Jurnal Bisnis dan Pemasaran Digital (JBPD)
ISSN: 2798-3293, Vol 6, No 1, 2026, 141-161 https://doi.org/10.35912/jbpd.v6i1.7044

Green Accounting on Return on Assets (ROA): The Moderating Role of Environmental Performance

Riani Puasarin[1*], Gema Ika Sari[2], Mochamad Fahru Komarudin[3]
Universitas Bina Bangsa, Banten, Indonesia[1,2,3]
puasarinriani@gmail.com[1*], gemaikas@gmail.com[2], mfahruk@gmail.com[3]

Article History
Received on 17 May 2026
1st Revision on 28 May 2026
2nd Revision on 15 June 2026
3rd Revision on 10 July 2026
Accepted on 14 July 2026

Abstract
Purpose: This study examines the effect of Green Accounting on Return on Assets (ROA), with environmental performance as a moderating variable among banks in the State-Owned Bank Association (HIMBARA) during 2020–2025.
Research Methodology: A quantitative approach was employed using Moderated Regression Analysis (MRA) with SPSS. The sample consisted of 96 quarterly observations derived from the financial statements and sustainability reports of HIMBARA banks over the 2020–2025 period.
Results: The findings show that Green Accounting has a positive and significant effect on ROA, while environmental performance has no significant direct effect on ROA. However, environmental performance significantly moderates and strengthens the relationship between Green Accounting and ROA. The regression model explains 30.4% of the variation in ROA.
Conclusions: Green Accounting contributes significantly to improving financial performance, while stronger environmental performance enhances its effectiveness in increasing bank profitability.
Limitations: The study is limited to HIMBARA banks and the 2020–2025 period, restricting the generalizability of the findings. The model also indicates that other financial, managerial, and macroeconomic factors may influence profitability.
Contributions: This study supports Stakeholder Theory, Legitimacy Theory, and the Resource-Based View by demonstrating the strategic role of environmental performance in strengthening the relationship between Green Accounting and financial performance in state-owned banks.

Keywords: *CSR, Environmental Performance, Green Accounting, HIMBARA, Moderation Return on Aset*

How to Cite: Puasarin, R., Sari, G. I., & Komarudin, M. F. (2026). Green Accounting on Return on Assets (ROA): The Moderating Role of Environmental Performance. *Jurnal Bisnis dan Pemasaran Digital*, 6(1), 141-161.

1. Introduction

The current development of the global economy increasingly demonstrates a fundamental shift in paradigm, from a sole focus on profit toward a more sustainable and inclusive approach. The concept of sustainable development is no longer regarded as merely a normative discourse but has become a primary strategy for maintaining long-term economic stability. This transformation has been driven by growing awareness that uncontrolled economic activities can generate negative environmental and social externalities, making it essential to integrate sustainability aspects into modern business practices. Sustainability accounting is an accounting concept that has emerged alongside increasing

demands for corporate transparency and accountability in economic, social, and environmental aspects.

The current development of the global economy increasingly demonstrates a fundamental shift in paradigm, from a sole focus on profit toward a more sustainable and inclusive approach. Sustainable development is no longer regarded merely as a normative discourse but has become a strategic imperative for maintaining long-term economic stability (Foltean, Trif, & Tuleu, 2019; Trainor, Andzulis, Rapp, & Agnihotri, 2014) . This transformation has been driven by growing awareness that uncontrolled economic activities can generate negative environmental and social externalities, making it increasingly important for organizations to integrate sustainability considerations into their business and accounting practices. In this context, sustainability accounting and Green Accounting have emerged as important mechanisms for improving corporate transparency and accountability by incorporating environmental considerations into accounting and financial decision-making (Berkat, Setinawati, & Basrowi, 2025).

Previous studies have generally examined the direct relationship between Green Accounting and financial performance, including Return on Assets (ROA). However, the empirical findings remain inconsistent. Some studies report that Green Accounting improves financial performance by enhancing operational efficiency, stakeholder trust, corporate reputation, and access to sustainable financing, whereas other studies find weak or insignificant effects (Nuryanto, Basrowi, Quraysin, Pratiwi, & Utami, 2024) . These inconsistencies suggest that the financial benefits of Green Accounting may not occur uniformly across organizations but may depend on complementary organizational and environmental factors. Moreover, much of the existing literature has focused on Green Accounting as an independent variable and financial performance as a dependent variable, while relatively limited attention has been given to the conditions under which Green Accounting can generate stronger financial outcomes (Almasyhari, Rachmadani, & Sari, 2025).

A particularly important gap concerns the role of Environmental Performance as a moderating variable. Although environmental performance reflects the extent to which an organization effectively manages and responds to environmental responsibilities, previous research has predominantly treated it as an independent determinant of financial performance rather than as a factor that can strengthen or weaken the effect of Green Accounting on profitability(Mukt, Basrowi, Juwita, Isnarini, Dewi, & Yusuf, 2025). This distinction is important because the adoption of Green Accounting alone may not automatically translate into improved financial performance. The financial value of environmental accounting information may depend on whether the organization demonstrates credible and measurable environmental performance. Organizations with stronger environmental performance may be better positioned to translate Green Accounting practices into operational efficiency, stakeholder legitimacy, corporate reputation, and ultimately higher profitability (Dahlan, Shafia, Tatung, & Basrowi, 2025).

This gap is particularly relevant in banking. Although banks have limited direct environmental impacts, their financing, investment, risk management, and reporting decisions strongly influence sustainable economic activities. HIMBARA banks also play a strategic role in Indonesia's financial system and are increasingly expected to integrate sustainability principles. However, evidence on whether Environmental Performance strengthens the relationship between Green Accounting and ROA remains limited. Examining this moderating role therefore provides a clearer understanding of how environmental accounting practices affect financial performance. (Fauzi, Basrowi, & Wulandari, 2025). Accordingly, this study addresses the research gap by examining not only whether Green Accounting affects ROA but also whether Environmental Performance strengthens this relationship among HIMBARA banks during the 2020–2025 period. By positioning Environmental Performance as a moderator rather than merely as a direct predictor, this study provides a more nuanced explanation of the conditions under which Green Accounting can generate financial benefits. This perspective contributes to the sustainability accounting literature by integrating accounting practices, environmental outcomes, and financial performance within a single analytical framework (Mukt et al., 2025).

According to (Nuryanto et al., 2024) sustainability accounting is viewed as an integrated reporting system that not only presents financial information but also incorporates non-financial information related to Environmental, Social, and Governance (ESG) performance. Consequently, sustainability accounting provides a more comprehensive picture of a company's overall performance beyond traditional financial measures. This is consistent with previous research, which suggests that sustainability encompasses the integration of economic, social, and environmental aspects into business activities to create long-term value (Ainin, Parveen, Moghavvemi, Jaafar, & Mohd, 2015; Hasibuan, Suliyanto, & Novandari, 2026).

Meanwhile, the financial performance of the state-owned banks that are members of the Association of State-Owned Banks (HIMBARA) namely *Bank Mandiri, Bank Rakyat Indonesia, Bank Negara Indonesia,* and *Bank Tabungan Negara* exhibited fluctuating trends during the 2020–2024 period. These fluctuations reflect instability in financial performance influenced by both external conditions and internal banking policies. During the COVID-19 pandemic period (2020–2021), the financial performance of HIMBARA banks experienced significant pressure. Restrictions on economic activities reduced borrowers' ability to meet their financial obligations, resulting in an increase in the Non-Performing Loan (NPL) ratio (Ainin et al., 2015).

As the economy entered the post-pandemic recovery period, the performance of the Indonesian banking sector, particularly the banks within HIMBARA, showed significant improvement. This finding is consistent with previous research indicating that the pandemic reduced banking profitability and lending activities, while the subsequent period was characterized by a rebound in financial performance (Almasyhari et al., 2025). In 2022, the recovery was driven by increased credit disbursement, particularly to the Micro, Small, and Medium Enterprises (MSME) sector, which recorded substantial year-on-year growth. This positive trend continued with stronger banking intermediation and growth in third-party funds, reflecting increased public confidence and improved operational efficiency. The upward trend persisted in 2023, when the combined net profit of HIMBARA banks increased by 22.86% Year-on-Year (YoY). These developments indicate that the banking sector has gradually adapted and successfully capitalized on the momentum of economic recovery (Almasyhari et al., 2025). The financial performance of HIMBARA banks, as measured by Return on Assets (ROA), is presented in Table 1 for the 2020–2025 period.

