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Environmental Performance, Social Media Sentiment and Company Financial Performance

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ABSTRACT

This study aims to empirically test the existence of environmental performance as a leading indicator of financial performance by involving public attention to social media sentiment. The population of this study consists of non-financial companies listed on the SRI-KEHATI index from 2017 to 2025. This research is a quantitative study, and the data is panel data. The data is processed with the assistance of E-Views. Based on the results it can be concluded that environmental performance affects financial performance, and simultaneously, positive company sentiment can strengthen the relationship between environmental performance and financial performance. Positive sentiment enhances environmental efforts are more visible and appreciated by the public. Environmental performance basically is not enough to just be carried out, but must also be known by the public through social media. Companies not only manage the environment, but are also considered capable of maintaining public trust and building a positive perception.

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1. INTRODUCTION

Companies tend to use environmentally based performance and environmental information disclosure to justify or legitimize corporate activities in the eyes of the public (Ani, 2021). According to Manrique & Martí-Ballester (2017), the adoption of environmental practices significantly and positively impacts corporate financial performance in both developed and developing countries. However, the effect of these efforts on corporate financial performance has been a major concern (Kaakeh & Gokmenoglu, 2022). Meanwhile, environmental factors are more dominant in influencing financial performance in Japan. In contrast, in India, social factors dominate financial performance (Laskar et al., 2017), although waste reduction and recycling play an important role in improving financial performance (Mishra et al., 2024). In facing the ongoing digital transformation across various areas of life, the integration of new digital technologies and the utilization of artificial intelligence (Navaneetha et al., 2022).

One of the digital transformations is marked by the emergence of social media. Social media has now become a very popular communication channel because it is easy to share information through it (Agarwal et al., 2021). Several studies have been conducted involving various platforms such as Facebook (Siganos et al., 2014) and Instagram (Nasution, 2021) to examine their impact on stock market reactions. However, Twitter was chosen in this study because it is a preferred social media platform for sharing financial information. (He et al., 2016) showed that public sentiment expressed on Twitter has significant predictive power regarding stock market performance indicators. Social media plays a role in reflecting a company's reputation, which can increase interest among stakeholders and regulatory pressure (Baah et al., 2021) because it is important for a company's value, especially in the long term (Batrancea et al., 2022).

Many studies have explored the relationship between environmental performance variables and company financial performance in both developed and developing countries; China (Kaakeh & Gokmenoglu, 2022); India (Laskar et al., 2017); (Mishra et al., 2024); Pakistan (Alam & Tariq, 2023); Asia (Islam et al., 2025), and the results can vary based on factors such as industry, methodology, and time period. This study is a continuation of the research conducted by (Islam et al., 2025). However, what makes this study innovative is that no research has yet been conducted in Indonesia that strengthens the factors of financial performance success by involving social media sentiment factors, referring to studies in the US (Wang & Vergeer, 2024); (Qalati et al., 2021); (He et al., 2016). According to Indonesian social media statistics in 2025, Indonesia is one of the countries with the largest and most active social media users in the world, with the number of users reaching over 190,000,000 people, and the average time spent on the time spent by Indonesian users on social media is 3 hours and 45 minutes per day, making it one of the countries with the highest social media engagement in the world.

Attribution theory is a theory in the field of social psychology that aims to explain how individuals determine the causes of an event or behavior, as well as the consequences of those attributions on their future behavior (Weiner, 2015). Attribution theory can facilitate an understanding of how a company's activities can be influenced by social media sentiment. This theory examines what information people gather to combine and form judgments and asserts that social perception uses past and present information to reach causal conclusions.

A company's environmental performance can contribute to better financial performance by reducing compliance costs, lowering risks associated with environmental lawsuits, and positioning the company more profitably in terms of waste management and emission reduction (Bătae et al., 2021). Good environmental performance will lead to investor confidence in the Company's performance due to environmental concern, which can serve as a gateway to improving financial performance through increased sales and cost efficiency (Cheng et al., 2024). This aligns with findings by Serpil Tomak (2023) and Islam et al. (2025). Based on this, a hypothesis can be drawn:

H1: Environmental performance has a significant effect on the Company's financial performance.

