

Implementation of Green Accounting in Commercial Banks in Indonesia

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ABSTRACT

Objective: This study aims to analyze the application of green accounting policies in the financial statements of commercial banks in Indonesia and its effect on the company's financial performance. **Method:** This quantitative study uses a population of 106 commercial banks in Indonesia with purposive sampling technique, which selects banks having complete annual reports during 2019-2023. Data was obtained through documentation method from annual reports, scientific articles, and green accounting policies. The analysis measures the relationship between Environmental Performance and green accounting disclosure on profitability represented by Return on Assets (ROA). **Results:** The results show an R Square value of 0.125, which means that the independent variables (Environmental Performance and Environmental Cost) are only able to explain 12.5% of the variation in ROA, while 87.5% is explained by other factors outside the model. The regression model is significant at the 0.05 level. Specifically, the Environmental Performance variable has a significant positive effect on ROA, while green accounting disclosure has a moderate impact but remains significant. **Novelty:** The novelty of the study lies in its focus on the banking sector in Indonesia, which is still minimally explored in the context of green accounting. This study enriches the literature by integrating sustainability theory and stakeholder theory in the Indonesian commercial banking sector. Practically, this study provides insights to banks to improve green accounting practices. This research also opens up opportunities for further studies on the long-term impact of green accounting on financial stability and sustainability.

INTRODUCTION

Over the past few decades, global attention to environmental issues has intensified, prompting various industry sectors to adopt environmentally responsible practices. One of the key sectors contributing to economic stability is the banking industry (Y. Chen et al., 2023; Diener & Špaček, 2021; M. A. Khan et al., 2020; Sharma & Choubey, 2022). Banks, as financial intermediaries, are not only tasked with driving economic growth but also bear responsibility for supporting sustainable development (ENDIANA et al., 2020). Green accounting has emerged as an important instrument to integrate environmental aspects into financial decision-making. It enables companies to identify, measure, disclose, and communicate the environmental impacts of their activities (Lusiana et al., 2021; Riyadh et al., 2020; Sukmadilaga et al., 2023). Green accounting has emerged as an important instrument to integrate environmental aspects into financial decision-making. It enables companies to identify, measure, disclose, and communicate the environmental impacts of their activities (Amran et al., 2021; Denhere, 2022; Kustinah, 2022; J. W. Lee, 2020; Saxena et al., 2021).

In line with this global transformation, Indonesia—a country experiencing rapid economic growth alongside severe environmental challenges—has begun to promote sustainable finance through regulatory frameworks such as 51/POJK.03/2017 (Harjanti et al., 2024; Lailatul Qudriyah et al., 2021; Perdana et al., 2023; Wayan Budiasa, 2020; Yakovlev & Nikulina, 2019). The global pressure to adopt sustainable finance policies has increasingly influenced national regulations, including those in Indonesia. However, the

implementation of green accounting strategies often faces various obstacles, such as increased operational costs, lack of stakeholder understanding, and resistance from decision makers (Chien et al., 2021; T. Khan et al., 2024). These challenges indicate the need for innovative strategies that balance environmental sustainability and profitability. In the midst of this urgency, the relevance of green accounting is further strengthened by increasing consumer awareness of responsible business practices. Consumers are now more likely to support companies that demonstrate a commitment to environmental protection (Asiaei et al., 2023; C. Lee & Lim, 2020; Majeed et al., 2022; Peterson et al., 2021; Yen et al., 2021). In the context of banking, this includes funding sustainable projects, such as renewable energy, waste management and natural resource conservation (J. M. Chen et al., 2024; Khaer & Anwar, 2022; Khairunnessa et al., 2021; Raihan et al., 2024; Taghizadeh-Hesary & Yoshino, 2020; Udeagha & Ngepah, 2023; Zhang et al., 2022). Thus, green accounting is not only an obligation, but also a strategic opportunity for banks to increase their competitiveness in an increasingly complex market.