Table 1. Development of HIMBARA bank's financial performance (ROA) 2020–2025

Bank	2020	2021	2022	2023	2024	2025
MANDIRI	1.20	1.62	2.07	2.53	2.30	1.99
BRI	1.16	1.83	2.76	3.07	3.04	2.68
BNI	0.37	1.13	1.78	1.92	1.90	1.74
BTN	0.44	0.64	0.76	0.80	0.64	0.66
Rata-rata	0.79	1.31	1.84	2.08	1.97	1.77

The data were obtained from the banks' annual reports and financial statements. Based on Table 1, the financial performance of HIMBARA banks as measured by Return on Assets (ROA) shows a fluctuating pattern (Berkat et al., 2025). Bank Mandiri's ROA demonstrated an upward trend from 2020 (1.20) to a peak in 2023 (2.53). However, it declined in 2024 (2.30) and fell more sharply again in 2025 (1.99). This pattern indicates fluctuations, where after a period of consistent growth, profitability began to weaken ((Berkat et al., 2025).

Bank BRI experienced a significant increase from 2020 (1.16) to 2023 (3.07). Nevertheless, in 2024 ROA declined slightly to 3.04 and was followed by a larger decrease in 2025 (2.68). These fluctuations indicate that although BRI recorded the highest performance among HIMBARA banks for a period, profitability pressures began to emerge during the last two years (Dahlan et al., 2025).

Bank BNI's ROA increased sharply from 2020 (0.37) to 2023 (1.92). However, it decreased slightly to 1.90 in 2024 and declined further to 1.74 in 2025. This pattern suggests relative stability through 2023 before gradually weakening thereafter (Dahlan et al., 2025) . Bank BTN showed a more moderate

trend. From 2020 (0.44) to 2023 (0.80), ROA continued to rise. However, in 2024 it declined significantly to 0.64, although it improved slightly in 2025 (0.66). BTN's fluctuations appear sharper than BNI's, with a particularly noticeable decline in 2024 (Fauzi et al., 2025).

According to data from Bank Indonesia accessed in May 2026 in Figure 1 , the banking sector's Return on Assets (ROA) ratio declined slightly from the end of 2023 to the end of 2024, reaching 2.69%. The decline in the ROA ratio was relatively limited despite a deeper decline in the Net Interest Margin (NIM), due to contributions from fee-based income, interest income from securities, and adjustments in loan loss provisions (CKPN). The NIM ratio decreased to 4.60% in September 2024 from 4.81% at the end of 2023 (Chart 3.3.7), in line with pressure on interest rate spreads. Meanwhile, fee-based income and interest income from securities increased to 10.53% and 48.80%, respectively, in September 2024 compared with the end of 2023 (Fauzi et al., 2025).

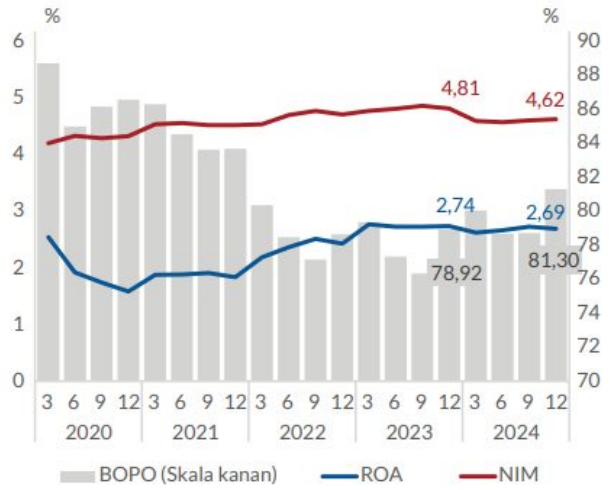

Figure 1. ROA development data BI publication source

These conditions indicate that increases in assets and business expansion are not necessarily accompanied by an improvement in a company's ability to maintain the stability of its Return on Assets (ROA).

Pressure from various stakeholders has continued to increase, encouraging companies to become more transparent and accountable for their environmental impacts (Fauzi, Effendi, & Basrowi, 2024). This trend is reflected in the growing adoption of sustainability reporting and Environmental, Social, and Governance (ESG) disclosures as forms of corporate accountability (Bolognesi et al., 2025). Furthermore, global investors are increasingly incorporating Environmental, Social, and Governance (ESG) considerations into their investment decisions, as such information is regarded as relevant for assessing corporate risk and long-term value (Fauzi et al., 2025). In response to these pressures, companies are required to integrate environmental considerations into their management systems and financial reporting. One of the emerging approaches is Green Accounting, an accounting system that incorporates environmental costs and benefits into corporate financial statements. Green Accounting enables companies to identify environmental impacts more systematically and supports sustainability-based decision-making (Fauzi, Effendi, Basrowi, & Muslihudin, 2024).

Climate change, environmental degradation, and the depletion of natural resources have become major challenges for businesses worldwide. These conditions encourage companies not only to pursue economic efficiency but also to fulfill their environmental responsibilities through the implementation of Green Accounting (Junedi & Basrowi, 2024). Research indicates that pressure on companies to manage their environmental impacts continues to intensify as environmental risks increasingly threaten business sustainability (Foltean et al., 2019; Trainor et al., 2014). A study conducted by Komarudin (2025) discusses the implementation of environmental management accounting in the

context of sustainable development, particularly in companies in developing countries. This research used a qualitative approach based on a literature review and found that implementing EMA can improve both environmental and financial performance through more efficient resource use and better environmental cost management. Furthermore, this study also highlighted various challenges in implementing EMA, such as weak regulatory support, low management commitment, and the limitations of traditional accounting systems in accommodating environmental aspects. These findings indicate that the success of EMA implementation is highly dependent on the organization's environmental conditions and external support.

In their study, Junedi and Basrowi (2024) emphasized that Green Accounting plays an important role not only in identifying environmental costs but also in enhancing transparency and supporting sustainability-oriented decision-making. Moreover, transparent reporting of environmental costs generated through Green Accounting practices improves a company's reputation and strengthens its legitimacy in the eyes of stakeholders, thereby increasing the confidence of external parties. Two previous studies consistently found that environmental performance has a positive effect on financial performance, both directly and indirectly through the mediating role of firm value (Junedi and Basrowi, 2024; Uda, Prasetyo, Dopo, & Uda, 2024). These findings reinforce the argument that sustainability initiatives are not merely a form of corporate social responsibility but also a relevant financial strategy. However, the decline in ROA suggests that the costs associated with implementing sustainability initiatives remain greater than the immediate financial benefits they generate (Lopes, Silveira, Farinha, Oliveira, & Oliveira, 2021; (Hasibuan et al., 2026)). Environmental performance indicators, including green financing and sustainable operational efficiency, indicate that BNI has adopted a gradual integration strategy, resulting in a less pronounced impact on profitability (Mukt et al., 2025). The adoption of energy-efficiency initiatives and environmentally friendly building practices appears to have contributed positively to BTN's profitability, although the impact remains relatively limited.

2. Literature Review and Hypotheses Development

2.1 Return on Assets (ROA)

Return on Assets (ROA) can be understood as a measure of a company's financial condition, reflected through the use of financial ratios as the primary performance indicators. Financial ratios play an essential role in assessing a company's ability to meet its obligations, generate profits, and manage its assets and capital effectively. Therefore, the application of financial ratios provides a comprehensive overview of a company's financial performance and serves as an important basis for evaluation and strategic business decision-making (Nuryanto, Yusuf, Junedi, Pratiwi, & Basrowi, 2025).

ROA is influenced by a company's ability to innovate and implement more effective strategic planning that aligns with the needs of its target market. Innovations that fail to meet market demands may result in increased production costs, declining sales, or lower product quality. In general, innovation enables companies to develop new products or services and improve operational processes, thereby creating additional value and enhancing profitability. Technology adoption acts as a moderating factor that strengthens the relationship between innovation, strategic planning, and financial performance by making business processes faster, more accurate, and more competitive. Consequently, the combination of innovation, strategic planning, and technology adoption constitutes a key driver of improved corporate financial performance (Nuryanto et al., 2025).

In the context of sustainability-oriented business practices, ROA is not determined solely by conventional financial and operational factors but may also be influenced by how organizations manage environmental responsibilities and communicate sustainability-related information. Green Accounting provides a mechanism for identifying, measuring, and reporting environmental costs and benefits, thereby enabling management to incorporate environmental considerations into resource allocation and financial decision-making. Effective implementation of Green Accounting can contribute to cost efficiency, improved resource utilization, risk reduction, and enhanced stakeholder confidence, which may ultimately improve financial performance as reflected in RO (Rialti & Zollo, 2023).