Among all social media platforms, Twitter has the most diverse user base and can spread news faster than mainstream media (Schmidt et al., 2020). As a result, compared to other social media, Twitter has a more significant impact, and it is used to explore the role of such social media in corporate environmental performance and financial performance. . A study in Pakistan stated that social media sentiment positively affects corporate environmental factors and financial performance (Qalati et al., 2021). Based on this, a hypothesis can be drawn,

H2: the relationship between environmental performance and financial performance is moderated by social media sentiment.

2. METHODOLOGY

The population in this study consists of non-financial companies from 2019-2024 listed on the Indonesia Stock Exchange (IDX) that are included in the SRI-KEHATI index. This index comprises companies that conduct activities while consistently paying attention to the environment, have high social responsibility, and good corporate governance. The sample selection criteria using the purposive sampling method are as follows.

Tabel 1. Sampel Criteria

No.	Kriteria
1.	The company was listed in the SRI-KEHATI Index from 2017 to 2024.
2.	Banking Companies in the SRI-KEHATI Index 2017 to 2024.
3.	Non-financial companies included in the SRI-KEHATI stock index from 2017 to 2024 are not consistent.
4.	Non-financial companies that do not issue financial statements in rupiah
5.	Companies that did not issue environmental performance reports from 2017 to 2024.
Number of samples	
Number of samples x 8 years	

(Sources; data processed, 2025)

This study is a quantitative research that is both time series and cross-sectional in nature, using panel data regression models and moderate regression analysis to test the research

hypotheses, with data processed using the help of E-Views. The E-Views software was chosen because it has a good and easy-to-understand user interface, calculations with a high level of precision up to double type or 10 to the power of 16 after the decimal point, can be used for calculations with very large samples, has features that are quite comprehensive for various types of forecasting models, especially time series models and panel data models, and comes with various options for robust estimation coefficients for various types of regression models (Frieria et al., 2024). The analysis techniques used in this study consist of: Descriptive analysis, Multiple linear regression analysis, MRA analysis. Panel model estimation uses the common effect model, fixed effect model, and random effect model methods.

The panel model estimation uses the common effect model, fixed effect model, and random effect model. The selection of the fixed effect panel model is carried out by conducting the Chow test, Hausman test, and to strengthen the choice of the best panel model between the common effect model and the random effect model, the Lagrange Multiplier Test is carried out (Frieria et al., 2024). Corporate Financial Performance studies mention that environmental performance is performance measured using ROA, ROE, and the book value ratio (Farza et al., 2021). To measure a company's financial performance as an investment in environmental performance requires time to affect financial performance, and Tobin's Q captures long-term financial performance (Islam et al., 2025). Corporate financial performance is measured using Tobin's Q. Environmental Performance (Lusiana Nur Safitri, Rohimat Nurhasan, 2024) reveals that environmental performance is an achievable result measured from the environmental management system, which is related to the control of environmental aspects.

Environmental performance indicators consist of quantitative and qualitative measures. Methods for determining quantitative performance indicators include Christopher's 3-step method or the ISO 14031 method, especially those that use significant environmental aspects and impacts as the basis for determining performance. Methods for determining qualitative performance indicators include surveying stakeholder satisfaction, assessing management quality by comparing it with certain standards such as CERES, ISO 14001, EMAS, and TQEM CGLI, or referring to organizational performance metrics such as MBNQA or Green Zia. This study focuses on quantitative performance, thus using the ISO 14031 method. Social Media Sentiment Researchers chose Twitter (X) as a source for obtaining data because Twitter (X) is a social media platform where users can freely express their opinions daily compared to other social media platforms, and it is analyzed using the Vader approach (Lusiana Nur Safitri, Rohimat Nu, 2024) to see positive, negative, and neutral sentiments. Twitter also has a strong hashtag culture that makes it easier to sort and expand searches when collecting data. Therefore, Twitter data is easier to collect when something goes viral or is widely discussed on Twitter (X) because these conversations tend to focus on hashtags.

