The impact of disclosure of green accounting information on company performance on the Indonesia Stock Exchange

El impacto de la divulgación de información contable verde sobre el desempeño de las empresas en la Bolsa de Valores de Indonesia

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Abstract

This study examines how disclosing green accounting information affects company performance. The data involves 43 companies listed on the Indonesian Stock Exchange (IDX) during 2019-2022. The data consists of the disclosure of qualitative information (number of report pages needed to describe each corporate social responsibilities (CSR) activity), quantitative green accounting disclosures (presence of tables detailing and comparing each activity), the volume of disclosure (number of pages of the annual report assigned to CSR), the business sector contribution to environmental damage, and company performance. Data were analyzed using linear regression. The results show that the ratio of the number of pages per activity has a negative effect. In contrast, the number of pages positively affects company performance. Meanwhile, a specific table has a positive effect only on ROE. Therefore, this study concludes that companies must develop green accounting as a quantitative approach to maintain company performance.

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Peer Review under the responsibility of Universidad Nacional Autónoma de México.

Resumen

Este estudio examina cómo la divulgación de información contable ecológica afecta el desempeño de la empresa. Los datos involucran a 43 empresas que cotizan en la Bolsa de Valores de Indonesia (IDX) durante 2019-2022. Los datos consisten en la divulgación de información cualitativa (número de páginas del informe necesarias para describir cada actividad de responsabilidad social corporativa (RSE)), divulgaciones cuantitativas de contabilidad verde (presencia de tablas que detallan y comparan cada actividad), el volumen de divulgación (número de páginas del informe anual asignado a RSC), la contribución del sector empresarial al daño ambiental y el desempeño de la empresa. Los datos se analizaron mediante regresión lineal. Los resultados muestran que el ratio del número de páginas por actividad tiene un efecto negativo. Por el contrario, el número de páginas afecta positivamente al rendimiento de la empresa. Mientras tanto, una tabla específica tiene un efecto positivo sólo en el ROE. Por lo tanto, este estudio concluye que las empresas deben desarrollar la contabilidad verde como un enfoque cuantitativo para mantener el desempeño empresarial.

Código JEL: M41, M42, M14
Palabras clave: contabilidad verde; rendimiento financiero; desempeño de la compañía; contabilidad de sostenibilidad; divulgación de información

Introduction

Climate change and global warming are becoming increasingly threatening to human life. The maximum and average daily temperature gets higher from year to year (Patterson, 2023). Scientists have found evidence about the role of humans in increasing the temperature of the Earth's atmosphere (Santer et al., 2023). Humans play a role in increasing the temperature of the Earth's surface through various activities such as industry, deforestation, transportation, agriculture, animal husbandry, and intentional environmental pollution. For example, industrial activity and traffic create smoke that carries black carbon particles into the atmosphere, trapping heat on the Earth's surface and increasing the temperature around us (Moteki et al., 2023). In line with concerns that the Earth's temperature will increase beyond the limits of tolerance for human life and environmental damage is getting worse, various countries and business entities are trying to prevent or remediate existing conditions (Indonesian Ministry of Environment and Forestry, 2022; Talvitie et al., 2023).

One form of effort to prevent damage and further warming is to encourage business actors to not only control their operational processes so as not to pollute the environment but also to contribute to efforts to improve environmental and social quality for the better (Dhar et al., 2022). These efforts must

become part of the company's culture, policies, and actions (Artene et al., 2020) and be reported to shareholders and other stakeholders, such as society (García-Sánchez et al., 2020).

Green accounting reports on how environmentally efficient a company manages the environment through a cost-benefit approach (Buric et al., 2022). It considers economic damage and natural resource depletion due to its operations (Rounaghi, 2019). Even though it has not been formally included in the official normative framework, green accounting can be seen from various indications indicating that companies plan their environmental actions carefully by measuring costs or forecasting future benefits (Buricet al., 2022). This indicator can be seen from complete, detailed, factual, and rational reporting.

Although each sector has a different environmental impact (Gonzalez & Mendoza, 2021), all companies should ideally disclose their environmental information to third parties. This research problem focuses on companies that open their environmental accounting information to the public for their consideration in investing in these companies through the stock exchange. In this context, green accounting plays a role not only as a form of implementation of obligations but also as an effort to attract investment.