The relationship between Green Accounting and ROA can be explained through Stakeholder Theory, which emphasizes that organizational success depends on the ability to address the interests and expectations of relevant stakeholders. The disclosure and implementation of environmental accounting practices can provide stakeholders with information regarding the organization's commitment to environmental responsibility. For banks, stronger sustainability practices may enhance stakeholder trust, corporate reputation, and legitimacy, potentially supporting customer relationships and long-term financial performance. Thus, Green Accounting is expected to have a positive relationship with ROA because environmental transparency can create economic value in addition to fulfilling social and environmental responsibilities (Nuryanto, Basrowi, Quraysin, Pratiwi, & Utami, 2024).

According to Pratiwi, Saefudin, Sari, Maliki, and Nuryano (2025), a company's financial performance fundamentally reflects its ability to manage assets, liabilities, and equity in order to achieve profitability while maintaining business continuity. This perspective emphasizes the importance of financial stability as the foundation of long-term business sustainability. Consistent with this view, Purwaningsih, Muslikh, and Fathurahman (2024) defines corporate financial performance as a representation of a company's financial condition that demonstrates the extent to which it is capable of achieving its economic objectives through the effective management of assets, liabilities, and equity. Financial performance analysis serves as a tool for assessing management effectiveness in utilizing organizational resources and provides a basis for strategic decision-making (Purwaningsih et al., 2024).

Meanwhile, according to Rialti and Zollo (2023), high-quality accounting records constitute the primary foundation of a company's financial performance. Transparent and accountable accounting records not only enhance profitability and operational efficiency but also strengthen corporate legitimacy in the eyes of investors.

2.2 Green Accounting Theory

Corporate climate commitment represents an organization's responsibility toward environmental issues, as reflected through policies aimed at reducing greenhouse gas emissions, improving energy efficiency, and implementing sustainable business practices (Nuryanto, Basrowi, Quraysin, Pratiwi, & Utami, 2024). A higher level of climate commitment has a positive impact on corporate financial performance by enhancing corporate reputation, strengthening investor confidence, and creating new market opportunities. Through climate commitment, companies are encouraged to internalize environmental costs and disclose sustainability-related information in their financial statements (Rialti, & Zollo, 2023; Teece, Pisano, & Shuen, 1997).

Green Accounting functions as a mechanism for measuring, recording, and reporting the environmental costs and benefits arising from corporate activities. As such, it serves as a bridge between climate commitment and financial performance, since greater transparency in sustainability reporting enhances corporate accountability and increases the company's attractiveness to stakeholders (Teece et al., 1997). Komarudin (2025) examined the role of Environmental Management Accounting (EMA) in creating corporate competitive advantage. Using a quantitative approach, the study found that the implementation of EMA enhances operational efficiency, supports strategic decision-making, and strengthens a company's competitive advantage through improved environmental and financial performance. (Komarudin, Hasanudin, Hanifah, & Mulyasari, 2026) investigated the influence of institutional regulations and environmental management strategies on organizational performance, with environmental management accounting serving as a mediating variable. The findings revealed that stronger institutional support and effective environmental management strategies improve organizational performance, while EMA plays a significant mediating role in strengthening these relationships.

According to Sari, Winasis, Pratiwi, and Nuryanto (2024), green process innovation defined as the implementation of environmentally friendly production and operational processes, including energy efficiency, waste reduction, and the use of sustainable raw materials has a positive effect on financial

performance (Teece et al., 1997). Such green innovations not only reduce long-term operating costs but also enhance a company's reputation and increase its appeal to consumers and investors (Sukidin & Choirul, 2025). By committing to green innovation, companies are encouraged to internalize environmental costs within their financial reporting, thereby improving transparency and accountability. This, in turn, strengthens the relationship between green innovation and financial performance, as clear sustainability reporting enhances investor confidence and reinforces the company's social legitimacy (Sari et al., 2024).

2.3 Theory of the Moderating Variable: Corporate Environmental Performance

Research conducted by Nuryanto, Basrowi, Quraysin, Pratiwi, and Utami (2024) states that environmental performance reflects a company's efforts to reduce its negative environmental impacts through the implementation of environmental accounting practices and Corporate Social Responsibility (CSR). This finding indicates that although environmental sustainability is an important aspect of corporate reputation, its contribution to profitability is not always directly measurable (Hasibuan, Suliyanto, & Novandari, 2026).

Companies that manage their environmental and social responsibilities in a structured and transparent manner are more likely to achieve sustainable financial growth (Hasibuan et al., 2026). Meanwhile, the implementation of environmental costs ensures that companies assume full responsibility for the environmental impacts arising from their operational activities (Kraus, Breier, & Dasí-Rodríguez, 2020). These environmental costs reflect a company's commitment to preventing, reducing, or remediating environmental damage and environmental quality degradation that may result from its production or service activities (Huo, Zheng, & Pei, 2023). Research findings indicate that companies implementing environmental cost accounting through the recognition and disclosure of environmental expenditures have a positive effect on financial performance, particularly when measured by profitability indicators such as Return on Assets (ROA) and Return on Equity (ROE) (Nuryanto, Quraysin, & Pratiwi, 2024b; Waluyo, & Basrowi, 2024).

Uda, Prasetyo, Dopo, and Uda (2024) explained that the implementation of environmental costs not only demonstrates a company's commitment to corporate social responsibility and sustainability but also contributes to improved operational efficiency, more effective risk management, and a stronger corporate reputation (Maulidia, Afifah, Pebrianti, Juniwati, & Heriyadi, 2026). Therefore, integrating environmental costs into financial reporting can be regarded as a strategic approach that supports profitability while strengthening a company's long-term competitive position (Lopes, Silveira, Farinha, Oliveira, & Oliveira, 2021). Furthermore, environmental conservation efforts not only provide direct benefits to surrounding communities by creating a healthier and more sustainable environment but also contribute to the long-term sustainability of the company's business operations (Nambisan, Wright, & Feldman, 2019). Figure 2 presents the conceptual framework that illustrates the relationships among the variables examined in this study.

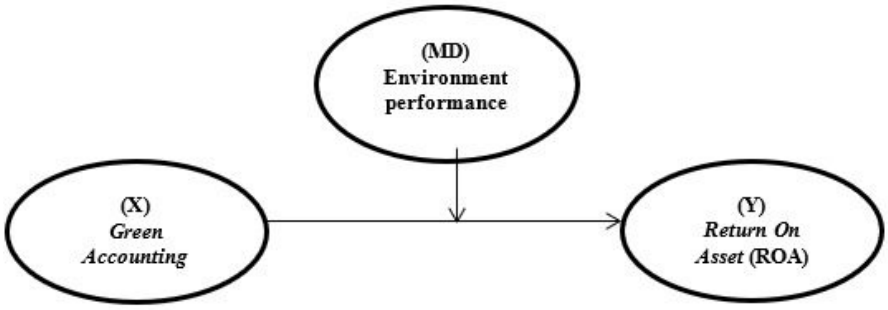

Figure 2. Framing of thinking

2.3.1 Relationship Between Variables (According to the Diagram Framework)

H_1: Direct effect of Green Accounting on Return on Assets ($X_1 \rightarrow Y$)

H_2: Direct effect of environmental performance on financial performance ($MD \rightarrow Y$)

H_3: Moderating effect of environmental performance. ($X_1 \times$ MD $\rightarrow Y$)

3. Research Methodology

3.1 Population and Sample

The population of this study consists of all companies that are members of the State-Owned Banks Association (HIMBARA) and are listed on the Indonesia Stock Exchange (IDX). This population was selected because HIMBARA represents a group of state-owned banks that play a strategic role in Indonesia's national financial system and consistently publish annual financial statements and sustainability reports relevant to the variables examined in this study. The companies included in the study population are *Bank Rakyat Indonesia* (BRI), *Bank Mandiri, Bank Negara Indonesia* (BNI), and *Bank Tabungan Negara* (BTN). The study covers the observation period from 2020 to 2025, meaning that the population comprises all annual financial reports of HIMBARA banks during this period.

The sample was determined using the saturated sampling (census sampling) technique, in which all members of the population are included as the research sample. The unit of analysis consists of the annual financial statements of these banks for the period 2020–2025 (Hair, Hult, Ringle, & Sarstedt, 2022). Based on this sampling approach, the study includes four companies observed over six years. Financial data are analyzed on a quarterly basis (Q1–Q4), resulting in a total of 96 observations (4 banks × 6 years × 4 quarters = 96 observations). This approach is expected to produce more accurate and representative research findings, as it eliminates sampling bias by including the entire population in the analysis (Hair et al., 2022).