This study is based on several main problem formulations, namely whether environmental performance has a positive influence on the company's financial performance and whether environmental costs contribute to improving financial performance. The purpose of this study is to identify the impact of environmental performance on the financial performance of commercial banks in Indonesia, examine the influence of environmental costs, and provide strategic recommendations for banks in integrating green accounting into their business operations. Through this approach, the study is expected to provide theoretical benefits in the development of green accounting literature and practical benefits in the form of strategic guidance for policy makers. The novelty of this study lies in its focus on the banking sector in Indonesia, which has not been widely studied in the context of implementing green accounting. In fact, disclosure of green banking practices can play a role in increasing firm value through public trust in the social and environmental responsibility of banks (Gunawan et al., 2022; Karyani & Obrien, 2020; Murwaningsari & Rachmawati, 2023; Sehen Issa et al., 2022; Sun et al., 2020). In addition, the low understanding of the importance of green accounting among decision makers is a challenge that is rarely discussed in detail in the literature. This study will provide an in-depth analysis of how green accounting can support the achievement of SDGs through sustainable finance strategies. In addition, this study will also identify specific barriers that banks face in implementing green accounting strategies and offer solutions to overcome them.

Therefore, it is important to understand how green accounting strategies can be integrated into commercial banking operations without compromising financial aspects. The application of green accounting in banking operations has a strong relevance to sustainability theory and stakeholder theory. Sustainability theory emphasizes the importance of companies to integrate three main pillars-economic, social, and environmental-into their business strategy (Jemli & Chtourou, 2023). In this context, green accounting becomes an effective tool to measure and report the impact of a company's operations on these three pillars. By using this approach, banks can ensure that the economic growth they support is not at the expense of social welfare and environmental sustainability. It also supports the Sustainable Development Goals (SDGs) program,

particularly the goals related to actions to combat climate change and safeguard land and water ecosystems. Meanwhile, stakeholder theory states that companies are not only responsible to shareholders, but also to all stakeholders affected by the company's operations, including society and the environment (Mahajan et al., 2023). The implementation of green accounting by banks shows their commitment to the interests of various parties, such as customers, investors, regulators, and local communities.

Based on the literature review, there are several research gaps that underlie the urgency of this study. Most previous studies, such as conducted by Adu (2022), Aslam & Jawaid, (2023), Awawdeh et al. (2022), J. Chen et al. (2022) Nguyen et al. (2021), Saha S & Rahman Md (2020) and Wachyu et al. (2021) environmental performance has a positive effect on profitability and environmental costs contribute to improving financial performance. Of course, this implies that the management of green activities has a major influence on bank performance, so there are indications that Green Banking Disclosure has a significant positive effect on firm value. But on the other hand research by Hamdani et al. (2022) and Indriastuti et al. (2021) shows the opposite where environmental performance and environmental costs have no effect on profitability. While several previous studies have examined green banking, few have comprehensively analyzed the impact of green accounting strategies including environmental performance and environmental costs on financial performance in the context of Indonesian commercial banks over a multi-year period. This study fills that gap by using panel data from 2019–2023, a method that allows for more dynamic and accurate observation by examining the impact of green accounting strategies on banks' financial performance as well as providing practical recommendations to deal with existing obstacles. Through this research, as an institution that has a major influence on the direction of the national economy, it is expected that the banking sector, especially commercial banks in Indonesia, has the responsibility to actively contribute to creating a more sustainable financial system, so that the integration of green accounting becomes a strategic step that is not only economically relevant but also supports the vision of sustainable development in Indonesia.

