



THE INFLUENCE OF ESG ON OPERATIONAL RISK OF BANK ISSUERS IN INDONESIA FOR THE PERIOD OF 2019 – 2023

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ARTICLE INFO	ABSTRACT
Keywords: Banks Operational risks ESG.	This study investigates the relationship between environmental, social, and governance (ESG) scores and operational risk of banks in Indonesia. Using panel data from 17 bank issuers in Indonesia during the period 2019–2023 with a dynamic panel regression approach, the results showed that ESG scores did not have a significant influence on operational risk, although the coefficients showed indications of a negative relationship. These findings reflect the limited implementation of ESG in Indonesia's banking sector and the lack of uniform reporting standards and supporting infrastructure. In contrast, internal variables such as bank size (SIZE), profitability (ROA), and equity (ROE) show a significant relationship with operational risk. Bank size is negatively correlated with operational risk, while profitability shows a significant positive correlation. This study provides new insights into the importance of managing internal factors in mitigating operational risks, as well as highlighting the need to strengthen ESG regulations in Indonesia to improve the sustainability of the banking sector

INTRODUCTION

Issues about environmental, social and governance or better known as ESG (Environmental, Social and Governance) are one of the topics that are currently becoming the main concern in the world, especially in the banking sector. Banks have a central role in encouraging sustainable development through the implementation of ESG that not only increases the company's value but also reduces operational risks. This journal refers to the journal published by Galletta, Goodell, Mazzù, Paltrinieri in 2023 with the title Bank Reputation and Operational Risk: The Impact of ESG. In the journal, the impact of ESG values from banks in 35 countries with a period of 2011-2020 was studied. ESG value also measures a company's performance in managing material ESG risks, ESG risks can harm the bank's

assets, finances and reputation, such as damage due to natural disasters that cause business disruption from debtors and bank operations (Nocoñ, 2024).

In Indonesia, the implementation of ESG is becoming increasingly relevant in line with the increasing awareness of the public and investors on the importance of sustainability in the business world. According to Damak (2021), good ESG implementation can strengthen the reputation of financial institutions and create stronger relationships with stakeholders. In addition to reputation, ESG also plays a role in reducing operational risks, as revealed by Cousins et al. (2022), which shows that banks with high ESG scores tend to be more resilient in the face of operational disruptions. This is especially relevant in Indonesia, where the banking sector faces challenges in the form of economic uncertainty, regulatory changes, and the need to meet evolving social expectations. (Dinh et al., 2024) highlighted that the consistent implementation of ESG helped banks improve their operational resilience during the COVID-19 pandemic, which is a real test for the stability of the global financial industry.

This study aims to analyze the influence of ESG implementation on bank reputation and operational risks in banks that have gone public in Indonesia during the 2019–2023 period. The study also seeks to identify the challenges faced in integrating ESG principles into business strategies and how they impact the company's overall performance. Thus, this research is expected to contribute to ESG literature and offer practical guidance for banks in improving their reputation and managing risk in a sustainable manner

LITERATURE REVIEW

The bank's reputation is an intangible asset that is greatly influenced by public perception of ESG performance. ESG exposure that affects the bank's business aspects can be seen in various aspects, for example in weather factors that cause business disruption to the debtor's business so that it has an impact on credit risk, a decrease in public deposits; In terms of social and governance aspects, it can be seen in how banks carry out the outsourcing process that has an impact on bank operations (International, 2021). According to (Eccles et al., 2014), companies with good ESG performance tend to gain higher trust from the public. Another study by (Antonia Garcia-Benau et al., 2013) shows that ESG transparency and reporting improve a bank's positive image in the eyes of investors and customers. Research by (Kelana et al., 2020) revealed that effective ESG implementation in Indonesia can encourage public trust and increase customer loyalty. According to (Pangaribuan & Idrianita, 2024), banks that proactively adopt ESG practices not only gain a competitive advantage but also gain long-term benefits such as improved reputation and access to sustainable capital. Research by (Ananda, 2020) also shows that ESG factors contribute significantly to banks' financial performance, which in turn affects their reputation in the eyes of stakeholders. This is in line with the findings by (Zhang et al., 2022) which show that a bank's reputation can be strengthened through sustainability initiatives, such as corporate social responsibility (CSR) programs and good environmental management.

