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Research Article

The Impact of Green Accounting and Corporate Social Responsibility on the Profitability of LQ-45 Firms

Edi Komara[1*], Putri Metha Ulinka Bangun[2]
[1,2] STIE Indonesia Banking School, Jakarta

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Abstract

This study analyzes the influence of green accounting (environmental costs and environmental performance) and corporate social responsibility (CSR) on the profitability (ROA) of LQ-45 Firms listed on the Indonesia Stock Exchange (IDX) from 2019-2022. Using purposive sampling, eight Firms were selected. Data was obtained from annual financial and sustainability reports. Environmental costs were measured using the Environmental Cost Index, environmental performance with the PROPER rating, and CSR disclosure using GRI91 criteria. Profitability was measured by ROA. Multiple linear regression analysis in SPSS 25 showed that: (1) Environmental costs did not significantly affect ROA. (2) Environmental performance had a positive significant effect on ROA. (3) CSR disclosure had a negative significant effect on ROA. (4) Simultaneously, environmental costs, environmental performance, and CSR disclosure influenced ROA. Managerial implications highlight the importance of strong environmental performance in increasing profitability. Management must carefully plan CSR programs to balance social benefits and costs. Investors should assess Firms' environmental and social management as part of investment decisions. Regulators should enforce policies promoting transparency in CSR disclosure and green accounting practices to enhance corporate accountability and sustainability.

Keywords: Green accounting, Corporate social responsibility, profitability

JEL Classification: G10, G19, G100

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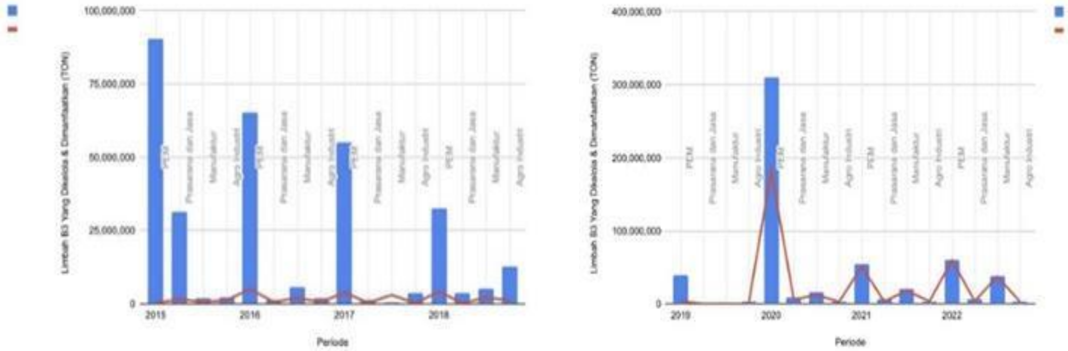
Corresponding author: Edi Komara (edi.komara@ibs.ac.id)

1. Introduction

The environmental crisis is a significant global concern that has consistently fueled discussion. The deterioration of our environment has led to a progressively thinning ozone layer. This crisis manifests through tangible effects such as global warming, depletion of the ozone layer, air pollution, climate change, greenhouse gas emissions, and the extinction of various plant and animal species. The careless exploitation of natural resources and the environment by humans is worsening these conditions, raising alarm over increasingly dire environmental situations. According to kumparan.com, the fashion industry accounts for 10% of global emissions.

Data from the Central Statistics Agency (BPS) and the Ministry of Environment and Forestry (KLHK) indicate that between 2015 and 2022, the management of B3 waste (Hazardous and Toxic Materials) across four key sectors Mining, Energy, and Oil and Gas (PEM), Infrastructure and Services, Manufacturing, and Agro-Industry has reached remarkably high levels.



Note: Blue = Managed hazardous and toxic waste; Red = Utilized hazardous and toxic waste

Source: BPS and KLHK

Figure 1.1: Comparison of Hazardous and Toxic Waste Management, 2015-2022 (Tons)

The data in Figure 1 indicate that the amount of waste generated and managed by each sector remains notably high compared to the low levels of waste utilized. Consequently, with the increasing volume of industrial waste, there is an urgent need for a sustainable waste management plan (Faizah, 2020).

As science advances, accounting further elucidates the relationship between Firms and the environment, a concept commonly known as Green Accounting. Green Accounting serves as an initial step toward addressing these environmental challenges. Its implementation can bolster a Firm's ability to mitigate environmental issues (Hamidi, 2019). Additionally, adopting Green Accounting practices is an effort by Firms to meet stakeholder expectations, which enhances their reputation in the eyes of stakeholders. By prioritizing effective Green Accounting, Firms demonstrate a commitment to addressing their environmental impact, rather than merely focusing on profit maximization.

