on Assets (ROA) within the framework of sustainable corporate strategy, emphasizing the vital role of environmental and social objectives in achieving long-term competitive advantage. Using a quantitative explanatory research design, data were collected from companies listed on the SRI-KEHATI Index of the Indonesia Stock Exchange during the period 2018–2023 and analyzed using Structural Equation Modeling–Partial Least Squares (SEM–PLS). The results reveal that both green finance management and firm size have a significant positive effect on ROA, with firm size also serving as a significant mediating variable in the relationship between green finance management and ROA. These findings suggest that integrating green finance management initiatives with strategic firm scaling enhances corporate profitability while simultaneously reinforcing environmental sustainability commitments.

KEYWORDS: Green Finance Management; Firm Size; ROA

I. INTRODUCTION

Research on green finance in corporations continues to evolve along with the dynamics of regulations and increasingly complex business needs. Recent studies highlight several important aspects within this context. First, there are studies that emphasize the relationship between green investment and corporate financial performance. [1][2] trace the positive impact of green investment on improving financial performance. [3][4][5] Furthermore, data also show that investments in energy conservation and emission reduction make a significant contribution to long-term financial performance. [3][6] Factors such as environmental taxes, government subsidies, and technological innovation also play a moderating role in strengthening the positive effects of green investment on corporate financial performance. [3][7] These findings affirm the importance of incorporating environmental investments into a company's long-term strategic planning. The implementation of green management systems and green accounting after the Covid-19 pandemic in Indonesia has become an important focus. [5][3] The pandemic forced companies to reduce costs in order to maintain stable profits, while most businesses and other sectors were still struggling to recover. In this context, companies are required to maintain green management and green accounting systems as an integral part of corporate social responsibility (CSR).

Green investment helps reduce environmental violations and enhances environmental performance. Environmental performance, in turn, can strengthen the impact of green investment in improving corporate performance over the long term. [8] This research highlights the need for corporate resilience and adaptability in facing increasingly complex environmental challenges while maintaining a strong commitment to sustainable business practices. [9]

In today's modern era, environmental and social awareness is crucial, in line with the growing public concern for environmental issues and human rights. Based on this, the researcher aims to examine whether the 25 companies listed in the Sri Kehati Index during the study period remain consistent in realizing the goals of the Sustainability Stock Exchange (SSE) and whether they can also improve the companies' stock returns.

II. LITERATURE REVIEW

A. Stakeholder Theory

The Stakeholder Theory states that a company is not merely an entity that operates for its own interests but must also provide benefits to its stakeholders. Thus, the existence of a company is greatly influenced by the support it receives from its stakeholders.

Gray, Kouhy, and Adams explain that the survival of a company depends on stakeholder support; therefore, corporate activities are aimed at gaining such support. The more powerful the stakeholders are, the greater the company's efforts to adapt to their

expectations. Social disclosure is considered part of the dialogue between a company and its stakeholders. [10][11]

The first study to introduce the concept of stakeholders was Strategic Management: A Stakeholder Approach by Freeman (1984). The concept of corporate social responsibility (CSR) began to gain recognition in the early 1970s, generally known as the stakeholder theory, which refers to a set of policies and practices related to stakeholders, values, compliance with legal requirements, social and environmental responsibility, and corporate commitment to contribute to sustainable development.

B. Green Finance Management (PROPER)

Green Financial Management is a concept of environmentally friendly finance aimed at creating and distributing financial products and services to stimulate environmentally responsible investments. In general, green financing can be defined as financial investments that flow into sustainable development projects, environmentally related activities, and policies that promote sustainable economic growth.[12]

The main focus of green finance is the financing or capitalization of development and projects that are environmentally friendly. Therefore, green finance typically covers several sectors such as sustainable tourism, biodiversity conservation, natural resource management, pollution prevention and control, and environmentally friendly transportation.

C. Firm Size

Firm size can be categorized into several groups, namely large, medium, and small enterprises. [13] Firm size is an indicator used to classify the scale of a company, which can be measured using several proxies such as total assets, log size, market value of shares, and others.[14]

Based on these definitions, firm size generally refers to the classification of companies based on various proxies, such as total assets, profit level, production capacity, and other indicators, to categorize companies into small, medium, and large groups. The formula used to measure firm size in this study is as follows: Firm Size = ln Total Assets.

D. Financial Performance (Return on Assets – ROA)

Performance represents the depiction of the achievement of implementation, plans, or policies aimed at realizing the goals, objectives, vision, and mission of an organization. [15] Thus, performance can be regarded as the company's effort in carrying out its organizational objectives.