In this paper, we hypothesize that there is a significant canonical correlation between the completeness, detail, factuality, and rationality of green accounting reporting on the profitability of Indonesian stock exchange member companies. This study's source of data is secondary data, including data on the business sector, number of majority shareholders, number of reporting pages, number of CSR activities, the existence of a detailed table of funds, ROE (Return on Equity), and ROA (Return on Assets).

We first discuss the theoretical basis of the article, with particular emphasis on the green accounting concept. We then present the method used in this research, which focused on innovative ways to measure green accounting using information from annual and sustainability reports. Based on the information from the data analysis, we show that green accounting influences company performance. We then presented the discussion of the result. We discuss our findings' theoretical and managerial implications, limitations, and further research.

Theoretical basis

Green accounting is an accounting system that combines economic and environmental information to measure, communicate, and interpret the financial activities of a company (Rahman & Islam, 2023). Some authors distinguish between green and social accounting and place sustainable accounting as a superstructure that includes both types of accounting (Gil-Marín et al., 2022). Even so, an accounting

concept comparable to social accounting is environmental accounting because this accounting focuses on ecological costs (Rounaghi, 2019). A study by Khairin et al. (2020) in Indonesia shows that professors in the accounting field view green accounting as accounting that involves environmental, spiritual, and social aspects, not just ecological aspects. In line with this thinking, green accounting also includes a framework for evaluating a company's social performance(Rahman & Islam, 2023). The existence of various concepts such as "environmental accounting," "green accounting," and "sustainable accounting" can be seen as a hierarchy, where environmental accounting is most specific, green accounting includes environmental and social accounting, and sustainable accounting includes economic, social, and environmental accounting. In line with this conclusion, this article uses the concept of green accounting to represent the social and environmental pillars.

Rahman and Islam (2023) argue that financial reports must reflect green accounting. This integration allows companies to evaluate their environmental performance and consider environmental aspects in decision-making(Maama & Appiah, 2019). Even so, in an environment where financial records are very tight, such as in Indonesia, but have not yet established regulatory green accounting, these costs cannot be reflected in specific financial reports. It would be unfair to suggest that a company is not practicing green accounting because that item is not explicitly in the financial statements. Preferably, we need to look at green accounting in annual and sustainability reports where companies freely describe what has been calculated and carried out regarding environmental aspects.

Actions that fall under the purview of implementing green accounting can range widely from environmental impact assessments to community development. The Indonesian Ministry of Environment and Forestry (2023) notes categories such as environmental management system (SML), life cycle assessment (LCA), energy efficiency, emission reduction, toxic and hazardous waste handling, non-toxic and non-hazardous waste handling, water efficiency, load reduction, biodiversity, community development, and disaster. The variety of practices and the unavailability of standards that can measure corporate green accounting practices comparatively and quantitatively hinder further research on green accounting, especially in developing countries (Gola et al., 2022).

Empirical evidence shows that various green actions, such as green supply chain practices, significantly affect company performance (Namagembeet al., 2019). Likewise, studies reveal that environmental accounting strategies can improve the sustainability performance of micro, small, and medium enterprises (MSMEs), which includes economic sustainability (Latifah & Soewarno, 2023). However, Majid et al.(2022) revealed that environmental accounting negatively affects financial performance. It indicates that the higher the quality of green accounting, the more the company's performance decreases. Majid et al. (2022) argue that this is caused by conflicting legitimacy. Using legitimacy theory, they assert that increasing pressure from the government makes other stakeholders

react negatively and not appreciate the company's efforts. For other stakeholders, the company's efforts to apply green accounting are simply carrying out obligations from the government, so they do not react positively by increasing the company's performance. Another explanation that can be raised is the high cost of implementing environmental accounting so that these costs suppress company performance and the view of stakeholders that green accounting investments are not profitable (Buallay et al., 2023; Shaikh, 2022; Şimşek & Öztürk, 2021). However, this study contradicts other empirical studies that find a positive relationship to financial performance (Deb et al., 2022; Kong et al., 2022; Latifah & Soewarno, 2023; Namagembe et al., 2019).