Five aspects of Green Accounting affect Firm profits: environmental costs, environmental performance, environmental disclosure, environmental activities, and environmentally friendly products. In this study, Green Accounting is measured using two main variables: environmental costs and environmental performance. Environmental costs are measured by comparing the costs incurred for corporate social responsibility (CSR) activities with annual profit. In contrast, environmental performance is measured through the Firm's participation in government programs, such as the Performance Rating Assessment Program (PROPER) in Environmental Management.

The Firm's implementation of CSR also contributes positively to Green Accounting. There are three important reasons why the business world must respond to CSR issues in line with its business operations. First, Firms are part of society, and therefore, it is natural for Firms to pay attention to the interests of the community. Second, the business world and society should have a symbiotic-mutualistic relationship. Third, CSR activities are one way to reduce or even avoid social conflicts. In this case, GRI (Global Reporting Initiative) is used to help evaluate the Firm's CSR.

GRI is centered on the performance index of economic, environmental and social, which will later have an impact on good relations between the Firm and the surrounding environment and have a positive impact on the Firm's sustainable development. If it is linked to the concept of green accounting, this will be a suitable concept to realize the global plan regarding the 2030 Sustainable Development Goals. However, Firms also need to pay attention to the social and environmental impacts of their operations. Green accounting and corporate social responsibility (CSR) become important in this context. Green accounting helps Firms measure and report environmental impacts, while CSR ensures the Firm's responsibility towards society and the environment.

From a financial management perspective, green accounting and social responsibility practices can reduce long-term operational costs, such as energy efficiency and better waste management, as well as reduce risks related to environmental regulations. This perspective can increase ROA by optimizing asset utilization, reducing energy price fluctuations, and ensuring compliance with changing regulations. This implementation can also improve the Firm's reputation in the eyes of investors, consumers, and regulators. Therefore, sustainable investment decision-making can strengthen the Firm's competitive position and contribute to profitability and long-term value. In this study, the research objects are Firms listed on the Indonesia Stock Exchange (IDX) and are also members of the LQ-45 stock index group during the years 2019-2022. The LQ-45 stock index is a group of stocks considered the most liquid, nationally recognized, established, and financially sound. However, in 2021 and 2022, Indonesia began to recover with economic growth of 3.70%.

Furthermore, 5.31%, respectively, reflects a recovery from the impact of the pandemic. The shift in focus that occurred before, during, and after the pandemic has the potential to influence the application of green accounting principles and corporate social responsibility (CSR) to Firm profitability. The COVID-19 pandemic highlighted the importance of green accounting and CSR practices in mitigating risks and enhancing sustainability, especially after several sectors suffered significant losses due to a lack of attention to environmental and sustainability issues. This study focuses on the period 2019-2022, which reflects significant changes in Firm policies and practices related to sustainable business and awareness of social and environmental responsibilities.

This study is a replication of a previous study conducted by Kinasih, Mas'ud, Abduh, and Pramukti (2022) entitled "The Effect of Environmental Performance, Environmental Costs, and Corporate Social Responsibility Disclosure on Financial Performance". The differences between this study and the previous study are (1) The previous study used research data from 2018-2021, while this study used research data from 2019-2022. (2) The Firm objects used in the previous study used Firms in the food and beverage sector listed on the IDX in 2018-2021, while this study uses all Firms included in the LQ-45 stock index group during 2019-2022.

2. Literature Review and Hypothesis

Stakeholder Theory

Stakeholder Theory was initially developed, presenting a framework in organizational management and business ethics that examines the moral principles and values essential for managing organizations. According to (Santosa, Rahayu, et al., 2022), stakeholders encompass individuals or groups that are affected by or can impact the achievement of organizational goals. This theory asserts that corporate activities should not only serve internal interests but also address the needs of various stakeholders, including investors, government entities, creditors, employees, suppliers, customers, the community, and the environment. From this perspective, it is crucial for Firms to provide stakeholders with information regarding their operations, as this serves as a foundation for informed decision-making. Firms are expected to consider their responsibilities to stakeholders in pursuit of greater profits, emphasizing not only the interests of management and investors but also the welfare of consumers and the surrounding community (Kholmi et al., 2022).

Organizational management should prioritize activities that are considered important by stakeholders and periodically report on these activities. This theory also affirms that every stakeholder has the right to obtain information about the organization's role in its surroundings, even though they may choose not to use that information and even not be directly involved in the firm (Kusuma, 2022). This result shows that stakeholders can influence but are also influenced by the support given to the Firm (Sulistiawati, 2017). This stakeholder approach encourages organizations to respond to demands made by interested parties in the organization's external environment. According to Heal and Garrett (Priyamanda & Jayanti, 2021), CSR activities can be a profitable strategy for Firms, contributing to risk management and maintaining long-term beneficial relationships for the Firm. Based on stakeholder theory, researchers hypothesize that CSR has a positive influence on a Firm's financial performance (Santosa, 2019).