RESEARCH METHOD

The method used in this study is a quantitative method with the aim of analyzing the financial statements of commercial banks in Indonesia related to green accounting policies. The population of commercial banks in Indonesia currently stands at 106 banks. The sampling technique used is purposive sampling with the criterion of having annual reports for the last five years (2019–2023). This five-year period was chosen to ensure the use of **up-to-date and consistent data**, particularly since many new banks have only recently been listed or commenced operations. A longer time frame, such as ten years, would introduce inconsistencies due to the unavailability of complete data and the emergence of newer banks that were not yet operational or publicly reporting in earlier years. In addition, this study only includes commercial banks that are listed and consistently publish sustainability and financial reports, as green accounting practices are more likely to be disclosed in such institutions. **From the total population, the 10 largest commercial banks in Indonesia were selected based on company size.** Thus, the

final sample consists of 10 banks observed over a 5-year period (2019–2023), resulting in 50 observations in total. Banks that did not publish complete financial or sustainability reports during this period were excluded from the sample to maintain data reliability and comparability.

The data collection technique used in this study is documentation. The study examined relevant documents such as reports, scientific articles, and policies related to green accounting theory and the application of green accounting in commercial banking. This helped to understand environmental concepts and themes in the banking industry. The variables in this study consisted of independent variables, namely environmental performance and environmental costs. These variables measured the extent of green accounting implementation in commercial banks. Meanwhile, the dependent variable is the company's financial performance. Data analysis was conducted by collecting data from financial reports and sustainability reports of commercial banks to analyze and compare the effectiveness of green accounting strategies. The researcher selected the information obtained. If the data obtained was not suitable, it could be eliminated so that valid information was collected. This final stage can answer the problems that arise in accordance with the presentation of the previous material.

The following are the steps we took to measure the data: 1.) Dependent Variables. The company's financial performance can be measured using Return on Assets (ROA) with the following formula:

$$Return\ On\ Assets = \frac{Net\ Income}{Total\ Assets} \times 100\% \quad \text{Mahrani \& Soewarno, (2018)}$$

2.) Independent Variables. Environmental Performance can be measured using the following formula:

$$EP = \frac{ISO\ Certificate + PROPER + Other\ environmental\ awards}{3} \quad \text{Widyawati dan Hardiningsih, (2022)}$$

Environmental Costs can be measured using the following formula:

$$EC = \frac{CSR\ Cost}{Net\ Income} \times 100\% \quad \text{Siregar et al., (2019)}$$

RESULTS AND DISCUSSION

Results

This research was carried out in accordance with the predetermined schedule. The research process begins with the data collection stage, which is carried out by the research team through the documentation method, by utilizing the annual reports of the companies that are the object of research. The data sources used have been ensured to be relevant and accurate to support the required analysis. After the data is collected, the next step is to tabulate the data using Microsoft Excel software. The tabulation process is carried out to organize raw data into a structured form, making further analysis easier. The tabulated data includes all relevant variables in accordance with the research framework. The final stage in this research is data processing which is carried out using the EViews application. This application is used because of its ability to analyze panel data, which combines cross-section (between companies) and time-series (between time) dimensions simultaneously (Alviani et al., 2021; Firmansyah et al., 2022).

The data processing process produces various statistical outputs that provide insight into the relationship between research variables (Friera et al., 2024; Widyasari & Parianom, 2024). The analysis results show that the independent variables analyzed have a significant influence on the dependent variable. In addition, all statistical tests conducted met the assumptions required for the validity of the research results. The findings are further discussed with reference to the results of previous studies, to provide a more comprehensive perspective and convey the theoretical and practical implications of the research results. The research was conducted by the data collection process by downloading the annual report which contains Company information including financial statements and downloading sustainability reports to see information related to the environment, namely CSR funds. The data of each company is obtained from the website of each company, namely the top 10 banks in Indonesia. After collecting data, the next process is tabulating using the Microsoft excel application. The next step is the data processing process using the Eviews application, following the results of the data processing that has been done:

Table 1. Simultaneous Test Results

Model Summary^b					
Model	R	R Square	Adjusted Square	R Std. Error the Estimate	of Durbin-Watson
1	.354 ^a	.125	.087	3.170	.767
a. Predictors: (Constant), EC, EP					
b. Dependent Variable: ROA					

