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The Impact of Corporate Financial Performance on Greenwashing Propensity: An Analysis of Fortune 100 Firms in Indonesia

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Abstract: This study aims at analyzing the influence of corporate financial performance on the tendency to engage in greenwashing among companies listed in the Fortune 100 Indonesia. Greenwashing is corporate practices that misleadingly portray an environmentally friendly image without substantive actions. Such actions are usually reflected in the company's financial performance, namely: Profit Margin (PM), Return on Assets (ROA), and Debt to Equity Ratio (DER). The research employs logistic regression analysis using secondary data from financial reports and sustainability reports of 41 Fortune 100 Indonesia companies from 2020 to 2023. The results indicate that increases in Profit Margin and Return on Assets significantly influence the propensity of companies engaging in greenwashing, while inclining in Debt-to-Equity Ratio does not. These findings suggest that companies with improved financial performance are more likely to practice greenwashing to maintain a positive image without allocating sufficient resources tor sustainability efforts. This study contributes to academic literature by strengthening empirical evidence on the relationship between financial performance and greenwashing. Additionally, the findings can serve as a reference for investors, regulators, and the public in identifying greenwashing practices and promoting corporate transparency and accountability in sustainability reporting.

Keywords: greenwashing, financial performance, Profit Margin, Return on Assets, Debt to Equity Ratio.

INTRODUCTION

In the age of modernization, companies are faced with a dualism of responsibilities: to maximize profits for shareholders, and to fulfill obligations to other stakeholders, such as employees, communities, regulators, and the environment (Abidin et al, 2025). Business models focusing solely on short-term profits often ignore sustainability factors, which can create negative environmental and social impacts in the long run (Forliano et al, 2025).

The 2015 Paris Agreement, a global collaboration on halting the climate change impacts, has put more pressure for companies around the world through the enforcement of more strict

regulations regarding greenhouse gas (GHG) emissions (Ongsakul,2025). Activities such as transportation, production, distribution and marketing, which are generally carried out in an unsustainable manner are now required to adopt the new norm (Emon et al, 2025). Demands from stakeholders to held responsible companies in climate change mitigation by adopting more sustainable business strategies, are soaring. Among the requirements are the use of renewable energy, resource efficiency, and the implementation of stricter environmental standards (Usman, 2024). Companies, considered to pose risks for the environment, are urged to declare their commitment in real terms through voluntary sustainability reports. Likewise, business owners failing to adhere the requirement, are also ought to pay the compensation in the form of tax or carbon offset (Yébenes et al, 2024).

With such a strong encouragement, companies' sustainability reports have become a commodity. Nowadays, more investment and financial institutions are providing funding for climate change mitigation efforts undertaken by companies (Fu et al, 2024). The Green Climate Fund (GCF), for example, has allocated USD12.8 billion to fund companies that promote sustainable business practices (Nuruzzaman et al, 2024). The Climate Bond Initiatives (CBI) provides USD4.2 trillion in concessional loans to companies investing in sustainable business activities (https://www.climatebonds.net/data-insights/market-data/certified-climate-bonds-database). In Indonesia alone, the total value of green investments over the last five years is IDR 496 T, which is planned to be increased by 20% per year (Kementerian Keuangan Republik Indonesia, 2023). All these funding alternatives have resulted in competitions among companies to show their commitment to sustainability in order to receive more financial supports from the potential investors (Lin, 2024).

In the midst of increasing corporate commitment and campaigns on environmental sustainability, a new phenomenon has emerged: greenwashing. Price Waterhouse Coopers, mentioned the phenomenon of ESG (Environmental, Social and Governance) Fraud, where companies engineer their ESG reports in order to present an image as a company that cares about social and environmental aspects (Amani, 2023). ACFE (Association of Certified Fraud Examiners) in its Fraud Tree even adds a new fraud category: Non-Financial Reporting Fraud, where fraudsters falsify non-financial reporting data, including Sustainability Reports to gain material benefits (ACFE, 2024).

The practice of greenwashing has devastating impacts to all stakeholders. The Climate Change Litigation Database reveals that greenwashing cases have caused total losses of billions of Euros, one of which reached EUR 31 billion in 2020, when Volkswagen was found guilty of fabricating the emission test results of their environmentally friendly vehicles (Merler & Asuru, 2024). In Indonesia itself, cases of environmental destruction have caused huge losses, such as that perpetrated by PT Timah, with losses worth IDR 271 trillion (Wijaya, 2024). Not only the financial losses, greenwashing hinders the global climate change mitigation agenda. The main goal of reducing GHG emissions is to curb the rate of climate change that triggers natural disasters such as flash floods, droughts, extreme heat, and the rise of sea level which potentially leads to the sinking of small islands in Indonesia (Maharani, 2024). With greenwashing, all efforts to mitigate the risk of global disasters are futile.