Profitability

Profitability refers to a Firm's ability to generate profits by managing its assets, liabilities, and equity, as reflected in the Firm's income and financing over a specific period. Describes profitability as the level of efficiency of a Firm's activities, reflected in the success in generating profits, and as a tool to assess the overall effectiveness of management through profit levels, sales, and investment. Thus, profitability becomes a crucial indicator to measure a Firm's ability to generate profits. The purpose of using profitability ratios, for both internal and external parties of the Firm, is to measure the profit earned by the Firm in a specific period, assess the profit position from the previous year, evaluate the development of profits over time, assess the relationship between net profit after tax and equity, and measure the productivity of Firm funding from loans or equity. Several types of profitability ratios used include Profit Margin on Sales, which includes Gross Profit Margin and Net Profit Margin to measure the profit margin on sales, and Return on Equity (ROE), which indicates the earnings of Firm owners relative to total equity. Earnings Per Share of Common Stock, which measures the earnings per share, and Return on Asset (ROA), which measures the percentage of profit earned by the Firm relative to total assets. Based on the research objectives and available data, the researcher will use the Return on Asset (ROA) ratio as the primary indicator to represent the profitability ratio, as this ratio is able to reflect the percentage of net profit earned by the Firm through the total assets available, and will be calculated using the formula:

$$ROA = \frac{Net\ Income}{Total\ Assets} \quad (1)$$

Green Accounting

With the enactment of Law Number 40 of 2007, which regulates the obligation of Limited Liability Firms (PT) to fulfill social and environmental responsibilities (Article 77) and the obligation to include a report on social and environmental responsibility performance in the Annual Report of the Board of Directors during the General Meeting of Shareholders (GMS) in accordance with Article 66, supported by Government Regulation Number 47 of 2012, Firms are encouraged to implement green industry through green accounting, in line with the increasing demand from consumers for environmentally friendly products. Lako (2018:99) states that green accounting involves the recognition, measurement, recording, reporting, and disclosure of information related to the impacts of economic, social, and environmental activities on corporations, society, and the environment. The main objective is to present integrated accounting information to assist stakeholders in making economic and non-economic decisions and to combine environmental benefits and costs in corporate finance (Sukmono et al., 2023).

Green accounting aims to prevent or reduce negative impacts on the environment and improve the impacts arising from such activities (Chasbiandani et al., 2019). This finding includes environmental costs, which are the monetary and non-monetary impacts of activities that affect environmental quality (Sulistiawati, 2017). The development of environmental accounting is used as a management and communication tool with the community to evaluate the effectiveness of environmental conservation activities and to communicate the impacts and results to the public. The benefits of implementing environmental accounting include cost savings, supporting decision-making, improving economic and environmental performance, satisfying stakeholders, and providing a competitive advantage. Also emphasizes the importance of the internal and external functions of environmental accounting, with internal functions related to Firm management and external functions related to financial reports that influence the decisions of stakeholders such as customers, investors, and the local community.

Knowledge of green accounting supports the sustainable development of natural resources, improves environmental performance, controls costs, invests in environmentally friendly technologies, and promotes environmentally friendly products (Putri et al., 2019). In short, green accounting aims to disclose the costs and environmental performance of Firms to improve the Firm's reputation in carrying out social responsibilities and achieving sustainability, which in this study is measured through environmental costs and performance to see its impact on Firm profitability.

Environmental Cost

State that environmental costs can be identified as a percentage of a Firm's total operating costs, which is a critical factor in cost-benefit analysis for making environmentally friendly investment decisions and increasing Firm profitability. These costs include expenditures incurred by the Firm in managing environmental aspects, although some Firms may view them as reducing profits. However, according to Tunggal and Fachrurrozie, the allocation of environmental costs actually reflects a Firm's commitment to social responsibility, which can build public trust.

Classify environmental costs into four main categories: (1) Prevention Costs, incurred to prevent the production of waste or pollution, such as employee training and the implementation of environmental management systems; (2) Detection Costs, to ensure compliance with environmental standards, such as audits and pollution level measurements; (3) Internal Failure Costs, arising from the production of waste that is not discharged into the external environment, for example, the treatment of toxic waste; and (4) External Failure Costs, which arise after waste is released into the environment, such as cleaning up contaminated land or ecosystem damage.

Firms improve nvironmental performance and control these costs; Firms need to conduct environmental cost reporting that categorizes costs according to these categories. This report provides important information about the impact of environmental costs on profits and the relative amount spent on each cost category. In this study, environmental costs are measured by comparing a Firm's expenditures on corporate social responsibility to its annual profit, using the formula proposed by Hadi (Wangi et al., 2020).

$$Indeks\ Biaya\ Lingkungan = \frac{Biaya\ Kegiatan\ CSR}{Laba\ Bersih} \tag{2}$$

Environmental Performance

Environmental performance is a Firm's overall achievement in managing environmental issues arising from its operational activities. Environmental performance is a measurable result of an organization's management of its environmental aspects, which can be measured based on environmental policies, objectives, targets, and performance requirements, and this is also in line with Indonesian Law No. 32 of 2009 on Environmental Protection and Management which emphasizes the need for systematic efforts to maintain environmental functions and prevent damage. ISO 14301 also states that environmental performance can be measured from the results of an environmental management system that controls environmental aspects.