Banks in Indonesia, such as PT Bank Negara Indonesia (Persero) Tbk, have been active in implementing ESG practices. Their annual sustainability report demonstrates a commitment to sustainability and social responsibility, which contributes to an improved reputation in the

market. A study by (Pramudito, A., Santoso, T., & Nugroho, 2022) found that there is a positive relationship between ESG scores and the public image of banks in Indonesia, showing that banks that invest in ESG practices are more likely to be viewed positively by the public.

The Role of ESG in Risk Management

ESG can be seen as a source of risk (International, 2023), Identifying ESG as a source of risk usually starts from physical dimensions such as location and business model, both of these factors will transition to operational risk due to the influence of the behavior of stakeholders when running the business. Operational risks include losses resulting from internal processes, human error, or external events, including those related to environmental and social issues. According to a study by (Aebi et al., 2012), ESG adoption helps banks identify and mitigate operational risks through improved governance and awareness of environmental and social impacts.

Research in Indonesia by (Putri, R. A., Santoso, A., & Wibowo, 2020) shows that banks that integrate ESG in their business processes are better able to manage operational risks related to climate change, non-compliance with regulations, or stakeholder expectations. Research by (RINANDA, 2023) found that banks with good ESG scores tend to have lower risk profiles, as measured through Non-Performing Loans (NPLs) and Loan to Deposit Ratios (LDR).

A study by (Susanto, H., Rahman, F., & Handayani, 2023) shows that there is a negative relationship between ESG scores and the level of operational risk of banks, measured through indicators such as NPLs and capital adequacy ratios (CAR). This indicates that banks with better ESG practices have a lower level of operational risk.

Empirical Study Period 2019-2023

In the 2019-2023 period, many banks in Indonesia began to adopt ESG as part of their business strategies. A study by (Susilo, A., & Kurniawan, 2022) highlights that during this period, large banks in Indonesia experienced an increase in ESG ratings and a decrease in the frequency of operational risk incidents. The study also noted that the COVID-19 pandemic has prompted banks to focus more on social aspects of ESG, such as financial inclusion programs and assistance to affected communities.

Challenges and Opportunities for ESG Implementation in Indonesia

ESG implementation in Indonesia faces challenges such as lack of awareness at the executive level, limited accurate ESG data, and lack of technical guidance. However, research by (Wijaya, H., & Wulandari, 2021) shows that there is a great opportunity to improve reputation and mitigate operational risks through collaboration with regulators and stakeholders.

Another challenge is that many of our banks are not aware of the positive impact of ESG on company performance/value/value when linked to the company's stock price. Consumers in Indonesia have also begun to increase their awareness, as intensified by the OJK in various financial inclusion programs and awareness about finance (financial literacy and inclusion). Consumers who understand and are aware of ESG issues will certainly have a preference for banks that have ESG scores that are categorized as supporting a better and more comfortable environment for future generations.

Research Methods

This study analyzes banks listed on the Indonesia Stock Exchange (IDX) during the 2019–2023 period, including conventional and sharia banks. The financial variables used in this study are obtained from published bank financial statements. Meanwhile, data related to ESG scores are obtained directly from Bloomberg Terminal (Bloomberg, 2023), which is widely recognized as a trusted source in financial and sustainability research. This database has been widely used in banking research (Paltrinieri et al., 2020; Shakil et al., 2020). However, the availability of data related to operational risks is still limited (Sturm, 2013).