Given the magnitude of impact, it is crucial that more studies are conducted regarding greenwashing indicators especially among well established companies so that stakeholders are able to recognizing greenwashing practices. Yet, research linking company performance to greenwashing practices is still inconsistent. Purnamasari and Umiyati (2024) in a study of companies listed on Indonesian Stock Exchange claimed a positive relationship between company performance (ROA) and greenwashing. Likewise, Schons and Steinmeier (2016), in a study on Corporate Social Responsibility (CSR) reports involving companies in 48 countries, found that Profit margin and RoA actually have a positive correlation with the tendency of greenwashing by companies. Meanwhile, Zhang (2022) suggested that companies with high

leverage ratio and financial limitations are more motivated to do greenwashing. In contrast, Walker and Wan (2012) in their research among 100 best companies in Canada found that Return on Assets (RoA) has a negative effect on the company's tendency to greenwashing. This claim is supported by Li et al (2019) studying 735 public companies in China who claimed that company's RoA was not an indication of greenwashing. Although all agree that greenwashing is related to the company's financial performance, there are not enough consistent results to conclude the relationship between greenwashing and the company's financial performance.

Therefore, we are interested in re-examining the relationship between greenwashing practices and corporate financial performance, specifically in Indonesia. Previous studies have used Return on Assets (RoA), Profit Margin, and Debt to Equity ratios (DER) as indicators of company performance. We intend to re-analyze the association between a company's financial performance and the propensity of greenwashing practices. Hence, the research questions are formulated as follows:

1. What are the descriptive analysis of Return on Assets (ROA), Profit Margin (PM), Debt to Assets Ratios (DER) and the susceptibility of companies practicing greenwashing?
2. Does the increasing/decreasing of Return on Assets, Profit Margin, and Debt to Assets Ratio correlate with the susceptibility of the companies perpetrating greenwashing?
3. Does the increasing/decreasing of Profit Margin correlate with the susceptibility of the companies perpetrating greenwashing?
4. Does the increasing/decreasing of Return on Assets correlate with the susceptibility of the companies perpetrating greenwashing?
5. Does the increasing/decreasing of Debt to Assets Ratio correlate with the susceptibility of the companies perpetrating greenwashing?

By conducting this research, it is hoped that stakeholders can recognize companies with the tendency of committing greenwashing, and cancel their support as a form of concern for sustainability and joint efforts to mitigate climate change.

METHODS

This research adopts quantitative approach using secondary data. In this study, unit of analysis was the companies listed in Fortune 100 Indonesia 2023 (https://ranking.fortuneidn.com/fortune-indonesia-100) while the data are from 2019-2024 . We assess indications of greenwashing practices by analyzing the Sustainability Report (SR) and compared it with data from online platforms, both published on their respective official websites and on electronic mass media, such as news, social media, and other relevant information online. We also designated seven types of greenwashing practices from various scientific articles (table 1). If the company claims to make certain efforts in SR but other online platforms confirm otherwise, practicing any of the seven types of greenwashing, the company will be rated 1. Conversely, if there is no indication of such, the company is rated 0.

Table 1. Types of Greenwashing

No	Indication of Greenwashing	Explanation
1	*Vague Claims*	the company uses terms such as *"eco-friendly"* or *"sustainable"* without concrete evidence.
2	*Hidden Trade-Off*	companies emphasize one aspect of green while ignoring larger environmental impacts
3	*No Proof*	environmental claims without certification or supporting data; *Irrelevance*, where companies promote green features that are actually irrelevant or already a regulatory standard

No	Indication of Greenwashing	Explanation
4	*Irrelevance*	companies promote green features that are actually irrelevant or already a regulatory standard
5	*Lesser of Two Evils*	comparing the product to a worse alternative that still has a negative impact on the environment
6	*Worshiping False Labels*	companies use fake symbols or labels to create the impression of environmentally friendly products
7	*Bait and Switch*	the company markets one green product as a gimmick while the majority of its business remains environmentally destructive

Source: Research data

This study used purposive sampling (Robinson, 2024). Companies listed in the Fortune 100 Indonesia 2023 were selected based on data availability, which result in a sample of 41 companies. Furthermore, we use data of SR and Financial Statements from 2019-2023. The performance ratio data from the financial reports are then further analyzed to identify the increase / decrease of the ratios compared to the previous year. For each company, three sets of performance ratio data are obtained concerning the increase/decrease of PM, ROA and DER during four observation periods: 2019-2020; 2020-2021; 2021-2022; and 2022-2023.