The role of green accounting in improving performance can be understood through institutional and stakeholder theories. According to institutional theory, organizations experience three pressures from the institutional environment: coercive pressure, mimetic pressure, and normative pressure (Deb et al., 2022). Coercive pressure originates from legal or regulatory requirements (Baah et al., 2021). In Indonesia, green accounting practices are not mandatory for all companies, but the government explicitly requires all companies participating in the Indonesian stock exchange to issue sustainability reports. The coercive basis in Indonesia for sustainability reporting is the Financial Services Authority Regulation (POJK) 51/217 concerning the Implementation of Sustainability Reporting Obligations for Financial Services Institutions, Issuers, and Public Companies. The sustainability report outlines the company's actions to implement the sustainability principles. Several studies use sustainability reports as indicators of green accounting because they provide a detailed description of cost control practices or predictions of company benefits in an environmental and social context(Gola et al., 2022; Gonzalez & Mendoza, 2021; Sisaye, 2022).

Mimetic pressure departs from the behavior of similar organizations in the industry (Gunarathne et al., 2021). It could be argued that mimetic pressure is analogous to the peer pressure that organizations face from their peers. If any industry member raises their standards to stand out, then competitors will have a gap to catch up to gain the edge that the company with green accounting has already taken. As a result, green accounting practices are spreading in the industry.

Normative pressure is pressure in the form of social norms and values in society. Companies must comply with normative pressures to show that they are following the values and expectations of their societal stakeholders(Li et al., 2020). This compliance gives them a competitive advantage compared to their competitors, who are also fighting for the attention and sympathy of the public. These institutional pressures, both from above (coercive), below (normative), and from the side (mimetic), make organizations behave in compliance and adopt the obligations imposed, including the obligation to practice green accounting (Rahman & Islam, 2023).

Meanwhile, stakeholder theory argues that companies can achieve long-term advantages by creating value through efforts to balance the needs and interests of stakeholders (Hörisch et al., 2020). These stakeholders include employees, customers, investors, suppliers, and regulators (Rahman & Islam, 2023). Each stakeholder has their own needs and interests. Green accounting is a form of the needs and interests of some stakeholders, especially from the community, consumers, and regulators. While other stakeholders may only need economic performance, the existence of stakeholders who require environmental performance demands a balancing effort, and hence, companies adopt green accounting. This adoption, in turn, makes the company likable, and performance increases. On the other hand, the failure to apply green accounting makes the company abandoned by consumers and the public and pressured by regulators, causing the company's performance to decline.

Methodology

This study investigates the effect of green accounting on company performance (operational and financial) in Indonesian Stock Exchange member companies based on the most recently published annual reports and sustainability reports. Annual reports and sustainability reports are obtained from each company's website. We use the most recent reports available on the website. Each company is represented only by one report year, so the data is cross-sectional, not panel data. We only use one year per company because we assume it follows a similar reporting pattern until the regulator pushes them to change their reporting pattern. The assumption came after we reviewed several reports from the same companies and found the homogeneity tendencies. So we decided to present each company with one of our most recent reports. However, we do not accept a company with the most recent report below 2019 for apparent reasons: they might cease to exist or are too young to publish their report.

The number of companies that became the research sample was 43, which resulted from screening from the initial target of 50 companies. Seven companies were found to be no longer extended members of the Indonesia Stock Exchange, or they had just become members. They had not fulfilled their obligations to publish financial and sustainability reports. The total population of members of the Indonesia Stock Exchange as of May 22, 2023, is 864 companies (IDX, 2023).

This study focuses on information about corporate CSR in the form of social activities and natural resource conservation activities. Both are forms of external environmental and social responsibility. The sustainability report contains both internal and external components. Many parties criticize internal CSR as implementing conventional HR management and development practices that must be adhered to, even without CSR and sustainability discourse (Omidi & Zotto, 2022). In contrast, external CSR is a genuinely additional activity. The company has the freedom to act or not fulfill it

because, conceptually, it does not directly impact its operations. Companies that do not look beyond their core internal concerns do not have external CSR that impacts society and the company's operational environment (Lythreatis et al., 2019). This external CSR is the target of this research, and green accounting indicators are directed at this external activity. That is, we view that green accounting considers environmental and social impacts on the company's external environment, while internal companies are more of a quality management effort, both the quality of human resources and the quality of implementing operational activities.

The dependent variables in this study are the two performance indicators, namely return on assets (ROA) and return on equity (ROE). ROA is the ratio between net profit and total assets and indicates the company's operational performance. Meanwhile, ROE is the ratio between net income and total equity (owners' rights to company assets after deducting total liabilities). ROE indicates a company's financial performance (Buallay, 2020).