3.2 Technique of data collection

The data collection in this study employed the secondary data method, which refers to data obtained indirectly through intermediaries or from previously published sources. The secondary data used in this study consist of the annual financial statements and sustainability reports of companies that are members of the State-Owned Banks Association (HIMBARA) for the period 2020–2025. These documents include information on Green Accounting (Environmental Cost), Return on Assets (ROA), and Environmental Performance, which is proxied by the Corporate Social Responsibility (CSR) Index based on the Global Reporting Initiative (GRI) Standards (Hair, Hult, Ringle, & Sarstedt, 2022).

3.2.1 Dependent Variable (Y) Returen on Asset (ROA)

Financial performance refers to a company's ability to generate profits and manage all of its resources effectively and efficiently within a given period, thereby reflecting the company's level of success in conducting its operational activities. In the context of this study, financial performance is not only understood conceptually as the achievement of business outcomes but is also operationalized as a variable that can be measured quantitatively. In other words, Return on Assets (ROA) as shown in Formula 1, provides a comprehensive measure of a company's ability to convert its investments in assets into profits**.**

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}} \times 100\% \tag{1}$$

3.2.2 Independent Variables (X) Green Accounting Measured by Enviromental Cost

In this study, Green Accounting is measured using the Environmental Cost approach. The measurement formula for Green Accounting adopted in this study refers to the research conducted by Dahlan, Shafia, Tatung, and Basrowi (2025), which was developed based on the following reference standard in **Formula** 2**.**

$$EC = \frac{COST}{PROFIT} \tag{2}$$

3.2.3 Moderating Variable (Md) Environmental Performance

The Environmental Performance variable in this study refers to the company's external environmental conditions, including stakeholder pressure, regulatory requirements, and the level of environmental awareness. This variable functions as a moderating variable in the relationship between Green Accounting and financial performance (Hair, Hult, Ringle, & Sarstedt, 2022).

As a moderating variable, Environmental Performance does not merely represent an additional direct determinant of ROA. Instead, it is expected to influence the strength of the relationship between Green Accounting and ROA. Specifically, banks with stronger Environmental Performance are expected to obtain greater financial benefits from Green Accounting because environmental information and expenditures are supported by more credible environmental practices and disclosures. Accordingly, the interaction between Green Accounting and Environmental Performance is expected to have a positive effect on ROA.

3.3 Data Analysis Technique

This study employs multiple regression analysis using the Moderated Regression Analysis (MRA) approach with the assistance of SPSS (Statistical Package for the Social Sciences) software. SPSS was selected because of its capability to perform multiple regression analysis, classical assumption tests, and moderation analysis efficiently and accurately. The data analysis was conducted through the following stages:

Descriptive statistical analysis is used to provide a general overview of the characteristics of the research data (Teece, Pisano, & Shuen, 1997). This analysis presents information on the minimum value, maximum value, mean, and standard deviation of each research variable, namely Green Accounting, proxied by Environmental Cost; Environmental Performance, proxied by the Corporate Social Responsibility (CSR) Index based on the Global Reporting Initiative (GRI) Standards; and Financial Performance, proxied by Return on Assets (ROA). The purpose of this analysis is to describe the characteristics of the data and examine the distribution of each variable before conducting further statistical analyses. Prior to performing the regression analysis, these tests are conducted to verify that the regression model meets the required statistical assumptions and provides valid and unbiased estimation results (Teece et al., 1997; Wang, & Ahmed, 2007).

The analytical method employed in this study is Moderated Regression Analysis (MRA), which is technically estimated using multiple linear regression. According to Teece et al. (1997), Wang and Ahmed (2007) multiple linear regression is a statistical method used to examine the effect of more than one independent variable on a single dependent variable. Moderated Regression Analysis (MRA) is applied to determine whether the moderating variable (Environmental Performance) strengthens or weakens the effect of the independent variable (Green Accounting) on the dependent variable (Return on Assets/ROA). The regression equation model used in this study is as presented in Formula 3:

$$Y = \alpha + \beta_1 X + \beta_2 Z + \beta_3 (X \times Z) + \varepsilon \tag{3}$$

Information:

Y = *Return on Asset* (ROA), X = *Green Accounting* (*Environmental Cost*), Md = Environmental Performance (CSR Index), X×Md = Interaction between Green Accounting and Environmental Performance, α = Constant, β_1, β_2, β_3 = Regression coefficients, ε = Error term.

The procedures for conducting the Moderated Regression Analysis (MRA) are as follows:

1. First Regression Model: Regress the independent variable (X) on the dependent variable (Y) to examine the direct effect.
2. Second Regression Model: Include the moderating variable (Md) in the regression model to examine its direct effect on the dependent variable.
3. Third Regression Model: Include the interaction term between the independent variable and the moderating variable (X × Md) to examine the moderating effect.

   To avoid multicollinearity between the independent variable and the interaction term, mean-centering was performed on variables X and Md before constructing the interaction variable (Nuryanto, Basrowi, Quraysin, Pratiwi, & Utami, 2024).Hypothesis testing was conducted using the t-test (partial test) and the F-test (simultaneous test) as follows: The t-test was used to examine the partial effect of each independent variable on the dependent variable. The test was conducted by comparing the calculated *t*-value with the critical *t*-value or by examining the significance value.

The decision criteria were as follows: If the significance value is < 0.05, H_0 is rejected and H_1 is accepted, indicating a statistically significant effect, if the significance value is > 0.05, H_0 is accepted and H_1 is rejected, indicating no statistically significant effect. The F-test was used to examine the simultaneous effect of all independent variables on the dependent variable. The decision criteria were as follows: If the significance value is < 0.05, the regression model is considered appropriate (fit), If the significance value is > 0.05, the regression model is considered inappropriate (not fit). The coefficient of determination (R^2) was used to measure the extent to which the regression model explains the variation in the dependent variable.

4. Results and Discussions

4.1 Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to provide an overview of the characteristics of the research data, including the minimum value, maximum value, mean, and standard deviation of each variable. The results of the descriptive statistical analysis are presented in the following Table 2.

Table 2. Descriptive statistics of the research variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Green Accounting (*X*)	96	0.251	934.430	337.117	266.872
ROA (*Y*)	96	0.0015	0.0308	0.0118	0.0079
CSR (Md)	96	33.82	96.58	66.96	15.53
Valid N (listwise)	96				

Based on Table 2, the results can be explained as follows:

Green Accounting (*X*), the green accounting variable, proxied by Environmental Cost, has a minimum value of 0.251 (Bank Mandiri, Q4 2025) and a maximum value of 934.430 (BTN, Q4 2025). The mean value is 337.117, with a standard deviation of 266.872. Since the standard deviation is relatively high, the Green Accounting data exhibit considerable variation across banks and observation periods. Return On Asset (ROA), The ROA variable has a minimum value of 0.0015 (BTN, Q1 2020) and a maximum value of 0.0308 (BRI, Q4 2023). The average (mean) ROA is 0.0118, with a standard deviation of 0.0079. The relatively smaller standard deviation indicates moderate variation in ROA across the observations. The average ROA of 1.18% remains below the 1.5% minimum benchmark established by Bank Indonesia, suggesting that, on average, the profitability performance of HIMBARA banks still requires improvement. Environmental Performance (CSR), the environmental performance variable, proxied by the CSR Index, has a minimum value of 33.82 (BNI, Q1 2020) and

a maximum value of 96.58 (BNI, Q4 2024). The mean value is 66.96, with a standard deviation of 15.53. The relatively large standard deviation indicates considerable variation in CSR disclosure among the banks. This finding suggests that not all HIMBARA banks demonstrate the same level of transparency and commitment in disclosing environmental information. To provide a more detailed overview, descriptive statistics for each bank are presented in Table 3.

Table 3. Descriptive statistic every bank

Bank	Variables	N	Minimum	Maximum	Mean	Std. Deviation
Mandiri	Green Accounting	24	0.251	250.030	149.236	58.110
	ROA	24	0.0041	0.0276	0.0141	0.0068
	CSR	24	43.93	76.21	63.95	10.94
BRI	Green Accounting	24	254.70	400.24	330.96	77.46
	ROA	24	0.0049	0.0308	0.0156	0.0082
	CSR	24	46.88	79.49	65.56	7.20
BNI	Green Accounting	24	99.75	175.00	138.50	21.26
	ROA	24	0.0028	0.0194	0.0098	0.0052
	CSR	24	33.82	96.58	68.07	22.46
BTN	Green Accounting	24	265.82	934.43	657.99	215.06
	ROA	24	0.0015	0.0080	0.0045	0.0020
	CSR	24	47.79	81.20	66.08	13.06

Based on Table 3, the descriptive statistics reveal differences in the implementation of Green Accounting, the level of profitability measured by Return on Assets (ROA), and Corporate Social Responsibility (CSR) among the four state-owned banks during the observation period. Variations in the mean, minimum, maximum, and standard deviation indicate that each bank adopts different policies and strategies in managing environmental, social, and financial performance.