All data is analyzed using descriptive statistics and logistic regression analysis (Sperandei, 2024). There are four variables. 1) Variable Y: the company's tendency to greenwashing; 2) X1: Net Profit Margin; 3) X2: Return on Asset; and 4) X3: Debt to Equity Ratio. All sample data for the four variables were first tested for their validity, both with the suitability test, using Classification Model and the likelihood test using the Overall Model Fit Test (2Log Likelihood) (Yan, 2005; Stoltzfus, 2011). Once the sample is valid, regression test is carried out. This study uses logistic regression analysis which tests the coefficient of determination and significance test, both simultaneously (F test) and individually (partial / T test). The entire analysis was carried out using SPSS (Musa, 2013).

RESULTS AND DISCUSSION

In this study, we aim at establishing the correlation between company's propensity of committing greenwashing with its financial performance, denoted with PM, ROA, and DER. We uses descriptive statistical analysis and logistic regression analysis to present and analyze the data further. Descriptive statistical analysis provides an overview of the characteristics of the dataset (Nick, 2007). In this study, 4 variables are discussed, namely the Company's tendency to greenwashing (Y), Profit Margin (X1), Return on Assets (X2), and Debt to Assets Ratio (X3). The results of descriptive statistical analysis for the four variables in this study are as in table 2

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Y	164	0	1	0.55	0.499
X1 (NPM)	164	-0.426000000	0.2558830200	0.0085157594	0.095453451
X2 (ROA)	164	-0.211000000	0.6672394858	0.0136914167	0.091831913
X3 (DER)	164	-3.04346447	4.891666667	-0.036975965	0.777474919
Valid N (listwise)	164				

Source: Research data

As per the result, the data used in this study is decent. The proportion of companies with and without the tendency of perpetrating greenwashing (variable Y) is almost equal, as reflected in its Mean /Proportion at 0.55 (55%). Samples of Variable Y also have well spread distribution as shown in the standard deviation, which is 0.499. in contrast, the increase/decrease ratio of Profit Margin among the companies is widely varied. The X1 variable shows increase/decrease from -0.426000 to 0.25588302. In average, most companies experienced increase in PM ratio (Mean) for 0.0085 (0,85%). Overall, the deviation among sampled companies from this average value is quite high, which is 0.095 (9,5%). Likewise, variable X2, which describes the increase / decrease of ROA also has quite diverse data, from -0.211000 (minimum) to 0.6672394858 (maximum). Nevertheless, in average companies have increased ROA for 0.0136914167 (1,37%) which is quite center from both the min and max values. Hence, the standard deviation is only 0.0918. Variable X3, which represents the decrease/increase in debt and equity ratio (DER). has shown average increase of DER for 0.036. This value is also quite a departure from the -3.043464 (Min) and 4.891666667 (max). However, the standard deviation is far exceeding this Mean, reaching value of 0.777. This indicates quite wide range variations among data, indicating companies with higher/lower ratios by ± 0.777 from the average value.

All collected data were tested using binary logistic regression analysis (Tranmer $ Elliot, 2008). Initially, we conducted a feasibility test using the Classification Model. The test results showed a value of 87.8 percent, `indicating the suitability of the model for further analysis. In addition, we also conducted Overall Model Fit test. The result shows initial iteration value (Step = 0) of 225.789 while the final test iteration value (Step = 1) is 157.597. The declining trend between the initial and final test results indicates an improvement of the regression model after the final iteration test. The data is further analyzed using the Nagelkerke R Square determination test (Nagelkerke, 1991). The result shows R Square value of 0.455 or 45.5%. Based on these two test results, it can be concluded that the hypothesized regression model as a whole is fit with the data. Also, the regression equation is adequate as X variables has successfully predicted 45,5% of the overall value of Y.