3. RESULT AND DISCUSSION

Table 1. Statistic Descriptive

	Enviroment	Financial	Sentiment
Mean	0.892857	1.388750	2.767857
Median	1.000000	1.175000	3.000000
Maximum	1.000000	4.550000	3.000000
Minimum	0.000000	0.250000	0.000000

Std. Dev.	0.312094	0.930249	0.632199
Skewness	-2.540341	0.983902	-3.266699
Kurtosis	7.453333	3.997594	13.90139
Jarque-Bera	106.5062	11.35738	376.8932
Probability	0.000000	0.003418	0.000000
Sum	50.00000	77.77000	155.0000
Sum Sq. Dev.	5.357143	47.59501	21.98214
Observations	56	56	56

(Sources; data processed, 2025)

Panel Data

Model Estimation Selection Test

This study uses two types of tests in model selection, namely the Chow Test and the Hausman Test. The results of these two tests are presented as follows;

Table 2. Chow Test

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
Redundant Fixed Effects Tests									
Equation: EQ01									
Test cross-section fixed effects									
Effects Test		Statistic		d.f.		Prob.			
Cross-section F		28.938014		(6,45)		0.0000			
Cross-section Chi-square		88.519735		6		0.0000			

(Sources; data processed, 2025)

The Chow Test results in the table 2 show that the probability value (prob.) for the Cross-section F test is 0.00, which means it is less than the 5% significance level or 0.05. Therefore, the appropriate model to use is FEM. Once it is determined that FEM is more suitable, the next step is to conduct the Hausman Test.

Table 3. Hausman Test

Correlated Random Effects - Hausman Test			
Equation: EQ01			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	0.002

(Sources; data processed, 2025)

Based on the results of the Hausman Test in the table above, a probability value (prob.) of 0.002 was obtained. In this test, the decision is made by comparing the probability value to a significance level of 5% or 0.05. Based on the results of the model estimation selection test, it can be concluded that the regression model used in this study is the Fixed Effect Model

(FEM). This is based on the results of the Chow Test and the Hausman Test, which have sequentially eliminated the Common Effect Model (CEM) and the Random Effect Model (REM). Therefore, the Breusch-Pagan Lagrange Multiplier (LM) test does not need to be conducted, as this test is only relevant if the CEM is initially chosen to be further compared with the REM. However, since the CEM was eliminated at the Chow Test stage, the LM Test is not needed in this process.

Table 4. hyphotesis test

Dependent Variable: FINANCIAL				
Method: Panel Least Squares				
Date: 12/06/25 Time: 15:53				
Sample: 2017 2024				
Periods included: 8				
Cross-sections included: 7				
Total panel (balanced) observations: 56				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.350552	0.196346	6.878425	0.0000
ENVIROMENTAL	0.108169	0.431545	0.250655	0.0380
ENVIROMENTAL*SENTIMENT	0.053152	0.128188	0.414640	0.0268
Effects Specification				
Cross-section fixed (dummy variables)				
Root MSE	0.406575	R-squared	0.805505	
Mean dependent var	1.388750	Adjusted R-squared	0.772400	
S.D. dependent var	0.930249	S.E. of regression	0.443799	
Akaike info criterion	1.359333	Sum squared resid	9.256988	
Schwarz criterion	1.684836	Log likelihood	9.061316	
Hannan-Quinn criter.	1.485529	F-statistic	0.003310	
Durbin-Watson stat	1.232583	Prob(F-statistic)	0.000000	

(Sources; data processed, 2025)

The Effect of Environmental Performance on Financial Performance

Based on the results of the panel data regression t-test, the probability value for the interaction between environmental performance and financial performance is 0.036, which is less than 0.05. This indicates that environmental performance affects financial performance. Therefore, it can be concluded that hypothesis H1 is accepted.