4.2 Testing the Data Analysis Assumptions

The normality test was conducted to determine whether the residuals (error terms) in the regression model are normally distributed. In this study, normality was tested using the Kolmogorov–Smirnov test with the assistance of SPSS. Before testing the research hypotheses, the normality of the data was examined using the Kolmogorov–Smirnov test, and the results are presented in Table 4.

Table 4. Results of the normality test (Kolmogorov–Smirnov)

Variables	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)	Description
Unstandardized Residual	0.782	0.574	Normal

Based on Table 4. the Asymp. Sig. (2-tailed) value is 0.574, which is greater than the significance level of 0.05. Therefore, it can be concluded that the residuals are normally distributed. This result is further supported by the Normal P–P Plot, in which the data points are distributed closely around the diagonal line, indicating that the residuals follow a normal distribution. To further verify the normality assumption, the normal P–P Plot of Regression Standardized Residual was examined, as illustrated in Figure 3 .

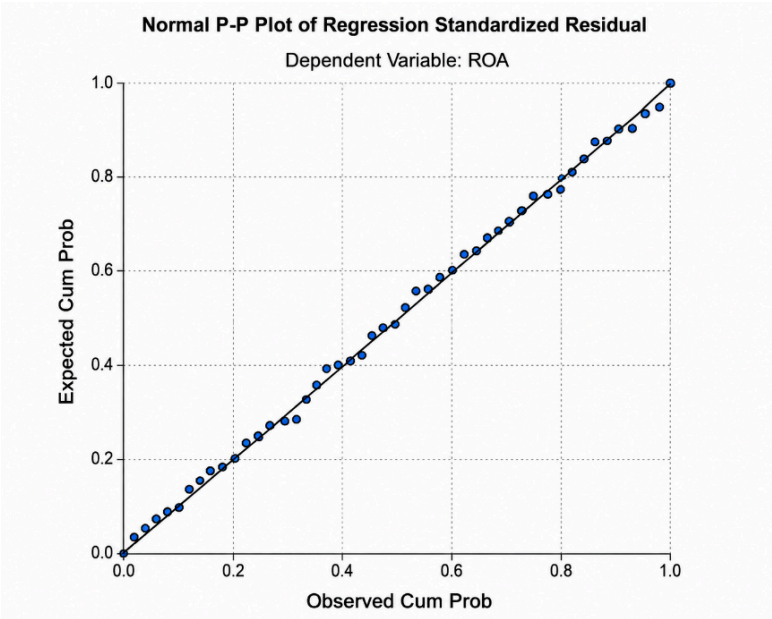

Figure 3. Normal P–P Plot of regression standardized residual

The multicollinearity test was conducted to determine whether there is a correlation among the independent variables in the regression model. A good regression model should not exhibit a strong correlation among its independent variables. In this study, multicollinearity was assessed by examining the Variance Inflation Factor (VIF) and Tolerance values. To ensure that the independent variables were free from multicollinearity, tolerance and Variance Inflation Factor (VIF) values were examined, and the results are presented in Table 5.

Table 5. Results of the multicollinearity test

Variables	Tolerance	VIF	Interpretation
Green Accounting (*X*)	0.854	1.171	No multicollinearity was detected
CSR (Md)	0.921	1.086	No multicollinearity was detected
Interaksi (*X**Md)	0.837	1.195	No multicollinearity was detected

Based on Table 5, all variables have Tolerance values greater than 0.10 and Variance Inflation Factor (VIF) values below 10. Therefore, it can be concluded that no multicollinearity exists among the independent variables in the research model.

The heteroscedasticity test was conducted to determine whether the variance of the residuals is constant across all observations in the regression model. Heteroscedasticity was examined using the Glejser test.

Table 6. Results of the heteroscedasticity test (Glejser Test)

Variables	t-hitung	Sig.	Interpretation
Green Accounting (*X*)	1.328	0.188	The model is free from heteroscedasticity
CSR (Md)	-0.492	0.624	The model is free from heteroscedasticity
Interaksi (*X**Md)	1.157	0.251	The model is free from heteroscedasticity

Based on Table 6, all variables have significance values greater than 0.05. Therefore, it can be concluded that no heteroscedasticity is present in the research model. This finding is further supported by the scatterplot, which shows that the data points are randomly dispersed around the zero line, indicating that the variance of the residuals is constant across observations. To assess whether the regression model satisfied the homoscedasticity assumption, a scatterplot of the standardized residuals was examined, as shown in Figure 4.

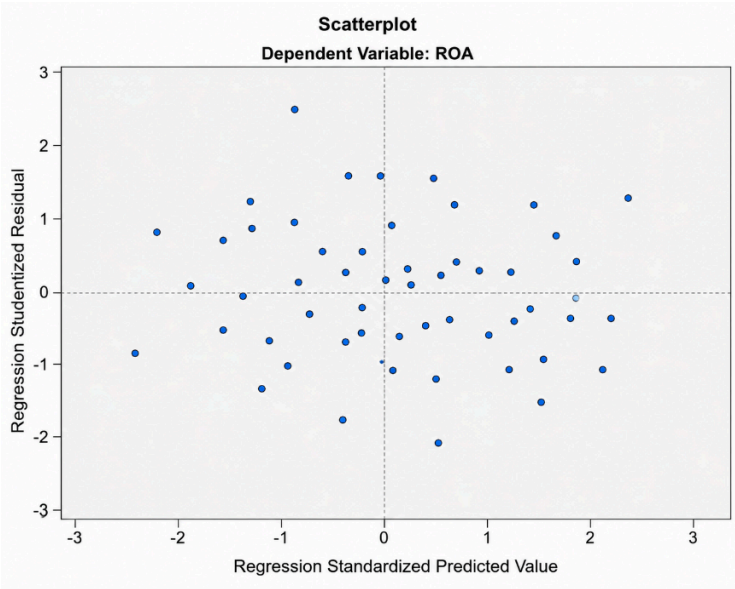

Figure 4. Scatterplot of the heteroscedasticity test

The autocorrelation test was conducted to determine whether there is a correlation between the residual (error term) in period t and the residual in the preceding period (t – 1) within the linear regression model. In this study, autocorrelation was examined using the Durbin–Watson (DW) test. The Durbin–Watson test was employed to examine the independence of the regression residuals, with the results summarized in Table 7.

Table 7. Results of the autocorrelation test (Durbin–Watson Test)

Model	Durbin-Watson	Interpretation
Regression	1.824	No autocorrelation was detected

Based on Table 7, the Durbin–Watson value is 1.824. With the number of observations (n) = 96 and the number of independent variables (k) = 3, the critical values are dL = 1.613 and dU = 1.724. Since the DW value (1.824) lies between dU (1.724) and 4 – dU (2.276), it can be concluded that there is no autocorrelation problem in the research model.

4.2.1 Multiple Regression Analysis and Moderation Analysis (MRA)

The moderating role of the moderator variable was assessed using Moderated Regression Analysis (MRA), with the results summarized in Table 8.

Table 8. Results of the Moderated Regression Analysis (MRA)

Model	Variables	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
Model 1	(Constant)	-0.006	0.002		-3.255	0.002
	Green Accounting (*X*)	6.976E-5	0.000	0.536	6.146	0.000
Model 2	(Constant)	-0.011	0.003		-3.711	0.000

Model	Variables	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
Model 2	Green Accounting (*X*)	6.365E-5	0.000	0.489	5.755	0.000
	CSR (Md)	6.967E-5	0.000	0.137	1.613	0.110
Model 3	(Constant)	-0.010	0.003		-3.428	0.001
	Green Accounting (*X*)	6.549E-5	0.000	0.503	5.967	0.000
	CSR (Md)	6.314E-5	0.000	0.124	1.481	0.142
	Interaksi (*X**Md)	3.482E-7	0.000	0.157	2.206	0.030

Description:

- Model 1: Regression of X on Y
- Model 2: Regression of X and Md on Y
- Model 3: Regression of X, Md, and Interaction (X*Md) on Y

  Following the Moderated Regression Analysis (MRA), Table 9 presents a summary of the regression models, including the key coefficients and model evaluation statistics used to assess their explanatory capability.