Financial performance is "An analysis conducted to assess the extent to which a company has implemented financial rules and principles properly and correctly, such as by preparing financial statements that comply with standards under the Financial Accounting Standards (SAK) or Generally Accepted Accounting Principles (GAAP)."[16]

III. METHODOLOGY

A. Research Design

This study employed an explanatory research design, which tries to evaluate a theory or hypothesis in order to enhance or even refute the existing research theory or hypothesis. This quantitative approach tries to collect information, data, and knowledge about topics that are not quite known.

B. Population and Sampling Procedure

The population refers to the entire group of people, events, or objects of interest that the researcher intends to investigate (Sekaran, 2006). The population used in this study consists of all companies listed in the Sri Kehati Index on the Indonesia Stock Exchange (IDX) from 2020 to 2023. These companies were selected as they provide the most recent data that can offer an updated overview of financial performance and firm value.

This study employs secondary data, which were obtained from the data center of the Indonesia Stock Exchange through the official website www.idx.co.id.

C. Analysis Techniques

Panel data regression is the analysis technique utilized in this work, which combines time series data with cross section data to create panel data, which consists of numerous individual units observed over a period of time. There were 150 cross sections (manufacturing enterprises) in this study, with the same time series (from 2018 to 2023) or 6 (six) periods.

1. Partial Significance Test (t-test)

The t-test is essentially used to determine the extent to which an individual independent (explanatory) variable influences the dependent variable in a regression model. This study applies a significance level of 10% ($\alpha = 0.10$) in a one-tailed ttest.The testing criteria for the t-test are as follows:

H_o: $b_i = 0$ → if the significance value of tstatistic > significance value of ttable, the independent variable does not significantly explain the dependent variable.

H_1: $b_i \neq 0$ → if the significance value of tstatistic < significance value of ttable, the independent variable significantly explains the dependent variable.

2. Simultaneous Significance Test (F-Test)

The F-test is used to determine the degree of joint influence of the independent variables on the dependent variable. The testing criteria for the F-test are as follows: If the significance value of the Fstatistic is lower than that of the Ftable, it indicates that the independent variables collectively explain the variations in the dependent variable in the model used. Conversely, if the Fstatistic value is greater than the Ftable value, it suggests that the independent variables, as a group, do not explain the variations in the dependent variable. This study uses a significance level of 10% (α = 0.10). The hypotheses for the F-test are:

H_o: $b_1 = b_2 = \ldots = b_k = 0$ → if Fstatistic significance > Ftable significance, the independent variables collectively are not significant explanatory variables for the dependent variable.

H_1: $b_1 \neq b_2 \neq \ldots \neq b_k \neq 0$ → if Fstatistic significance < Ftable significance, the independent variables collectively significantly explain the dependent variable.

3. Multiple Linear Regression Analysis

The first stage is conducted to examine the influence of Green Finance (X_1) and Firm Size (X_2) on Return on Assets (ROA) (Y).

The multiple linear regression model is formulated as follows: $Y = a + b1X1 + b2X2 + e$

Description: Y = ROA; a = Constant; b = Regression coefficient; X_1 = Green Finance; X_2 = Firm Size; e = Error term

D. Robustness Test

Before conducting data analysis, the first step is to perform an instrument quality test, which includes the validity test and the reliability test. In this study, the validity test was conducted using the convergent validity and discriminant validity methods with the assistance of SmartPLS 3.0 software. To evaluate discriminant validity, the Average Variance Extracted (AVE) method can also be used for each construct or latent variable. A model is considered to have good discriminant validity if the square root of the AVE for each construct is greater than the correlation between that construct and any other construct in the model.

In addition to the validity test, the reliability test of the construct is also conducted in the measurement model (outer model) to verify the accuracy, consistency, and precision of the instrument in measuring the construct. In PLS, the reliability of a construct with reflective indicators can be assessed using the composite reliability test. If the construct has composite reliability and Cronbach's alpha values greater than 0.7, it can be concluded that the manifest variables demonstrate good accuracy, consistency, and precision in measuring the construct. The empirical data used in this study reveals that the research model met all of the assumptions, allowing for the interpretation of the panel data regression equation

E. Hypothesis testing

The hypothesis testing in this study was conducted using Structural Equation Modeling (SEM) analysis, and the results were compared against the predetermined threshold values. The following section presents the comprehensive model testing results along with the hypotheses testing outcomes of this research.

Based on the theoretical and empirical frameworks discussed above, the following hypotheses are proposed: H1: PROPER has a significant effect on ROA.

H2: SIZE has a significant effect on ROA.

H3: SIZE mediates the effect of PROPER on ROA.