Gine (2021) adds that environmental performance is a mechanism by which Firms integrate environmental concerns into their operations and interactions with stakeholders. It is considered an investment that can affect a Firm's reputation. Environmental performance is related to three aspects: Strategic Corporate Environment, Corporate Environmental Reporting, and Operational Corporate Environmental Performance (Kusuma, A., 2022). Environmental performance evaluation is often carried out through the Performance Rating Assessment Program (PROPER) launched by the government, specifically the Ministry of Environment and Forestry, to encourage improvements in corporate environmental management. PROPER provides an assessment based on compliance with air and water pollution control, hazardous waste management, and other obligations related to environmental impact assessments (EIA), as well as the implementation of Environmental Management Systems (EMS) and resource conservation.

PROPER assessment criteria are divided into Compliance and Beyond Compliance, with rankings ranging from Gold, Green, Blue, Red, to Black. This color-coded rating system makes it easy for the public to understand a Firm's environmental management, with lower rankings being at risk of facing legal action or reputational sanctions. In addition, basic principles of environmental management, such as adopting policies to reduce pollution, setting objective criteria, and building a Firm culture that cares about the environment, also play an important role in the success of proactive environmental management implementation in Firms (Sulistiawati, 2017).

Corporate Social Responsibility (CSR)
CSR as defined by the International Institute of Sustainable Development is the integration of social and environmental concerns into business operations and the voluntary interaction with stakeholders by a Firm. Define CSR as a Firm's ommitment to improving the well-being of the community through good business practices and contributions of Firm resources. They also state that implementing CSR can improve a Firm's image, which helps the Firm's sustainability when facing crises. CSR was first introduced by Howard Rothmann Browen as a response to concerns in the business world and is considered an essential element in achieving sustainable development goals that encompass economic, environmental, and socio-cultural aspects. CSR also functions in managing costs and benefits for the Firm with both internal and external stakeholders (Santosa et al., 2022) .

The benefits of CSR for Firms include increased reputation and brand image, opportunities for awards, increased employee morale and productivity, expanded access to operational resources, opening up market opportunities, reduced costs related to environmental impacts, and improving relationships with stakeholders, while the benefits of CSR for the community include improved welfare, environmental, social, and cultural sustainability, and the maintenance of public facilities. CSR is seen as the core of business activities in the concept of the Triple Bottom Line, which encompasses three main factors: people, profit, and the planet, as explained by John Elkington. Profit is the Firm's responsibility to achieve profits through improving the welfare of employees, shareholders, and contributions to society. At the same time, people encompass the role of society in creating value for the Firm, and the planet focuses on the environmental impact that can affect the firm's sustainability (Aprilia & Rahayu, 2023).

CSR has become a recognized standard by the business world and international organizations, with several related standards such as the Caux Principles for Business, Social Accountability 8000, and the Global Reporting Initiative. At the same time, this study uses indicators from GRI-G4. GRI is an independent institution that develops guidelines for sustainability reporting, with indicators divided into economic, social, and environmental categories, which are used to calculate the CSR index of Firms through the analysis of annual reports. Reports prepared in accordance with GRI standards will provide specific information on the economic, social, and environmental performance of Firms, which can enhance positive relationships with the environment and have a positive impact on sustainable development.

Hypothesis Development
The impact of environmental costs on profitability explain that environmental costs encompass expenditures to rectify environmental damage caused by the Firm as well as protective measures taken. Corporate social disclosure serves to gain legitimacy and recognition from the public, in line with legitimacy theory which mandates Firms to follow social norms. Many Firms are still hesitant to disclose environmental costs as it is perceived to add to operational burdens and reduce profitability, as found research. States that environmental costs do not significantly impact profitability. Conversely, some opinions, as expressed by Tryas Chasbiandani et al. (2019), argue that expenditures on environmental programs can enhance a Firm's reputation and competitive advantage and potentially increase revenue and profits in the future.
H1: Environmental costs have a negative impact on profitability.

The Impact of Environmental Performance on Profitability
Environmental performance, reflects a Firm's efforts to improve the environment in order to reduce the impact of damage caused and has become a major concern among the public as environmental issues increasingly become a hot global topic (Putri and Amin, 2019). This performance measures how much a Firm contributes to maintaining environmental sustainability to prevent claims from the public and stakeholders and is considered part of a Firm's social responsibility, which is assessed through the PROPER assessment. Firms with high PROPER ratings tend to have a positive image in the eyes of the public, which in turn can help maintain environmental balance and increase long-

term profitability. Several studies have shown that environmental performance has a significant impact on profitability, as found by Gine (2021), who confirmed a positive relationship between environmental performance and Firm financial performance, and research by Tryas Chasbiandani et al. (2019) also shows a positive influence of environmental performance on profitability. However, there are differences of opinion, who state that environmental performance does not have a direct impact on financial performance or Firm profitability. According to them, environmental performance factors are not the biggest factors that affect a Firm's financial performance.
H2: Environmental performance has a positive impact on profitability.