Table 9. Summary of regression models

Model	R	R Square	Adjusted R Square	F-hitung	Sig. F
Model 1	0.536	0.287	0.279	37.779	0.000
Model 2	0.553	0.306	0.291	20.000	0.000
Model 3	0.571	0.326	0.304	14.837	0.000

Based on Tables 8 and Table 9 , the results can be explained as follows:

Model 1 (Direct Effect of Green Accounting on ROA), in Model 1, the R-Square value is 0.287, which means that Green Accounting can explain 28.7% of the variation in ROA, while the remaining 71.3% is explained by other variables outside the model. The F-statistic value is 37.779 with a significance value of 0.000 < 0.05, indicating that the regression model is a good fit. The regression coefficient value for Green Accounting (B = 6.976E-5) with a t-statistic of 6.146 and a significance value of 0.000 < 0.05 shows that Green Accounting has a positive and significant effect on ROA.

Model 2 (Direct Effect of Green Accounting and CSR on ROA), in Model 2, the R Square value increases to 0.306, meaning that Green Accounting and CSR simultaneously explain 30.6% of the variation in ROA. The regression coefficient for Green Accounting remains significant (t = 5.755, sig. 0.000), whereas CSR has a significance value of 0.110 > 0.05, which means that CSR partially has no significant effect on ROA.

Model 3 (Effect with Moderating Interaction), in Model 3, the R Square value increases to 0.326, which means that all variables (Green Accounting, CSR, and the interaction variable) can explain 32.6% of the variation in ROA. The interaction coefficient value (X*Md) has a t-statistic of 2.206 with a significance value of 0.030 < 0.05, indicating that environmental performance (CSR) significantly moderates the effect of Green Accounting on ROA.

4.3 Hypotheses Testing

H_1: The Effect of Green Accounting on ROA

Based on the analysis results of Model 1, the t-statistic value is 6.146 > t-table (1.986) with a significance value of 0.000 < 0.05. Therefore, H_{01} is rejected and H_1 is accepted, which means that Green Accounting has a positive and significant effect on the Return on Assets (ROA) of HIMBARA

banks during the 2020-2025 period. The results of the hypothesis testing are summarized in Table 10, indicating whether each proposed hypothesis is supported by the empirical data.

Table 10. Summary of hypothesis testing 1

Variable	Coefficient	t-value	t-table	Sig.	Conclusion
Green Accounting → ROA	0.536	6.146	1.986	0.000	Significant

H_2: The Effect of Environmental Performance on ROA

Table 11. Summary of hypothesis testing 2

Variable	Coefficient	t-value	t-table	Sig.	Conclusion
CSR → ROA	0.137	1.613	1.986	0.110	Not Significant

Based on the results of Model 2, the calculated t-value for the CSR variable is 1.613, which is lower than the critical t-value (1.986), and the significance value is 0.110, which is greater than 0.05. Therefore, H_{02} is accepted and H_2 is rejected, indicating that environmental performance does not have a significant effect on the Return on Assets (ROA) of HIMBARA banks during the 2020–2025 period. The results of the second-stage hypothesis testing, including the moderating effects, are summarized in Table 11.

H_3: The Moderating Role of Environmental Performance in the Relationship between Green Accounting and ROA

Based on the results of Model 3, the calculated t-value for the interaction variable (X × Md) is 2.206, which is greater than the critical t-value (1.986), and the significance value is 0.030, which is less than 0.05. Therefore, H_{03} is rejected and H_3 is accepted, indicating that environmental performance (CSR) significantly moderates (strengthens) the effect of Green Accounting on the Return on Assets (ROA) of HIMBARA banks during the 2020–2025 period. Table 12 provides a comprehensive summary of the third hypothesis testing, indicating the estimated coefficients, significance levels, and decisions for each hypothesis.

Table 12. Summary of hypothesis testing 3

Variable	Coefficient	t-value	t-table	Sig.	Conclusion
Interaction (X × Md) → ROA	0.157	2.206	1.986	0.030	Significant (Moderating Effect)

To assess the goodness-of-fit of the regression model, the coefficient of determination (R^2) was analyzed, and the findings are reported in Table 13.

Table 13. Coefficient of determination (R^2)

Model	R Square	Adjusted R Square	Description
Model 1	0.287	0.279	Moderate predictive ability
Model 2	0.306	0.291	Moderate predictive ability
Model 3	0.326	0.304	Moderate predictive ability

Based on Table 13, the Adjusted R Square value for Model 3 is 0.304, indicating that Green Accounting, CSR, and their interaction explain 30.4% of the variation in ROA, while the remaining 69.6% is explained by other variables outside the research model. To evaluate the overall significance of the regression model, the F-test (simultaneous test) was conducted, and the results are presented in Table 14.

Table 14. F-Test results (simultaneous test)

Model	F-value	F-table	Sig.	Description
Model 3	14.837	2.70	0.000	Model is appropriate

4.4 Discussion of Research Results

4.4.1 The Effect of Green Accounting on Return on Assets (ROA)

The findings of this study align with the research results of Nuryanto et al., (2024) which state that the implementation of Green Accounting can enhance corporate efficiency, thereby exerting a positive impact on financial performance (Siagian et al., 2026). Furthermore, Roni, (2026) concluded that companies integrating environmental aspects into their accounting systems gain a competitive advantage that results in an increase in Return on Assets (Parida, Sjödin, Lenka, and Wincent, 2015). Research by Waluyo & Basrowi, (2024) also shows that Green Accounting supported by good environmental performance can improve corporate profitability as it promotes resource utilization efficiency and reduces environmental costs in the long run (Nurdiana, 2026).

Theoretically, the results of this study can be explained through the Stakeholder Theory formulated by Nuryanto, Quraysin, & Pratiwi, (2024b). This theory explains that companies are not only responsible to shareholders but also to all stakeholders, such as the government, society, investors, employees, and local communities (Sok, O' Cass, and Sok, 2013). The implementation of Green Accounting is a form of corporate accountability toward stakeholder interests by providing information regarding environmental costs, investments, and activities (Suherman, et.al., 2026).

In addition, this finding also supports the Legitimacy Theory proposed by Uda, Prasetyo, Dopo, & Uda, (2024). According to legitimacy theory, companies will attempt to obtain and maintain social legitimacy through various activities that show congruence between corporate values and societal values (Putri et al., 2025). An enhanced reputation drives increased customer loyalty, investor trust, and a more harmonious relationship with regulators, which ultimately contributes to the improvement of corporate profitability (Suseno, Dian, and Basrowi (2026).

From the Resource-Based View (RBV) perspective Waluyo & Basrowi, (2024), Green Accounting can be viewed as an organizational capability that creates a sustained competitive advantage. Systems for managing environmental costs, energy efficiency, waste reduction, and sustainability reporting mechanisms are strategic resources that are difficult for other companies to replicate (Trainor, et.al., 2014). The company's ability to effectively manage these resources generates operational efficiency, increases asset productivity, and creates long-term economic value reflected in the rising Return on Assets (Anderson et al., 2014) and (Zhou and Hoever, 2014).

4.4.2 The Effect of Environmental Performance on Return on Assets (ROA)

The results of hypothesis testing show that environmental performance, proxied by Corporate Social Responsibility (CSR), has no significant effect on Return on Assets (ROA) in the State-Owned Banks Association (HIMBARA) during the 2020–2025 period (Triyani, Etika, and Verawati (2026). This finding indicates that the level of disclosure and execution of corporate social responsibility has not been able to provide a tangible contribution to enhancing the company's ability to generate profits from its assets. Thus, the hypothesis stating that environmental performance affects ROA is rejected (Pratiwi, et al., 2025).

This finding is consistent with the research of Anderson, Potočnik, and Zhou, 2014), which concluded that Corporate Social Responsibility disclosure has not been able to significantly increase corporate financial performance. Similar results were also found by Anderson, Potočnik, and Zhou, 2014), indicating that environmental performance does not have a significant effect on corporate profitability (Widodo, Kurniawati, Ambarwati, and Kusumawati, 2026).

Theoretically, the results of this study can be explained through the Slack Resources Theory (Anisariza, Purwaningsih, Basrowi, and Ventayen, 2025). This theory explains that companies with

high levels of profitability tend to have greater resources to carry out social and environmental activities (Nuryanto et al. (2025). In other words, the more dominant relationship is that profitability drives the increase in CSR activities, not vice versa (Triyani, Etika, and Verawati, 2026). In the context of this study, the implementation of CSR programs in HIMBARA banks has not directly resulted in an increase in corporate profits because most of these activities are still viewed as long-term investments whose economic benefits will only be realized in subsequent periods (Suherman, Pranata, Sumarni, and Suroso, 2026).