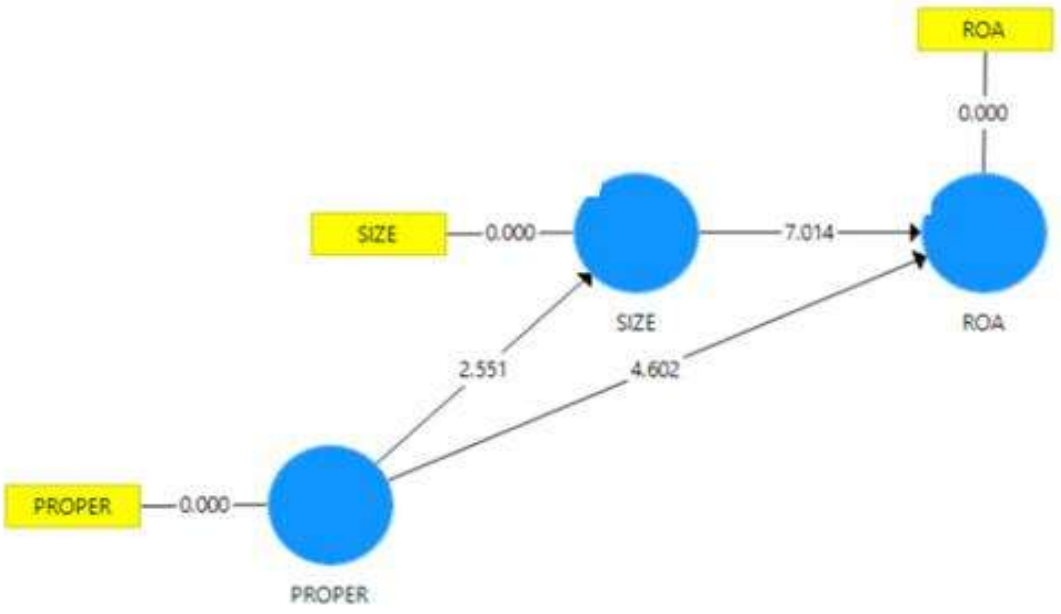

Figure 1. Full Structural Model Results (Standardized Output) – Bootstrapping Source: Processed Data using SmartPLS, 2024

Hypothesis testing in this study was conducted using Structural Equation Modeling (SEM), and the results were compared with the predetermined threshold values. The complete structural model and hypothesis testing results are presented in Figure 1.

a. Hypothesis 1: The Effect of PROPER on ROA.

Hypothesis 1 explains the effect of Environmental Performance (PROPER) on Financial Performance (ROA). Based on the results of data processing, the path coefficient value is 0.378, with a t-statistic of 4.602 > t-table value of 1.96 and p-value of 0.000 < 0.05. Therefore, H_{o1} is rejected and H_{a1} is accepted, indicating that the PROPER variable has a significant effect on ROA.

The results of the partial hypothesis testing for the Environmental Performance (PROPER) variable show that this variable has a significant positive influence on the company's financial performance (ROA). Environmental performance is one of the key factors that can influence a company's financial performance, including Return on Assets (ROA). In Indonesia, one of the programs that assesses corporate environmental performance is PROPER (Company Performance Rating Program in Environmental Management), which is managed by the Ministry of Environment and Forestry. Companies listed in the SRI- KEHATI Index are those that have been selected based on their sustainability performance, encompassing environmental, social, and governance (ESG) aspects.

b. Hypothesis 2: The Effect of Firm Size on ROA

Hypothesis 2 explains the effect of Firm Size (Size) on Return on Assets (ROA). Based on the results of the data analysis, the path coefficient value is -0.400, with a tstatistic of 7.014 > t-table value of 1.96 and a p-value of 0.000 < 0.05. Therefore, H_{o2} is rejected and H_{a2} is accepted, indicating that the Firm Size (Size) variable has a significant effect on ROA.

The results of this study demonstrate that firm size has a negative and significant effect on company performance (ROA). This significant relationship indicates that the total assets owned by a company can be used to predict or explain its financial performance. In other words, a company's financial performance—as reflected in its effectiveness in generating profits—can be directly influenced by the total assets it possesses.

The findings contribute to the understanding that a larger total asset base in manufacturing firms may actually reduce financial performance. Based on the research data, this occurs because the increase in total assets from year to year is not proportional to the net income, which tends to decline. The high level of total assets is not optimally utilized in sales, resulting in lower profitability. The net income of manufacturing companies fluctuates and, in some cases, even shows losses (negative profits). This indicates that large asset holdings may become a burden when they are not used efficiently, as companies must still bear the costs associated with maintaining those assets.