We also perform the simultaneous test (F Test) and Partial Test (T Test) to determine the significance of the relationship among variables. The simultaneous test is used to determine the correlation between the increase / decrease of all ratios; PM, ROA and DER, and the tendency of *greenwashing* practices among the companies. This Significancy Test is done by comparing the value of Omnibus Test of Model Coefficients and the calculated Chi Square, with alpha value of 5% (0.05). The result show the significance value is 0.000 which is smaller than the significance threshold of 0.05. This means that the model created is significant, and at least one of the X variables has a significant relationship with the Y variable (table 3).

Table 3. Simultaneous Test Results

		Chi-square	df	Sig.
Step 1	Step	68.192	3	.000
	Block	68.192	3	.000
	Model	68.192	3	.000

Source: Research data

Partial test is carried out to determine whether the increase / decrease in PM, ROA, DER correlates with the company's tendency to commit *greenwashing.* The results show that variables X1 and X2 have positive correlation with Y with its significancy value less than 0,05 (0.000 and 0.048 respectively). In contrast, variable X3 does not show any significant correlation with Y exhibiting significancy value of 0.468, far exceeding the established significance threshold of 0.05 (table 4).

Table 4. Partial Test

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	X1 (NPM)	20.858	5.060	16.994	1	.000	11439 86178
	X2 (ROA)	11.996	6.067	3.910	1	.048	16214 0.344
	X3 (DER)	.190	.262	.0528	1	.468	1.210
	Constant	-.009	.197	.002	1	.964	.991

Source: Research Data

The partial significance test results above show that not all increases / decreases in performance ratios correlate with the likelihood of greenwashing in a company. The increase / decrease in PM and ROA each correlates with the tendency of a company practicing greenwashing. However, the increase/decrease in DER does not show any correlation with the same level of significance as PM and ROA.

CONCLUSION

Based on the results, this study concludes several key findings related to corporate financial performance and the tendency of greenwashing practices in Fortune 100 Indonesian companies. The results of logistic regression analysis show two corporate performance ratios that have a significant association with the tendency of greenwashing practices, namely PM and ROA. The research data further demonstrate that companies with a tendency to practice greemwashing generally present constantly improving trends of either PM or ROA ratios in the annual report. Conversely, companies less likely to perpetrate greenwashing tend to present financial statements with less steady trends of PM and ROA.

The increase/decrease of PM is significantly correlated with the tendency of greenwashing. This suggests that companies with aggressive claims of sustainability while showing steady increasing profits over the years, has a tendency to allocate more resources to campaigning rather than actually investing in sustainability. This finding is in line with signalling theory, where companies use asymmetric information to build an image without substantive commitment (Conelly et al, 2011). Likewise, the increased/decreased ROA also is a sign of greenwashing. Companies campaigning refinement in the business process to become less polluting, yet showing an inclining trend of ROA over the years are more likely to forge its commitment in the sustainability reports. Meanwhile, our study does not capture any significant correlation between DER and greenwashing. This may be due to the industry characteristics in Fortune 100 Indonesia, which are dominated by capital-intensive sectors (such as banking and infrastructure), where high leverage is the business norm.

Based on the above-mentioned results, this study supports the previous studies claiming that steady increase in the performance trends (PM ratio and ROA) while the company is still progressing its commitment toward sustainability, might be an indication of greenwashing practices. This finding supports stakeholder and legitimacy theories (Meutia et al, 2022), where companies greenwashing to meet external demands without sacrificing profitability. This study reveals a paradox where companies with strong financial performance have a high potential for greenwashing. This challenges the conventional narrative where profitability are often associated with social responsibility (Garriga, & Melé, 2004). Conversely, the findings suggest that mitigating greenwashing requires multi-stakeholder collaboration, including independent audits, strict reporting standards and incentives for companies that prioritize real sustainability.

This research has important implications. Companies should treat the results as a wake-up call to improve transparency and accountability in sustainability reporting, as well as to allocate real budgets for green initiatives. Investors and regulators can also use the findings as

an early monitoring tool to identify greenwashing risks, so that investments and policies can be directed to companies that are truly committed to ESG (Environmental, Social, and Governance). Furthermore, with this research, it is hoped that the wider community can increase literacy about greenwashing so as not to be trapped in unsubstantiated sustainability claims.

Going forward, further research of non-financial factors (e.g., stakeholder pressure, government regulation) that influence greenwashing is needed, as well as the use of qualitative methods to uncover the motivations behind the practice. This research is not only intended to provide empirical evidence on the dynamics of greenwashing in Indonesia, but also to encourage critical reflection on business integrity in achieving sustainable development. There is a need for a redefinition of corporate success that is not only measured by profit, but also the genuine impact on the environment and society.

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