The Impact of CSR Disclosure on Profitability Sulistiawati (2016) indicates that the information contained in financial statements plays an important role in the capital market, both for individual investors and as a whole, because the value of the information presented in financial statements is very important, especially for investors. Accurate and complete information will improve a Firm's financial performance as it can increase investor confidence and encourage them to make better investment decisions. In addition, CSR is an action taken by a Firm as a form of its responsibility to society and the environment. Shows that CSR has a positive impact on Firm profitability, a finding. However, some studies have revealed that CSR has a negative impact on Return on Assets (ROA). Conversely, other research shows that CSR does not affect ROA, as revealed in the research of Nur Azizah & Fadilla C. (2022).
H3: CSR has a positive impact on profitability.

The Impact of Environmental Costs, Financial Performance, and CSR on Profitability Firms that consider environmental costs demonstrate readiness for potential environmental impacts in their surroundings, which can improve environmental performance through the implementation of PROPER. Good implementation of PROPER can encourage positive reactions and legitimacy from the community, thus contributing to increased long-term profits. The disclosure of CSR activities is also concrete evidence that the Firm is responsible for the environment and is able to manage sustainable business strategies that are not only profit-oriented but also sustainable and responsible to shareholders and stakeholders. Thus, environmental costs, environmental performance, and CSR disclosure provide positive signals that can enhance the Firm's reputation in the community, influence sales revenue, and increase investor confidence in investing their capital, which ultimately impacts the Firm's profitability.
H4: Environmental costs, environmental performance, and CSR have a simultaneous impact on profitability.

Conceptual framework
The following is a conceptual framework for the research on "The Impact of Green Accounting and Corporate Social Responsibility on the Profitability of LQ-45 Firms", which can be depicted in the following framework:

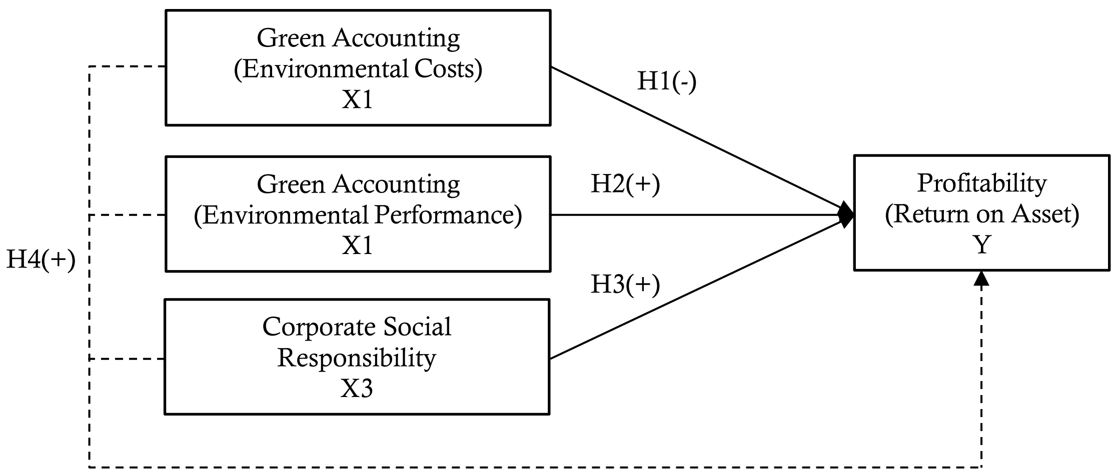


Figure 1: The Conceptual Framework

3. Data and Method

The research object in this study is Firms listed on the Indonesia Stock Exchange (IDX) LQ45 Index from 2019 to 2022. The data source used in this research is the financial statements and sustainability reports of LQ45 Index Firms published on the Firms' official websites or the Indonesia Stock Exchange website. The population in this study is LQ45 Index Firms. The sample used in this study uses purposive sampling. The sample criteria used by the researcher are as follows: (1) All Firms included in the LQ-45 stock group in 2019-2022. (2) The Firms studied are Firms that are in the LQ-45 stock group for four consecutive years from 2019-2022. (3) LQ-45 Firms that publish annual reports for the years 2019-2022. (4) LQ-45 Firms that obtain or are included in the PROPER ranking and present information related to CSR activities consecutively for the years 2019-2022. (5) Firms that disclose environmental costs in Rupiah currency (Rp.).