The results of this study can also be explained through the Stakeholder Theory (Anisariza, Purwaningsih, Basrowi, and Ventayen, 2025). According to this theory, CSR implementation is a form of corporate responsibility to various stakeholders, including society, regulators, customers, investors, and the surrounding environment (Nuryanto, et.al., 2025) . Nonetheless, stakeholder satisfaction does not always immediately translate into an increase in profitability (Siagian et al., 2026).

4.4.3 The Moderating Role of Environmental Performance in the Relationship between Green Accounting and ROA

The results of hypothesis testing indicate that environmental performance, proxied by Corporate Social Responsibility (CSR), is able to moderate, specifically strengthen, the effect of Green Accounting on Return on Assets (ROA) in the State-Owned Banks Association (HIMBARA) during the 2020–2025 period (Roni, 2026). This finding shows that the effectiveness of Green Accounting implementation in increasing corporate profitability will be greater when the company also possesses good environmental performance (Zhou and Hoever, 2014). In other words, CSR acts as a contingency variable that strengthens the relationship between Green Accounting and the company's financial performance **(**Nurdiana, 2026).

The results of this study are in line with the findings of Basrowi, Fauzi, and Efendi, (2025), which concluded that environmental performance strengthens the relationship between Green Accounting and corporate economic performance (Widodo, et.al., 2026). This finding indicates that Green Accounting and CSR are not two standalone practices, but rather complement each other in creating sustainable economic value (Maulidia, Afifah, Pebrianti, Juniwati, and Heriyadi, 2026).

Theoretically, the results of this study can be explained through the Stakeholder Theory proposed by Cuevas-Vargas, Aguirre, and Parga-Montoya, (2022). According to this theory, companies must be able to create value for all stakeholders, not just for shareholders. Green Accounting provides transparent information regarding environmental cost management, while CSR demonstrates the actual implementation of the company's social and environmental responsibilities (Hasibuan et al., 2026). When both practices are executed simultaneously, stakeholders obtain more comprehensive information regarding the company's commitment to sustainability (Daud and Gusnita. 2026).

5. Conclusions

5.1 Conclusion

This study concludes that Green Accounting significantly improves the financial performance of HIMBARA banks, as reflected in ROA. Environmental costs should therefore be viewed not only as compliance expenses but also as strategic investments that can support efficiency, risk management, stakeholder confidence, and long-term value creation.

Environmental Performance does not directly affect ROA, suggesting that environmental initiatives may not generate immediate financial benefits. However, Environmental Performance significantly strengthens the relationship between Green Accounting and ROA. This indicates that Green Accounting is more effective in improving profitability when supported by credible environmental practices and performance.

Theoretically, the findings support Stakeholder Theory, Legitimacy Theory, and the Resource-Based View by showing that environmental accounting and environmental capabilities can jointly enhance transparency, legitimacy, efficiency, reputation, and financial performance. The study also extends

previous research by positioning Environmental Performance as a moderating factor rather than merely a direct predictor of profitability.

Practically, HIMBARA banks should integrate Green Accounting into strategic decision-making and ensure that environmental costs are systematically monitored and linked to measurable environmental outcomes, operational efficiency, risk management, sustainable financing, and long-term financial performance.

5.2 Research Limitations

Although this study has provided empirical contributions regarding the effect of Green Accounting on Return on Assets (ROA) with Corporate Social Responsibility (CSR) as a moderating variable in the State-Owned Banks Association (HIMBARA), there are several limitations that need to be considered in interpreting the results and serving as a basis for the development of future research.

5.3 Suggestions and Directions for Future Research

The findings of this study highlight the need to strengthen the implementation of sustainable finance policies and enhance the quality of sustainability reporting practices. Regulators, particularly the Financial Services Authority (OJK) and the Ministry of Environment and Forestry, are encouraged to develop more standardized, transparent, and comparable sustainability reporting frameworks while promoting the consistent adoption of Green Accounting practices across industries. Future research is recommended to examine these relationships using broader industry coverage, longer observation periods, and additional moderating or mediating variables, such as corporate governance, environmental performance, or institutional ownership, to provide a more comprehensive understanding of the determinants of corporate financial performance.

Acknowledgement

The authors would like to express their sincere gratitude to the management and relevant staff of the Universitas Bina Bangsa and HIMBARA banks for providing publicly available financial statements and sustainability reports that supported the data collection process of this study. The authors also thank the academic colleagues and reviewers who provided valuable insights and constructive feedback during the development of this research. The authors are solely responsible for the analysis, interpretation, and conclusions presented in this study.

Author Contributions

RP contributed to the conceptualization, data collection, formal analysis, and preparation of the original manuscript. GIScontributed to the research design, data interpretation, and manuscript revision. MFK supervised the research process, validated the findings, and critically reviewed the manuscript. All authors have read and approved the final version of the manuscript.

References

Ainin, S., Parveen, F., Moghavvemi, S., Jaafar, N. I., & Mohd Shuib, N. L. (2015). Factors influencing the use of social media by SMEs and its performance outcomes. *Industrial Management & Data Systems*, *115*(3), 570-588. https://doi.org/10.1108/IMDS-07-2014-0205

Almasyhari, A. K., Rachmadani, W. S., & Sari, Y. P. (2025). Strategic decision-making: Linking corporate choices, social responsibility, and environmental accounting in waste management. *Social Sciences & Humanities Open*, *11*(6), 101404. https://doi.org/10.1016/j.ssaho.2025.101404

Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of management*, *40*(5), 1297-1333. https://doi.org/10.1177/0149206314527128

Anisariza, N. U., Purwaningsih, E., Basrowi, B., & Ventayen, R. J. M. (2025). Legal protection model for superior village products based on digital transformation and the role of village-owned enterprise (BUMDes). *LAW REFORM*, *21*(2), 444-481. https://doi.org/10.14710/lr.v21i2.66142

Berkat, Setinawati, & Basrowi. (2025). The role of educational management in enhancing innovation and problem-solving competencies for students towards global competitiveness: A literature review. *Social Sciences & Humanities Open*, *11*(1), 101280. https://doi.org/10.1016/j.ssaho.2025.101280

Dahlan, A., Shafia, M., Tatung, T., & Basrowi, B. (2025). Digital transformation: The role of AI, social dynamics, and political support on the quality of strategic decisions and their implications for the progress of Islamic banking in Malaysia and Indonesia. *International Journal of Data and Network Science*, *9*(3), 701-716. https://doi.org/10.5267/j.ijdns.2024.6.011

Daud, D., & Gusnita, A. (2026). Implementation of prevention and investigation programs in organizational oversight. *Studi Ilmu Manajemen dan Organisasi, 7, 405-415. doi:*. https://doi.org/10.35912/simo.v7i1.6369

Fauzi, F., Basrowi, B., & Wulandari, W. I., Rita. (2025). Fostering sustainability through leadership and employee personality traits. *Sustainable Futures*, *9*(1), 1-12. https://doi.org/10.1016/j.sftr.2025.100502

Fauzi, F., Effendi, R., & Basrowi, B. (2024). Utilization of big data and cloud computing platforms for the smooth processing of financial ac-counting system data and its implications for the success of village development. *International Journal of Data and Network Science*, *8*(3), 2015-2028. https://doi.org/10.5267/j.ijdns.2024.1.012

Fauzi, F., Effendi, R., Basrowi, B., & Muslihudin, M. (2024). The influence of supply chain and knowledge-oriented leadership on the performance of village financial system operators and its implications on the level of village welfare. *Uncertain Supply Chain Management*, *12*(3), 1935-1948. https://doi.org/10.5267/j.uscm.2024.2.010

Foltean, F. S., Trif, S. M., & Tuleu, D. L. (2019). Customer relationship management capabilities and social media technology use: Consequences on firm performance. *Journal of Business Research, 104, 563-575. doi:*. https://doi.org/10.1016/j.jbusres.2018.10.047

Hair, J., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM): Sage Publishing*.