Previous research has measured green accounting in various ways, from simply giving a value of 1 to companies that implement it and 0 to those that do not implement it (Dhar et al., 2022) to distributing questionnaires with several questions indicating the implementation of green accounting (Rahman & Islam, 2023). This research offers three new indicators that can be used to measure the implementation of green accounting. These three indicators are disclosure of qualitative information, quantitative information, and volume of disclosure.

Disclosure of qualitative information is approached by the number of pages needed to describe each CSR activity. The fewer pages used, the denser the information provided and, therefore, more quantitative. Too many pages allow companies to provide subjective information and even persuasion (Viererbehl & Kohl, 2022). This indicator can be a proxy for green accounting because it determines whether stakeholders prioritize quantitative values, such as accounting data, or values that are more qualitative and narrative, such as in-depth descriptions.

Disclosure of quantitative information is approached by the existence of tables detailing and comparing each activity. Indeed, the negative effect of disclosing qualitative information can be interpreted as disclosing quantitative information. However, tables can be a determinant and allow for the disclosure of dual data: qualitative and quantitative (if the disclosure of qualitative information has a positive effect). The existence of tables allows companies to describe activities comparatively by comparing the costs incurred for each activity carried out and the benefits generated from each sustainability activity. Tabulations also give a broad picture of sustainability activities and their relation to other quantitative information in financial reports, such as performance indicators. It is an actual application of the materiality principle in accounting theory (Sisaye, 2021). Thus, tables could imply a

preference for quantitative data, hence strong support for green accounting. This variable is dummy, with one meaning it has a detailed table of cost or benefit information and 0 means it does not have it.

The third indicator is the volume of disclosure, approximated by the number of pages in the annual report attributed to CSR. The more pages, the greater the stakeholders' demand for green accounting details. Suppose the effect of this variable is positive, and the ratio has a negative effect. In that case, stakeholders determine the importance of formal solid and abstract information such as quantitative data from green accounting in large quantities. Conversely, suppose the effect of the variable number of pages is positive, and the ratio is also positive. In that case, the stakeholders will emphasize the qualitative and quantitative data diversity.

The control variables used in the model are company size, business sector, and diversity of shareholders. Company size is widely known to affect company performance because it determines the business size and capital available for profit (Kijkasiwat & Phuensane, 2020). The number of employees or assets can approximate company size. This study uses the total assets in natural logarithms as a proxy for company size.

Specific business sectors have a higher level of profitability than other business sectors (Mallinguh et al., 2020). There are many ways to classify business sectors, such as primary (extractive), secondary (manufacturing), and tertiary (services). This study distinguishes the business sector based on its environmental impact. Suppose the sector has an enormous impact and has high performance. In that case, this can be interpreted as a rationalization of the company's operations and the importance of implementing green accounting. Energy and mining sector companies are the companies with the most environmental impact, and they are also the most profitable due to their abundant product potential. This study's classification was taken from Eco Experts' research (Howell, 2023). The results of this study identify the industrial sectors that have the most impact on the environment, from the worst ones, namely energy, transportation, construction, agriculture, food retail, fashion industry, and technology. In line with these findings, the environmental impact score of each company is 1 for technology companies (including financial services and health services), 2 for fashion companies, 3 for food companies (including hospitality), 4 for agricultural companies, 5 for construction companies and manufacturing, 6 for transportation companies, and 7 for energy and mining companies.

Diversity is a significant predictor of performance because it provides a broader perspective and experience in dealing with various company challenges(Khan et al., 2019; Song et al., 2020). This study uses shareholder diversity as a control variable. The available data does not detail the number of parties holding shares below 5% because the number of small shareholders is vast. The primary attention is directed to shareholders with a minimum number of shares of 5% because they have

significant power in making company decisions. Therefore, diversity is approximated by the number of shareholders owning at least 5% of the stock.