Operational Variable

Profitability

In this study, the dependent variable is profitability, which is proxied by Return on Assets (ROA). ROA, as a profitability ratio, measures a Firm's effectiveness and efficiency in generating profits from its assets. The formula used to calculate ROA, is as follows:

$$\boldsymbol{ROA} = \frac{Net\ Income}{Total\ Assets} \tag{3}$$

Environmental Costs

Environmental costs are expenses incurred by a Firm related to environmental damage caused and protective measures taken. Environmental costs will be measured by calculating the ratio of expenses incurred for CSR activities to net profit. Based on this, the formula to measure environmental cost is as follows:

$$\text{Environmental cost index} = \frac{\text{CSR activity costs}}{\text{net profit}} \tag{4}$$

Environmental Performance

Environmental performance is a Firm's performance in improving the environment to reduce environmental damage caused by Firm activities. Environmental performance will be measured using PROPER ranking data, a scoring method given from the highest rank of 5 to the lowest rank of 1. The order of ranks from best to worst is Gold, Green, Blue, Red, and Black (KLHK Regulation Number 6 of 2013).

Color	Score	Value
Gold	5	Excellent
Green	4	Good
Blue	3	Sufficient
Red	2	Poor
Black	1	Very Poor

Corporate Social Responsibility

Corporate Social Responsibility (CSR) refers to the information a Firm provides about its social activities, such as environmental efforts, energy use, worker safety, and community involvement. We will measure CSR performance using the GRI 4 index, which has 91 specific criteria. Each criterion will be scored as either 1 (if the Firm discloses information about it) or 0 (if it doesn't). We will then calculate an overall CSR score by adding up all the 1s and dividing by the total number of criteria.

$$CSRI = xjv91 \tag{5}$$

Notes:
CSRI: Corporate Social Responsibility Index
Index Xj: Total disclosure points of a Firm

4. Results

In this research, the research object focuses on Firms included in the LQ45 Index listed on the Indonesia Stock Exchange (IDX) for the period 2019-2022. The population in this study was selected using purposive sampling, a sampling technique that is carried out based on considerations that are adjusted to the research objectives. The criteria used in sampling for this research are as follows:

Table 1. Observation Sample Selection Criteria

Criteria	Quantity
All Firms listed in the LQ-45 index from 2019 to 2022.	63
Firms that have been in the LQ-45 index for the entire period of 2019-2022.	27
LQ-45 Firms that have annual reports for the years 2019-2022.	27
LQ-45 Firms with a PROPER rating and provide CSR information for the entire period.	17
Firms that report environmental costs in Indonesian Rupiah.	8
Number of samples	8

Descriptive Statistics

Descriptive statistical analysis provides an overview of the data, which can be seen from the mean, maximum value, minimum value, median, and standard deviation of each variable. Based on data processing using SPSS, the following descriptive statistical test results were obtained:

Table 2. Descriptive Statistics Results

	N	Minimum	Maximum	Mean	Std. Deviation
IBL	32	.00222	1.48335	.08587	.25795856
PROPER	32	3.00000	5.00000	4.00000	.62217102
CSR	32	.35165	.80220	.57452	.12135327
ROA	32	.00642	.28174	.08851	.0.5895688
Valid N (listwise)	32				

Source: Processed Secondary Data

The results of the above tests indicate that the sample used in this study consists of 32 data samples and shows the minimum value, maximum value, mean, and standard deviation of the Environmental Cost Index (ECI), Environmental Performance (PROPER), Corporate Social Responsibility (CSR), and Return on Asset (ROA). Based on Table 4.2, the following descriptive statistical test results were obtained:

a) The minimum environmental cost is 0.00222, which belongs to PT United Tractors Tbk (UNTR) in 2019. The maximum value is 1.48335, which belongs to PT Aneka Tambang Tbk (ANTM) in 2019. The mean value is 0.08587, and the standard deviation is 0.2579586.
b) The minimum value for the Performance Rating Program (PROPER) is 3, which is held by several Firms (2 times ICBP and INDF in 2020 and 2022, 1time INTP and UNTR in 2020). The maximum value for PROPER is 5, which is held by ANTM (2021), PTBA (2019-2022), and SMGR (2022). The mean value is 4.00, and the standard deviation is 0.622.
c) Corporate Social Responsibility (CSR) has a minimum value of 0.35165, obtained from PT Kalbe Farma Tbk (KLBF) from the disclosure of corporate social responsibility components, and a maximum value of 0.80220, obtained from PT Aneka Tambang Tbk in 2022, with a mean of 0.57452 and a standard deviation of 0.12135327.
d) In the table above, it can be seen that PT Aneka Tambang Tbk obtained the minimum Return on Asset (ROA) value of 0.00642 in 2019 and the maximum ROA value of 0.28174 in 2022. The average ROA is 0.0885140, with a standard deviation of 0.5895688.