Aulia Nursantoso & Maulana (2023); Pura & Madiawati (2021); Rayen Rafli Yabukon (2024) state that the R square value of 0.75 is included in the strong category, the R square value of 0.50 is included in the moderate category and the R square value of 0.25 is included in the weak category. Table 1 shows that the R value of 0.354 indicates a moderate relationship between the independent variable and the dependent variable. The R Square value of 0.125 indicates that only 12.5% of the variation in Return on Assets (ROA) can be explained by the independent variables – environmental performance and environmental cost – used in this model. This suggests a relatively **weak explanatory power**, implying that 87.5% is influenced by other external or internal factors may have a greater influence on the financial performance of commercial banks in Indonesia. Such factors could include macroeconomic conditions (e.g., interest rate fluctuations, inflation), regulatory frameworks, bank-specific strategies, or unobserved sustainability initiatives not captured in this model.

Table 2. Analysis of Variance (ANOVA) Results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	64.831	2	32.416	3.227	.049 ^b
	Residual	452.077	45	10.046		
	Total	516.909	47			
a. Dependent Variable: ROA						
b. Predictors: (Constant), EC, EP						

Table 2 provides information about the variation in the regression model, dividing the total variation into the part that can be explained by the regression model and the part that cannot be explained by the model (Residual). The p-value (Sig.) of 0.049 indicates that the regression model as a whole is statistically significant at the 0.05 level of significance. This means that there is strong evidence that the independent variables jointly affect the dependent variable, this is consistent with research (Di Leo & Sardanelli, 2020; Switkay, 2020).

Table 3. Regression Analysis Results

Coefficients ^a						
Model		Standardized Coefficients	Unstandardized Coefficients			
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.406	1.106		1.272	.210
	EP	4.101	1.941	.295	2.113	.040
	EC	-.421	.333	-.177	-1.266	.212
a. Dependent Variable: ROA						

The results of hypothesis testing can be seen in table 3. Table 3 shows that Environmental Performance (EP) or environmental performance has a significance value of 0.040 (sig.<0.05) so that H1 is positively accepted. The results of this hypothesis indicate that the greater the environmental performance, the greater the financial performance of a banking company. For the second hypothesis results show that Environmental Cost (EC) or environmental costs have a significance of 0.212 (sig.>0.05) so that H2 is rejected. The results of this hypothesis indicate that there is no significant influence between environmental costs and the financial performance of banking sector companies in Indonesia.

Discussion

The results of this study provide important insights into the relationship between the implementation of environmental performance (EP), environmental cost (EC), and financial performance measured by Return on Assets (ROA) in the banking sector in Indonesia. The findings show that EP has a positive and significant influence on ROA, while EC does not show a significant influence. Environmental Performance (EP) has a positive effect on ROA because it reflects the bank's commitment to sustainability,

enhances reputation, and improves efficiency, which can increase profitability. Ha is in accordance with the research of (Afiah & Rachmawaty, 2023; Aldi, 2021; Angraeni & Purwaningsih, 2022) which emphasizes the importance of the role of environmental performance as one of the strategic elements in increasing the profitability of banking companies. Good environmental performance reflects the bank's commitment to managing the environmental impact of its operations (Adeyemi et al., 2024; Oktarini et al., 2024; Rehman et al., 2021). This finding is in line with sustainability theory that emphasizes the integration of three main pillars-economic, social, and environmental-into corporate strategy. Improved environmental performance can provide various benefits, including reduced operational risks, increased stakeholder trust, and a better reputation in the eyes of customers and investors (Febby Maharantika, 2022; Fikriyah & Wiyanti, 2023; Huynh, 2020). In the context of Indonesia, which faces significant environmental challenges, these results are also relevant to efforts to achieve the Sustainable Development Goals (SDGs), particularly regarding actions to mitigate climate change and responsibly manage natural resources.