The data is cross-sectional since each company is represented by one report. Because the data is not panel data, we can not use fixed or random effect regression. Hence, the data were analyzed using the linear regression method. The equations used are:

$$ROA_i = \beta_0 + \beta_1 SIZ_i + \beta_2 SEC_i + \beta_3 TAB_i + \beta_4 RAT_i + \beta_5 OWN_i + \beta_6 PAG_i + \varepsilon_i$$

$$ROE_i = \beta_0 + \beta_1 SIZ_i + \beta_2 SEC_i + \beta_3 TAB_i + \beta_4 RAT_i + \beta_5 OWN_i + \beta_6 PAG_i + \varepsilon_i$$

With SIZ is the logarithm of total assets, SEC is the business sector, TAB is the existence of a breakdown table of costs, RAT is the ratio of the number of pages per activity, OWN is the number of shareholders above 5%, and PAG is the number of pages. ROA and ROE are the dependent variables in this model, where ROA is the ratio of net income to total assets while ROE is the ratio of net income to total equity. Index (i) shows individual companies while index in numbers (1-6) shows the order of the coefficients. The coefficient of the slope of a linear line is denoted by the symbol beta (β). The zero coefficient (β_0)is the intercept of the regression equation, while the random error value is represented by the epsilon symbol (ε) at the end of the equation.

Results

Table 1 presents descriptive statistics of the continuous variables studied in this study. The average number of shareholders is about four entities per company, or 3.67. The average number of pages provided for green accounting is 6.49, or seven pages per report. Five reports, however, have more than ten pages of green accounting information. The most pages reached 84, which is exceptional since the second largest reports only have 28 pages of green accounting. The average number of activities per company reported is nine activities. The average page-per-activity ratio is about half (0.56) per activity. The finding means that, on average, two activities are reported on one page of the annual/sustainability report. The activities range from localized and small-impact activities, such as giving charities to local orphanages, to regional and large-impact activities, such as economic empowerment programs for fishers. The average Ln(Asset) is 28.20, equivalent to 1.77 Trillion Rupiah or US$117.76 million.

The average ROA reported by the sample was 0.01, which was very small. The ROA was small because 12 samples had negative ROA, meaning they experienced loss. The lowest ROA was -0.47, meaning the company experienced a significant loss of 47% of its asset value. The standard deviation of ROA was lesser compared to ROE (0.12 vs 0.53), which means that the most extensive

variation of values resides in ROE data. Twelve samples have negative ROE, the lowest ROE reaching –2.76 or 276% loss compared to total equity.

Table 1
Descriptive results

	Means	Maximum	Minimum	Standard deviation
Ln(Asset)	28.20	33.11	24.51	2.27
Shareholders	3.67	9	1	1.69
Number of pages	6.49	84	0	13.51
Number of activities	9.14	57	0	12.89
Pages/activity ratio	0.56	4	0	0.70
ROA	0.01	0.30	-0.47	0.12
ROE	0.04	1.34	-2.76	0.53

Source: own calculation using data from IDX

Table 2 presents the distribution of discrete data, including the business sector (proxy of the environmental impact provided by the company) and the existence of detailed tabulated data. Most companies studied were in the manufacturing and construction sectors, 25 out of 43 (58.1%). There are no companies from the fashion and agriculture sectors. A total of ten companies are in sectors with a minimum impact on the environment, namely the technology and financial sectors. Meanwhile, four companies in the energy sector have the most considerable environmental impact. As many as 27 companies did not report their activities in tabulations, making it difficult to compare them. There are only three companies whose latest year of report was used before the pandemic (2019).

Table 2
Frequency results

	Amount	Percentage
corporate sector		
Technology and finance	10	23.3
Fashion	0	0
Retail and hospitality	1	2.3
Agriculture	0	0
Manufacturing and construction	25	58.1
Transportation	3	7
Energy	4	9.3
Activity tabulation		
There is	16	37.2
No	27	62.8
Year of publication		
2019	3	7
2020	2	4.7
2021	24	55.8
2022	14	32.6

Source: own calculation using data from IDX

The variance inflation factor (VIF) is calculated to test the independent variables' collinearity. According to Gujarati and Porter (2009), a VIF higher than 10 indicates the occurrence of collinearity so that it can inflate the standard error of the estimated coefficient. Table 3 shows that the VIF of all values is even less than 3, indicating that none of the independent variables suffer from multicollinearity problems.

Table 3
Collinearity test

	tolerance	VIF
size	0.798	1.25
sector	0.635	1.57
table	0.559	1.79
Ratio	0.753	1.32
ownership	0.933	1.07
Pages	0.693	1.44

Source: own calculation using data from IDX

To test for autocorrelation, we used the Durbin-Watson (DW) test. DW values outside the range of 1.5-2.5 can contain autocorrelation problems (Gujarati & Porter, 2009). Table 4 shows that the DW value of the ROE model is in the range of 1.5-2.5, while the DW value of the ROA model is slightly closer to 2.5, namely 2.43. Even so, this value is still marginal, so that it can be tolerated. Therefore, it can be concluded that no autocorrelation problem can affect the analysis results.