Hasibuan, R. R., Suliyanto, S., & Novandari, W. (2026). Using social media marketing to improve marketing performance: The role of digital customer-centric intimacy capability. *Studi Ilmu Manajemen dan Organisasi*, *7*(1), 1-20. https://doi.org/10.35912/simo.v7i1.6325

Huo, D., Zheng, Q., & Pei, L. (2023). Investigating the characteristics of urban comprehensive hospitals from a supply–demand balance perspective: A case study of three districts in Shenzhen based on Multi-Source Data. *Sustainability*, *15*(4), 3327. https://doi.org/10.3390/su15043327

Junedi, B., & Basrowi, Y. (2024). IT-based learning innovation and critical thinking skills concerning students' mastery of materials and their implications on academic achievement. *International Journal of Data and Network Science*, *8*(3), 1999-2014. https://doi.org/10.5267/j.ijdns.2024.1.013

Komarudin, M. F. (2025). Analysis of Company Competitive Advantage through the Application of Environmental Management Accounting. https://doi.org/10.59613/mjbms.v3i2.280

Komarudin, M. F., Hasanudin, A. I., Hanifah, I. A., & Mulyasari, W. (2026). The influence of institutional regulations, environmental management strategies, and organizational performance with environmental accounting management as a mediating variable. *Accountancy Business and the Public Interest*. Retrieved from https://abpi.uk/index.php/issues/

Kraus, S., Breier, M., & Dasí-Rodríguez, S. (2020). The art of crafting a systematic literature review in entrepreneurship research. *International Entrepreneurship and Management Journal*, *16*(3), 1023-1042. https://doi.org/10.1007/s11365-020-00635-4

Lopes, J. M., Silveira, P., Farinha, L., Oliveira, M., & Oliveira, J. (2021). Analyzing the root of regional innovation performance in the European territory. *International Journal of Innovation Science*, *13*(5), 565-582. https://doi.org/10.1108/IJIS-11-2020-0267

Maulidia, N. A., Afifah, N., Pebrianti, W., Juniwati, J., & Heriyadi, H. (2026). The effect of discount live-stream and bundling product on impulse buying through positive emotions. *Studi Ilmu Manajemen dan Organisasi*, *7*(1), 21-35. https://doi.org/10.35912/simo.v7i1.4799

Mukt, K. T., Basrowi, Muti'ah, E., Juwita, Isnarini, E., Dewi, W. R., & Yusuf, F. A. (2025). Folklore Debus Banten tourism management towards sustainability using virtual augmented (Va) and augmented reality (Ar) applications based on folktale text transformation. Paper presented at Paper presented at the AIP Conference Proceedings.

Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research policy*, *48*(8), 103773. https://doi.org/10.1016/j.respol.2019.03.018

Nurdiana, R. (2026). Career development and work motivation towards organizational commitment and employee performance. *Studi Ilmu Manajemen dan Organisasi*, *7*(1), 53-73. https://doi.org/10.35912/simo.v7i1.5168

Nuryanto, U., Basrowi, B., Quraysin, I., Pratiwi, I., & Utami, P. (2024). Halal product supply chain and sharia banking support for halal product commerce and its implications for halal product sharia economic growth in Indonesia. *Uncertain Supply Chain Management*, *12*(3), 1949-1968. https://doi.org/10.5267/j.uscm.2024.2.009

Nuryanto, U., Yusuf, F., Junedi, B., Pratiwi, I., & Basrowi, B. (2025). The role of AI and big data in increasing the success of e-commerce assistance and its implications on the quality of MSME capacity development models with disabilitie. *International Journal of Data and Network Science*, *9*(4), 1175-1192. https://doi.org/10.5267/j.ijdns.2024.8.025

Nuryanto, U. W., Quraysin, I., & Pratiwi, I. (2024b). Magnitude of digital adaptability role: Stakeholder engagement and costless signaling in enhancing sustainable MSME performance. *Heliyon*, *10*(13). https://doi.org/10.1016/j.heliyon.2024.e33484

Parida, V., Sjödin, D. R., Lenka, S., & Wincent, J. (2015). Developing global service innovation capabilities: How global manufacturers address the challenges of market heterogeneity. *Research-Technology Management*, *58*(5), 35-44. https://doi.org/10.5437/08956308X5805360

Pratiwi, I., Saefudin, A., Sari, G. I., Maliki, B. I., & Nuryano, U. W. (2025). Green human capital and organizational performance: The role of employee environmental awareness and sustainable innovation in achieving organizational sustainability. *Innovation and Green Development*, *4*(3), 1-18. https://doi.org/10.1016/j.igd.2025.100244

Purwaningsih, E., Muslikh, M., & Fathurahman, M. (2024). Optimization of branding and value chain mapping using artificial intelligence for the batik village clusters in indonesia to achieve competitive advantage. *Data & Metadata, 3, 1-14. doi:*. https://doi.org/10.56294/dm2024.620

Putri, R. L., Asnawi, R., Hanif, Z., Normal, I. N., Sinaini, L., Saputra, M. H., . . . Yasin, A. (2025). Strategic synergy: Artificial intelligence, organizational databases, and profitability enhancement with risk management as the mediator. *International Journal of Data and Network Science*, *9*(4), 1051-1066. https://doi.org/10.5267/j.ijdns.2024.9.015

Rialti, R., & Zollo, L. (2023). Digital Transformation of SME Marketing Strategies: Innovating for the 4.0 Era.

Roni, A. (2026). Event marketing management and city competitiveness: Mediation of Bandung City Branding. *Studi Ilmu Manajemen dan Organisasi*, *7*(1), 389-404. https://doi.org/10.35912/simo.v7i1.6291

Sari, G. I., Winasis, S., Pratiwi, I., & Nuryanto, U. W. (2024). Strengthening digital literacy in Indonesia: Collaboration, innovation, and sustainability education. *Social Sciences & Humanities Open*, *10*(1), 1-20. https://doi.org/10.1016/j.ssaho.2024.101100

Siagian, D., Situmorang, R., Simbolon, Y., Tarigan, J., Harefa, A., Poniman, P., & Sirait, K. (2026). An exploratory sequential mixed-method study on ghost-demography and economic exclusion in automated economies. *Studi Ilmu Manajemen dan Organisasi*, *7*(1), 433-453. https://doi.org/10.35912/simo.v7i1.6432

Sok, P., O'Cass, A., & Sok, K. (2013). Achieving superior SME performance: Overarching role of marketing, innovation, and learning capabilities. *Australasian Marketing Journal (AMJ)*, *21*(3), 161-167. https://doi.org/10.1016/j.ausmj.2013.04.001

Suherman, E., Pranata, R. M., Sumarni, N., & Suroso, S. (2026). Workplace ostracism and employee performance: The interactive roles of leader-member exchange and gender. *Studi Ilmu Manajemen dan Organisasi*, *7*(1), 417-432. https://doi.org/10.35912/simo.v7i1.6364

Sukidin, S. H., Choirul, & B, B. (2025). Shaping democracy in Indonesia: The influence of multicultural attitudes and social media activity on participation in public discourse and attitudes toward democracy. *Social Sciences & Humanities Open*, *11*(3), 1-11. https://doi.org/10.1016/j.ssaho.2025.101440

Suseno, B. D., Dian, K., & Basrowi. (2026). The role of social problem of auditee as a predictor of compliance and the follow-up on auditor findings. *Account and Financial Management Journal*, *11*(5), 4472-4479. https://doi.org/10.47191/afmj/v11i5.05

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509-533. https://doi.org/10.1142/9789812796929_0003

Trainor, K. J., Andzulis, J. M., Rapp, A., & Agnihotri, R. (2014). Social media technology usage and customer relationship performance: A capabilities-based examination of social CRM. *Journal of Business Research*, *67*(6), 1201-1208. https://doi.org/10.1016/j.jbusres.2013.05.002

Triyani, F., Etika, C., & Verawati, H. (2026). Effect of advertising rates, the number of listeners and companies that advertise on revenue receipts. *Studi Ilmu Manajemen dan Organisasi*, *7*(1), 37-51. https://doi.org/10.35912/simo.v7i1.5044

Uda, S., Prasetyo, D., Dopo, E., & Uda, S. (2024). Basrowi,"Development of Mobile Learning Application System for Environmental Science Material (SARITHA-Apps),". *Int. J. Inf. Educ. Technol*, *14*(3), 452-463. https://doi.org/10.18178/ijiet.2024.14.3.2066

Waluyo, W., & Basrowi, B. (2024). Influence of the profitability of tax rates and exchange rates one determining transfer pricing decisions: An Empirical Evidence from Indonesia. *Quality – Access to Success*, *25*(203), 203. https://doi.org/10.47750/QAS/25.203.21

Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, *9*(1), 31-51. https://doi.org/10.1111/j.1468-2370.2007.00201.x

Widodo, Z. D., Kurniawati, S. B., Ambarwati, R., & Kusumawati, E. (2026). Enhancing inclusive talent management and financial management literacy through digitalization to improve human resource performance. *Studi Ilmu Manajemen dan Organisasi*, *7*(1), 455-469. https://doi.org/10.35912/simo.v7i1.6422

Zhou, J., & Hoever, I. J. (2014). Research on workplace creativity: A review and redirection. *Annu. Rev. Organ. Psychol. Organ. Behav*, *1*(1), 333-359. https://doi.org/10.1146/annurev-orgpsych-031413-091226