In particular, fixed assets require continuous expenditures for maintenance, replacement, improvements, additions, and rearrangements due to depreciation and production route adjustments. The size of a company is generally measured by its total assets. A company with large total assets is categorized as a large firm, which is typically viewed as stable and capable of generating higher profits. However, during unfavorable economic conditions, the opposite effect may occur. Weak economic conditions can result in poorer financial performance, as high asset levels are not accompanied by increased profitability, thereby exerting a negative impact on the company's profitability (Wufron, 2017).

c. Hypothesis 3: The Effect of PROPER on ROA Through Firm Size

Hypothesis 3 explains the effect of PROPER on ROA with Firm Size as an intervening variable. Based on the results of the data analysis, the path coefficient value is -0.073, with a t-statistic of 2.551 > t-table value of 1.96 and a p-value of 0.020 < 0.05. Therefore, H_{o3} is rejected and H_{a3} is accepted, indicating that the PROPER variable has a significant effect on ROA through Firm Size as an intervening variable. Thus, Firm Size in this study successfully acts as an intervening variable between PROPER and ROA.

The results of the hypothesis testing show that the indirect effect of PROPER on company performance (ROA) through Firm Size as an intervening variable is significant. Good environmental performance increases firm size, and larger firms tend to have a positive impact on ROA. Therefore, good environmental performance (PROPER) indirectly improves ROA through an increase in firm size. In other words, better environmental performance encourages company growth, and larger firms generally exhibit better financial performance, as measured by ROA.

This study indicates that good environmental performance (PROPER) has a significant indirect effect on ROA through the increase in firm size. This finding suggests that corporate efforts to enhance their environmental performance not only have a direct positive impact but also help firms grow and develop, which in turn improves their financial performance.

Furthermore, this study highlights the importance of considering intervening or mediating variables in understanding the complex relationship between environmental performance and financial performance. The implementation of sound environmental policies and practices can serve as an effective strategy for companies to achieve long-term growth and profitability.

IV. RESULTS AND DISCUSSION

A. DESCRIPTIVE ANALYSIS

Descriptive statistical analysis is used to describe or explain the characteristics of the research object based on the data obtained from the sample or population as it is. This descriptive statistic provides an overview of the data through measures such as the mean, minimum value, maximum value, and standard deviation. The results of the descriptive statistical analysis in this study are presented as follows:

Table1. Descriptive Statistics

	Mean	Median	Min	Max	Standard Deviation
PROPER	3.527	3	2	5	0.64
ROA	7.857	6.1	-5	34.8	6.722
SIZE	31.84	31.71	19.67	35.32	1.924

Based on the table above, the results can be explained as follows:

The PROPER variable, with a total of 150 observations (n = 150), has a minimum value of 2.0 and a maximum value of 5.0. The standard deviation of 0.64 is lower than the mean value of 3.527, indicating that the PROPER variable has homogeneous variation.

The ROA variable, with a total of 150 observations (n = 150), has a minimum value of -5.0 and a maximum value of 34.8. The standard deviation of 6.722 is lower than the mean value of 7.857, indicating that the ROA variable has homogeneous variation.

The SIZE variable, with a total of 150 observations (n = 150), has a minimum value of 19.67 and a maximum value of 35.32. The standard deviation of 1.924 is lower than the mean value of 31.84, indicating that the SIZE variable also has homogeneous variation.

B. MULTIPLE LINEAR REGRESSION ANALYSIS

Regression Equation: Financial Performance (ROA) = 0.378 PROPER – 0.400 Size

The coefficient of 0.378 for PROPER indicates that an increase of one unit in environmental performance (PROPER) will increase financial performance (ROA) by 0.378 units, assuming the other variable (Size) remains constant.This means that the better a company's environmental performance (as measured by PROPER), the higher its ability to generate profit from its assets.

The coefficient of -0.400 for Size means that an increase of one unit in firm size (Size) will decrease ROA by 0.400 units, assuming PROPER remains constant. This suggests that larger companies tend to have lower efficiency in generating profits from their assets, possibly due to higher operational costs or increased management complexity.

Environmental performance (PROPER) has a positive effect on financial performance, while firm size (Size) has a negative effect on financial performance (ROA).

CONCLUSIONS

1. PROPER has a partially significant effect on Financial Performance (ROA). This indicates that the company's performance in environmental aspects (as assessed by PROPER) influences the company's ability to generate profits from its assets. However, this effect is observed under certain conditions or aspects, not across all factors that affect financial performance. In other words, the PROPER program plays an important role in influencing the company's financial performance.
2. Firm Size has a partially significant effect on Financial Performance (ROA). This means that the larger the company's size, the greater the likelihood that the company possesses more resources, operational capacity, or efficiency, which can contribute to the improvement of financial performance (ROA).
3. The indirect effect of PROPER on Financial Performance (ROA) through Firm Size as an intervening variable is significant. This means that the PROPER program impacts financial performance (ROA) through the role of firm size as an intervening variable. PROPER contributes to increasing firm size, for example, through a better reputation or more efficient operations which in turn enhances the company's ROA

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