Table 4
Autocorrelation and Normality Test

Model	Durbin-Watson	Kolmogorov-Smirnov (p-value)
ROA	2.43	0.737 (0.648)
ROE	1.61	0.825 (0.504)

Source: own calculation using data from IDX

Finally, the normality test was performed. The normal probability plot is used to test the normality of the residuals. As presented in Fig. 1 and Fig. 2, the residuals from the regression results show a reasonably fit pattern with a linear line, especially the ROE graph. The residual ROA graph deviates slightly from normality with one outlier but is still tolerable. The normality of data was also tested using the Kolmogorov-Smirnov test. The test proved that the unstandardized residuals of the ROA regression model were normally distributed with $p = 0.648 > 0.05$. We also find that the residuals of the ROE model succeed the normality test, with $p = 0.504 > 0.05$. Table 4 above shows the Kolmogorov-Smirnov test.
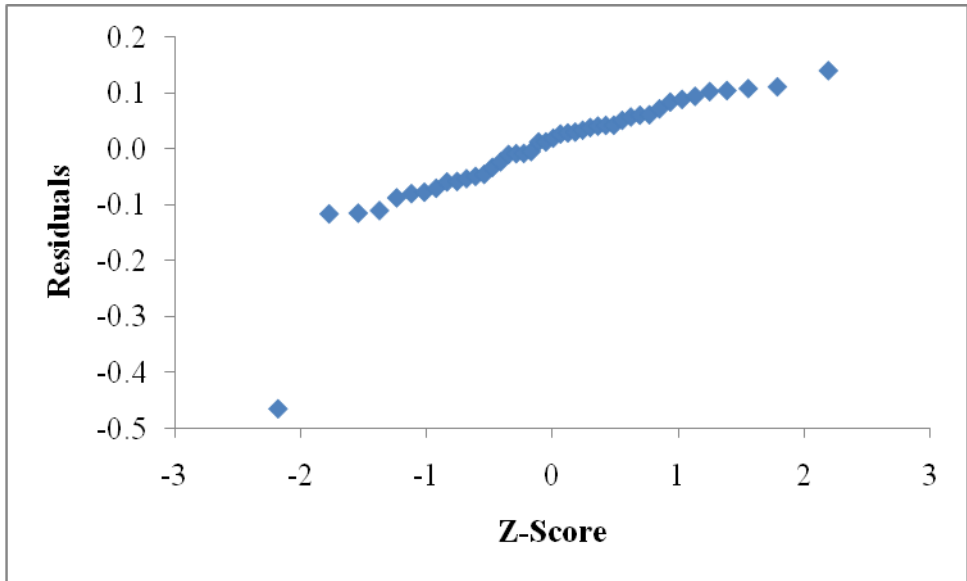
Figure 1. Normal Probability Plot for ROA Model
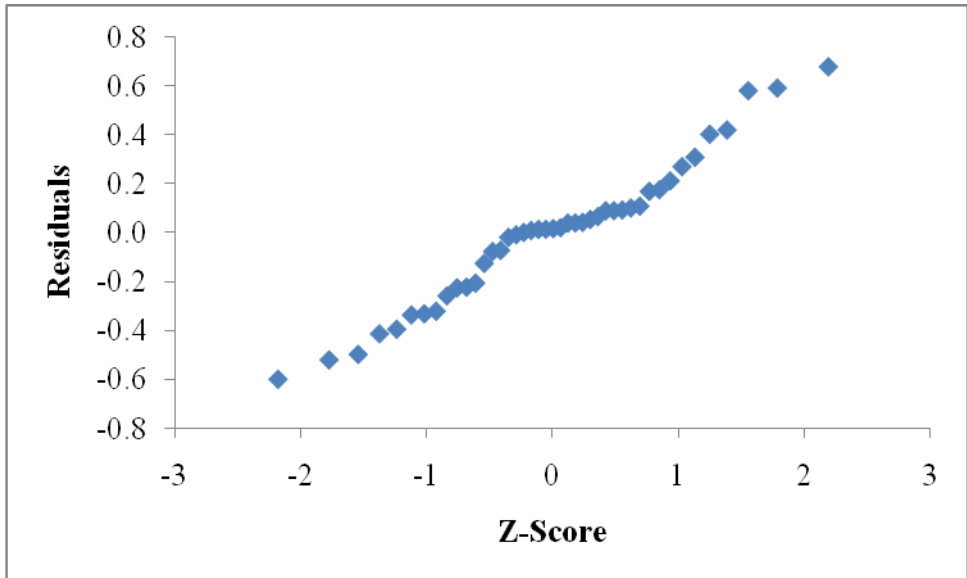Source: own calculation using data from IDX