In contrast, environmental costs (EC) do not show a significant effect on ROA (Febby Maharantika, 2022; Fikriyah & Wiyanti, 2023; Huynh, 2020). This result deviates from the findings of previous studies, such as those conducted by (Ernanto & Hermawan, 2022; Thomas NYAHUNA, 2023; Yanti & Suwarno, 2023) which state that environmental costs can improve financial performance. One possible explanation for the deviation lies in the managerial perception of environmental costs, which may still be considered compliance obligations rather than strategic investments. Furthermore, this insignificant result may be influenced by measurement limitations, where the EC indicators used fail to capture the full extent of environmental investments. A threshold effect may also exist, where environmental costs only generate positive financial impacts after exceeding a certain level (Kennedy, 2024; Sabarila & Sep, 2024; Sari et al., 2022). Additionally, contextual factors specific to Indonesia—such as weak enforcement of regulations, limited environmental awareness among stakeholders, and uneven CSR implementation across banks—might contribute to the insignificant relationship. Future research could consider incorporating alternative proxies for EC and control variables related to regulatory, institutional, and contextual factors to build a more comprehensive model.

The practical implications of this study are significant. First, banks in Indonesia need to consider environmental performance as a strategic priority in improving their competitiveness. This can be done through increased funding for sustainable projects, such as renewable energy, waste management and natural resource conservation. Second, banks should increase transparency in green accounting reporting to strengthen customer and investor confidence. This transparency can also help banks to fulfill regulations from the Financial Services Authority (OJK) related to sustainable finance. Third, training and socialization to management and employees about the importance of environmental costs need to be improved, so that budget allocations for environmental management can be utilized more strategically. From a theoretical perspective, this study enriches the literature on the application of green accounting in the banking sector, especially in developing countries such as Indonesia, which is still rarely explored (Kirani & Astuti, 2024; Maulidya et al., 2024; Pratama & Firmansyah, 2024). This study also supports the integration of sustainability theory and stakeholder theory in the context of the financial sector, by emphasizing the importance of corporate responsibility not only to shareholders, but also to society and the environment.

For future research, it is suggested that the scope be expanded by using a mixed-method approach to provide a more holistic picture. For example, the use of in-depth interviews with bank managers can help identify specific barriers in the implementation of green accounting. In addition, the scope of the study can be expanded by involving a larger sample and a longer period of time, so as to improve the generalizability of the results. Additional variables such as technological innovation, the level of compliance with environmental regulations, and the influence of sustainability projects should also be considered in the research model. Finally, this study provides a strong basis for policymakers to design incentives that encourage banks to improve their environmental performance. Such incentives could be in the form of subsidies for green investments or tax deductions for sustainability projects. Thus, green accounting is not only a regulatory obligation, but also a strategic opportunity for the banking sector to support business and environmental sustainability.

CONCLUSION

Fundamental Finding : This study shows that the implementation of green accounting policies contributes to increasing transparency and supporting sustainable financial performance in the Indonesian banking sector. Based on the analysis, the Environmental Performance variable has a positive and significant influence on profitability (ROA), while green accounting disclosure has a moderate but still significant impact.

Implication : the regression model used shows that the independent variables are only able to explain 12.5% of the variation in ROA, while the remaining 87.5% is influenced by other factors outside the research model. Specifically, the Environmental Performance variable has a significant positive effect on ROA, indicating that good environmental performance contributes to increased profitability. Meanwhile, green accounting disclosures have a moderate but significant impact on ROA, indicating that transparency in environmental management has a role in supporting financial performance, although the effect is not very strong.

Limitation : the limitations of this study are that it only measures the effect of Environmental Performance and green accounting disclosures on profitability and uses secondary data from annual reports and other documents. **Future Research :** suggestions for future research, it is recommended to expand the scope of research by including other variables such as waste management costs, innovation in environmentally friendly technology, or the level of compliance with environmental regulations. In addition, research with larger samples and longer time periods can provide more in-depth results regarding the relationship between green accounting and financial performance. Thus, it is hoped that future research can provide a more comprehensive picture of the benefits of green accounting implementation in supporting business and environmental sustainability.

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