The results of the regression analysis in this study are as follows:

Table 3. Multiple Linear Regression Analysis

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std.Error	Beta		
1	(Constant)	.010	.066		.145	.886
	IBL	-.038	.036	-.167	-1.053	.301
	PROPER	.047	.014	.492	3.329	.002
	CSR	-.181	.078	-.373	-2.327	.027

a. Dependent Variable: ROA

Source: Processed Secondary Data

Based on the results of the multiple linear regression analysis, the relationship between the independent and dependent variables can be expressed by the following regression equation:

$$ROA = 0.010 - 0.038IBL + 0.047PROPER - 0.181CSR$$

5. Discussion

The Impact of Environmental Costs on Profitability

Based on the multiple linear regression analysis, it was found that the significance value of 0.301 (which is greater than 0.05) indicates that environmental costs do not have a significant impact on profitability, as measured by return on assets (ROA), for LQ-45 Firms listed on the Indonesia Stock Exchange between 2019 and 2022. This finding aligns with earlier research conducted by Kholmi and Nafiza (2022), Angelina and Nursasi (2021), and Azizah & Fadilla (2022). Many Firms continue to refrain from disclosing environmental costs in their financial statements, often citing the difficulty in controlling these expenditures or the potential increase in tax liabilities (Kholmi & Nafiza, 2022). Consequently, environmental costs frequently go unnoticed, as they are typically aggregated with the cost of goods sold.

However, for Firms that disclose environmental costs, data shows that fluctuations in net income are not always significant despite environmental expenditures. For instance, United Tractors incurred environmental costs of Rp24.73 billion in 2019 with a net income of Rp11.134 trillion. In 2020, amid the pandemic, environmental costs surged to Rp171.95 billion, followed by a decline in net income to Rp5.632 trillion. Interestingly, in 2021 and 2022, the Firm allocated even larger environmental costs, reaching Rp207.84 billion and Rp243.44 billion, respectively, but recorded a significant increase in net income to Rp22.993 trillion in 2022. Similar patterns were observed in other Firms in the sample, where environmental expenditures did not appear to have a significant impact on financial performance. This result may indicate that environmental cost expenditures have indirect effects that can support long-term profitability (Azizah & Fadilla, 2022). Investments in environmental costs have the potential to enhance Firm image, customer loyalty, and operational efficiency, all of which contribute to financial performance. With effective

Management Firms can reap the economic benefits of environmentally friendly practices, such as attracting investors and building a sustainable competitive advantage. Therefore, although environmental costs do not have a direct impact on ROA, a commitment to sustainability can yield significant long-term benefits.

The Impact of Environmental Performance on Profitability

The results of the second hypothesis test indicate that environmental performance has a significant positive impact on Firm profitability. With a significance value of 0.015 (<0.05) and a positive direction, it can be concluded that the environmental performance of LQ-45 Firms listed on the Indonesia Stock Exchange during 2019-2022 positively impacts profitability, thus supporting the alternative hypothesis (Ha). Environmental performance, as measured by PROPER, reflects a Firm's ability to create a clean and responsible environment. This result is in line with legitimacy theory, which states that the alignment between a Firm's existence and environmental values can strengthen its positive image in the community, increase sales, and ultimately support net income growth. Firms with good environmental performance not only gain social benefits but also external benefits. Consumers increasingly value environmentally friendly products and Firm transparency in managing environmental impacts, thus increasing public trust. The better a Firm's environmental performance, the greater its role in creating added value for customers and other stakeholders. Previous research, such as that conducted by Putri et al. (2019) and Tryas Chasbiandani et al. (2019), also supports these findings, where environmental performance has a positive impact on Firm profitability.

The positive impact of environmental performance is also evident in the Firm's relationship with stakeholders. The environmental performance assessment conducted by the Ministry of Environment and Forestry (KLHK) can influence the interest and support of stakeholders, including investors. According to stakeholder theory, Firms with good environmental performance tend to have easier access to investment, which impacts the increase in Return on Assets (ROA). With increased profits, Firms can attract more investors and strengthen their financial position. Therefore, environmental performance is not only a tool for building a Firm's image but also a strategy for increasing long-term profitability.

The Impact of CSR Disclosure on Profitability

The results of the third hypothesis test indicate that Corporate Social Responsibility (CSR) has a significant negative impact on Firm profitability, with a significance value of 0.027 (< 0.05). This finding suggests that although CSR is expected to enhance Firm image and customer loyalty, expenditures on CSR activities can reduce profitability, especially in the short term. This is likely due to the significant allocation of resources to CSR programs, which reduces funds available for core Firm operations. Previous research, also supports this finding by stating that CSR can negatively impact Return on Assets (ROA).