Figure 2. Normal Probability Plot for ROE Model
Source: own calculation using data from IDX

Table 5 shows the regression results. These results indicate that the ROA and ROE models have high statistical significance because the F-test's p-value is less than 5%. High statistical significance indicates the high explanatory power of the model.

Table 5
Multiple regression

Variable	ROA model			ROE model		
	β	t-Statistics	Sig.	β	t-Statistics	Sig.
size	0.218	1.44	0.156	0.091	0.89	0.375
sector	0.088	0.52	0.606	0.202	1.77	0.085
table	0.181	1.00	0.320	0.307	2.52	0.016
Ratio	-0.416	-2.68	0.011	-0.751	-7.16	0.000
ownership	0.043	0.30	0.759	0.282	2.99	0.005
Pages	0.396	2.45	0.019	0.541	4.95	0.000
F	3.22			14.13		
Sig.	0.012			0.000		
R Square.	0.349			0.702		
Adjusted R Square	0.241			0.652		

Note: Numbers in bold indicate a degree of significantly less than 5%
Source: own calculation using data from IDX

The ROA model shows that only two variables significantly affect operational performance, namely, the ratio of the number of pages to activities and the number of pages. The ratio of page count to activity is a proxy for description depth. The higher this ratio, the more information companies provide to describe an activity they carry out, and therefore, the more green accounting practices they implement are revealed. Even so, the ROA model shows a negative impact from this ratio, indicating that the less information disclosed, the higher the company's operational performance. On the other hand, the more pages that describe green activities, the higher the ROA. These results cannot be interpreted as positive support for increasing the number of green activities; companies do not need to say much about each. In turn, this orientation signifies the importance of quantity over quality in implementing green accounting.

Unlike the ROA model, the ROE model shows that almost all independent variables have a significant effect. Only the sector does not significantly affect the ROE at the 5% level. In the ROE model, the ratio of pages to activities has a negative effect, and the number of pages has a positive effect, indicating an essential orientation on the number of activities rather than the quality of activities. This orientation is supported by tables detailing expenditures for each activity that affects ROE, indicating the importance of quantitative details in reporting green activities. Finally, the number of shareholders positively affects ROE, indicating that various perspectives support a company's financial performance.

Discussion

The most significant finding from this study is that page ratio has a negative effect, while page count and quantitative breakdown have a positive effect on performance. These results indicate that green accounting can provide benefits for improving performance than qualitative efforts through narrative descriptions. As an accounting method, green accounting is objective, quantitative, formal, and comparative, so it does not create ambiguity and facilitates quick decision-making. This finding aligns with previous research showing that investors prefer quantitative information about social responsibility to qualitative information (Wendai et al., 2022). Quantitative information encourages confidence in the authenticity of these practices and reflects the company's sincerity in accepting responsibility and being evaluated for it (Rustam et al., 2020). On the other hand, preliminary qualitative and quantitative information reflects that the company deliberately hides unfavorable information and raises doubts about the company's reliability among investors (Pinnuck et al., 2021).

In contrast, qualitative methods open space for subjectivity and the potential for greenwashing (Viererbl & Koch, 2022). In this case, implementing green activities can damage the company's image(Einwiller et al., 2019). Stakeholders can view these activities skeptically and suspect hidden intentions (Gatti et al., 2019). According to Viererbl and Koch (2022), this is due to reactance. According to psychological reactance theory, humans will try to maintain freedom and end discomfort when facing threats to their freedom of choice (Reynolds-Tylus, 2019). This reactance brings negative behavior and attitudes toward the source of the threat (Youn & Kim, 2019). CSR information that is qualitative, subjective, and rhetorical can be seen as a persuasive effort that is manipulative and threatens the freedom of stakeholders (Viererbl & Koch, 2022). As a result, stakeholders will experience reactance and reduce company performance through contract reductions or product purchases.