Moderation of Social Media Sentiment on the Relationship between Environmental Performance and Financial Performance

Based on the results of the panel data regression t-test, the probability value for the moderation of social media sentiment on the relationship between environmental performance and financial performance is 0.033, which is less than 0.05. This indicates that social media sentiment moderates the relationship between environmental performance and financial performance. Therefore, it can be concluded that hypothesis H2 is accepted.

Discussion Results

The Influence of Environmental Performance on Financial Performance

The results of hypothesis 1 provide the perspective that companies that perform well in environmental performance become attractive to investors. Disclosure of good company information is expected to serve as a consideration for investors to invest their capital. Investors not only look at a company's performance in terms of finance but also need to pay attention to the environmental performance carried out. ISO 14031 is part of the tools that

can be used to measure environmental performance, and Indonesian companies listed in the SRI-KEHATI index are companies that have a concern for environmental performance. Therefore, companies in Indonesia should view environmental performance not merely as a regulatory obligation but as a long-term business strategy, especially if accompanied by innovation, transparency, and good governance. Environmental performance can become a source of competitive advantage and long-term value. but it is not an automatic guarantee. To truly correlate with financial performance, a company needs management that is strategically integrated. Regulatory policies and incentives for companies that implement environmentally friendly practices can help encourage the implementation of environmental performance, especially in sectors with high environmental impact such as industry, mining, and manufacturing. The results of this study are in line with the findings of (Islam et al., 2025) and (Serpil Tomak, 2023).

Moderation of social media sentiment on the relationship between environmental performance and financial performance

Public opinion emerging from social media platforms in this study, X account, creates sentiment, namely positive sentiment in the form of praise, support, good perception, and negative sentiment generates criticism, protests, pollution issues, accusations of greenwashing, while neutral creates comments that do not lean toward positive or negative. Social media sentiment is no longer just public opinion but has become a strategic variable that affects reputation, investor confidence, risk perception, and even company value. Because social media sentiment can act as a moderating factor that strengthens or weakens the impact of environmental performance on financial performance. Good environmental performance efforts can include enhancing reputation, increasing the company's legitimacy in society, reducing the risk of fines or environmental lawsuits, and lowering operational costs (energy efficiency, waste, water). If the public gives positive sentiment towards the company's environmental efforts, then its impact on financial performance becomes stronger. The reinforcing mechanism includes improved reputation, social amplification effect, and increased investor confidence. Positive sentiment makes environmental efforts more visible and appreciated by the public. Investors will view the company as responsible and having lower environmental risk. Even small environmental efforts can have a big impact when they go viral on social media. Modern investors (especially millennials and Gen Z) are very sensitive to environmental issues. Thus, positive sentiment strengthens the relationship between environmental performance and financial performance. The results of this study are in line with the findings of the study by Qalati et al. (2021).

4. CONCLUSION

Based on the results and discussion, it can be concluded that financial performance affects financial performance. The relationship between environmental performance and financial performance is strengthened by the presence of social media sentiment. Positive sentiment makes environmental efforts more visible and appreciated by the public. Investors will view the company as responsible and having lower environmental risk. ISO 14031 is part of the tools that can be used to measure environmental performance, and Indonesian companies listed in the SRI-KEHATI index are companies that have a focus on environmental performance. This study was conducted on Indonesian companies that focus on the environment and are listed in the SRI-Kehati index. Of course, this study is not without its limitations; therefore, the following suggestions are made for future studies so that this

research can be generalized: it is recommended to broaden the research objects to manufacturing companies and to use more comprehensive measures of environmental performance and like PROPER, it involves other variables such as Corporate Social Responsibility.

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