High expenditures on CSR can be a cost burden, especially if the direct benefits of such activities are not immediately apparent. For example, investments in environmental and social programs may not have a direct positive impact on firm revenue. Additionally, if a Firm's financial condition is unstable, priority will be given to financial stability rather than the implementation of CSR programs. Improper or excessive CSR management can result in suboptimal allocation of funds, making its benefits to profitability less significant. However, it is important to note that this negative impact tends to occur in the short term. In the long term, CSR has the potential to provide significant positive impacts. Research by Kleysia N. Tanod, Grace B. Nangoi, and I Gede Suwetja (2019) shows that CSR can enhance a Firm's reputation, attract customers, and support future profitability. A clear example can be seen in PT United Tractors, which, during the COVID-19 pandemic, prioritized social contributions such as donations of medical equipment, mass vaccinations, and necessities. Although profits declined at the beginning of the pandemic, this strategic step helped the Firm maintain good relationships with stakeholders and had a positive impact on profitability in subsequent years. Therefore, Firms need to implement a balanced CSR strategy, considering long-term benefits to create sustainability that supports financial performance.

The Impact of Environmental Costs, Financial Performance, and CSR on Profitability

This research indicates that environmental costs, environmental performance, and Corporate Social Responsibility (CSR) collectively have a positive impact on a Firm's Return on Assets (ROA). This means that a Firm's investment in environmental cost management, improving environmental performance, and implementing effective CSR practices can increase profitability levels. This research result is supported by a significance value of 0.001, which is much smaller than 0.05, indicating a statistically significant relationship between these variables and ROA. Environmental costs, which include investments in environmentally friendly technologies such as waste management and emissions reduction, have been proven to support operational efficiency and the Firm's financial sustainability. Similarly, environmental performance, as measured by achievements such as carbon footprint reduction and energy efficiency, contributes positively to profitability. A Firm's efforts to improve environmental performance not only reduce negative impacts on the environment but also strengthen operational efficiency and sustainability, which can provide long-term benefits. In addition, strong CSR practices, such as community involvement, philanthropy, and the implementation of fair work standards, have proven to be essential in building a Firm's reputation in the eyes of consumers and the public. Firms that successfully integrate CSR into their business strategies not only enhance their image but also create a positive impact on operational and financial performance. These findings are in line, which confirms that responsibility for the environment and society can provide significant benefits, both in terms of long-term sustainability and achieving business objectives.

6. Conclusion

Based on the findings from the research discussed earlier, the conclusions drawn are as follows: Partially, green accounting, as indicated by environmental costs, does not influence profitability. In contrast, green accounting, as measured by environmental performance, demonstrates a positive and significant impact on profitability. Furthermore, corporate social responsibility (CSR) has a negative and significant effect on profitability. Additionally, when considered together, environmental costs, environmental performance, and CSR collectively influence profitability. Investing in green accounting and CSR can yield substantial benefits for Firms, both in achieving their business objectives and in promoting long-term sustainability.

Limitations and avenues for future research

The limitations of this study are: Sample limitations, where this sample is only limited to LQ-45 Firms listed consecutively in this research period. Firms that have not disclosed environmental cost components or CSR components completely and some Firms have not been included in the PROPER award winners from the Ministry of

Environment and Forestry

Suggestions in this study are: Firms are expected to be able to carry out recording, bookkeeping, and transparent disclosure in order to minimize risks that may occur in economic, social and environmental aspects, and a strategic and efficient plan is needed so that every cost or related activity is able to have an impact on Firm profits. For investors, it is hoped that they can consider green accounting and CSR as one of the factors in determining investment decisions which can be beneficial in the aspect of sustainable business. For further research, it is expected to use other variables or proxies or other research methods outside of this research.

Managerial Implications

The results of this study indicate that the green accounting variables proxied by environmental costs and environmental performance, as well as corporate social responsibility (CSR) disclosure, collectively have a positive impact on Return on Assets (ROA) in LQ-45 Firms in Indonesia during the period 2019–2022. Partially, environmental costs do not have a significant effect on ROA; environmental performance has a significant positive effect, while CSR has a significant negative effect. These findings provide important insights for Firms, investors, and other stakeholders to consider business sustainability in an effort to increase profitability and reduce environmental impact."

The managerial implications of this research emphasize the importance of focusing on environmental performance, which has been proven to be able to increase ROA. Firms can adopt measures such as the application of environmentally friendly technologies, energy efficiency, and waste management to improve environmental performance. In addition, management needs to be careful in planning and managing CSR programs so that social investment provides a balanced impact between social benefits and costs incurred. A strategic approach in CSR, such as programs that support environmentally friendly innovation or improve the skills of local communities, can not only improve relations with stakeholders but also create long-term added value for the Firm.
These results demonstrate the importance of assessing a Firm's ability to manage environmental and social issues as part of investment analysis for investors. From the regulator's side, these

findings underscore the need for policies that promote transparency and accountability in CSR disclosure and green accounting practices. Policies that encourage Firms to integrate social and environmental responsibility into business strategies can create a more sustainable business environment, support financial stability, and benefit all stakeholders.

ORCiD ID: https://orcid.org/0000-0001-5935-5162

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