The problem of reactance is new and contributes significantly to stakeholder theory. Stakeholder theory emphasizes the company's role in balancing stakeholders' conflicting interests and expectations. The emergence of a negative impact of qualitative information on company performance indicates that this strategy cannot balance the interests of regulators and the interests of investors who exert coercive pressure with the interests of consumers who exert normative pressure. Hence, quantitative and exact information supplemented with the modest qualitative narration is needed to increase the effectiveness of green accounting reports.

Green accounting can be a solution for imbalances that occur and remove doubts that occur. Green accounting shifts the disclosure of qualitative information to more quantitative disclosures, thus reducing doubts about trusting the company's sustainable activities. In addition, green accounting can

also encourage the implementation of broader sustainability activities to cover various aspects of community development and biodiversity needed to encourage sustainable development.

Conclusions

This research investigates the influence of green accounting on companies' overall operational and financial performance. Using data from 43 companies, we investigate the impact of quality (pages to activity ratio), quantity (number of pages), and breakdown (existence of a budget table) of sustainability activities on two forms of performance, namely Return on Assets (ROA) and Return on Equity (ROE). We also control company size, business sector, and ownership.

This paper contributes to the growing literature on sustainable and green accounting by showing that green accounting affects company performance using three new indicators that depart from corporate sustainability reports. The three new indicators are better than before; researchers only use dummy indicators regarding whether a company has green accounting practices.

This study concluded that there is a significant negative relationship between the number of pages per activity and performance. The fewer pages used to describe an activity, the better the performance. On the other hand, the number of pages and tabulations positively affects operational and financial performance. The thicker the qualitative description and the more detailed the quantitative description, the higher the company's ROE value.

This finding has theoretical implications for academics and policymakers. The research results illustrate the benefits green accounting provides if translated quantitatively, individually, and comparatively. Qualitative narrative descriptions are less valuable and give the impression of being long-winded. Practitioners need to prepare more rigorous, factual, and unambiguous reports by recording expenses for each activity so they can be compared. The number of activities also needs to increase stakeholders' positive perception of the company's green activities.

Furthermore, this research implies the importance of integrating psychological reactance theory into institutional and stakeholder theories. The finding that the ratio of pages per activity hurts performance indicates a psychological reactance effect where stakeholders feel an imbalance in efforts to meet their needs and expectations. This imbalance is reflected in the perception of persuasive intent, which is then rewarded with distrust of exaggerated, persuasive, rhetorical, ambiguous, emotional, and qualitative reports. This distrust becomes normative pressure that forces companies to improve by only reporting real, exact, comparative, detailed, rational, and quantitative things. These characteristics are the principles of green accounting. Green accounting has the principle of materiality, namely that all items influencing investor decision-making must be recorded in detail. For this reason, green accounting

can significantly affect performance, as shown by the ability of tabulation and the number of pages to increase ROA and ROE.

The traditional CSR paradigm is based on the principle of voluntarism so that companies can report whatever they feel is essential to show their contribution to society and the environment. This disclosure can be indicated by incomplete information, a long-winded and overly emotional narrative, neglect of quantitative details, and feeling too rigid and "calculated." However, this research reveals that this action can negatively affect company performance because it provides large amounts of qualitative data. Such unstructured information can be perceived as an attempt at persuasion, which triggers psychological reactance. Therefore, companies need to express their CSR activities as clearly and concisely as possible, with qualitative information merely as a complement and providing important new information that cannot be represented quantitatively.

This research has two limitations. The first limitation is that the sample of companies in this research is still low, making it impossible to use other, more complex analytical methods involving many variables. More significant results can be obtained if the number of samples is increased in terms of the number of companies and the year of publication. The second weakness departs from the sample departing from various industries. This limitation is related to the limited number of samples that do not allow analysis to be carried out in just one business sector.

This study suggests that more research on green accounting should be carried out using more precise indicators. Future research can also use primary, predominantly qualitative data to find a suitable mechanism to explain why several indicators negatively affect performance. Finally, multi-sector comparative research needs to be conducted by involving more companies from each sector to see whether the relationship between green accounting and company performance applies equally to all business sectors.

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