Research Data and Variables

The main variable in this study is operational risk (OPERISK). Although the definition of operational risk is difficult to formulate due to its multidimensional nature (Sturm, 2013), BCBS (2006) proposes that operational risk can be identified as a risk that arises due to the failure or inadequacy of internal processes, human resources, systems, or as a result of external events. More recently, the BCBS and the ECB combined operational risk with reputational risk, taking into account the institutional impact on the climate and environment arising from litigation related to products and operations (ECB, 2021; BCBS, 2022).

This study uses ESG Scores accessed through Bloomberg Terminal as an independent variable to evaluate its impact on Operational Risk. Bloomberg's ESG score is calculated based on publicly reported company data, including annual reports, sustainability reports, and other regulatory documents (Bloomberg, 2023). This score includes three main pillars, namely Environmental, Social, and Governance, each of which is assessed based on industry-specific material issues. These three pillars are then combined into an aggregate score, which provides a comprehensive picture of the company's sustainability performance.

In this study, ESG scores are used as a representation of the company's sustainability performance. The independent variables consist of the ESG aggregate score as well as the scores of each pillar (Environmental, Social, and Governance) to identify the sustainability dimension affecting Operational Risk. The use of Bloomberg's ESG Score is based on a transparent methodology, its financial relevance, and broad corporate coverage across different sectors and regions (Bloomberg, 2023).

The size of the bank is controlled by entering the natural logarithm of the bank's total assets (SIZE). The profitability indicator is also used as a control variable, namely return on equity (ROE). Return on Equity is a measure of how much profit can be generated by management from shareholder funds invested in the Bank, usually against a negative correlation between return on assets (ROA) to ESG compared to ROE, for example when a bank invests in ESG initiatives, there will be a decrease in the ROA ratio, but over time there will be an improvement in operational risk management which is reflected in the size of the ROE improve (Salem et al., 2024). In the development of the Company, in addition, bank efficiency is an additional control variable measured through CINC. The use of CINC, which is the ratio between operating expenses and operating income, is important as a measure of whether ESG results in cost savings, ensures business continuity by optimizing

competitiveness through innovation, reducing employee turnover or increasing customer loyalty (Chang et al., 2021). The data source and variable definitions are in Table 1 below:

Tabel 1
Definisi Variabel

Variabel	Deskripsi	Sumber
Variabel Dependen		
OPERISK	Aset Tertimbang Menurut Risiko (ATMR) untuk Risiko Operasional / Total ATMR	Laporan Keuangan Publikasi Bank
Variabel Independen		
ESG SCORE	Variabel ESG Score adalah ukuran kuantitatif yang dikembangkan oleh Bloomberg untuk menilai manajemen perusahaan terhadap isu-isu material lingkungan, sosial, dan tata kelola yang berdampak signifikan pada kinerja keuangan perusahaan, berdasarkan data yang diungkapkan secara publik dan dievaluasi melalui metodologi yang transparan dan berbasis materialitas industri.	Bloomberg Terminal
Variabel Kontrol		
SIZE	Logaritma natural dari total aset untuk ukuran (<i>size</i>) bank	Laporan Keuangan Publikasi Bank
ROA	Laba Bersih /Rata rata Total Aset	Laporan Keuangan Publikasi Bank
ROE	Laba Bersih /Rata rata Total Ekuitas	Laporan Keuangan Publikasi Bank
CINC	Rasio efisiensi: total beban operasional / total pendapatan operasional. Rasio yang lebih rendah menunjukkan bank lebih efisien.	Laporan Keuangan Publikasi Bank

Methodology

To investigate the relationship between bank operational risk (OPERISK) and ESG Scores, the following dynamic regression model with estimates at the bank level:

$$OPERISK_{i,t} = \alpha_i + \gamma OPERISK_{i,t-1} + \beta_1 ESG\ SCORE_{i,t-1} + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 ROE_{i,t} + \beta_5 CINC_{i,t} + \delta_t + \epsilon_{i,t}$$

Where:

γ : Measure the impact of OPERISK lag on current operational risk values.

β_1 : The effect of ESG SCORE in the previous period on the current OPERISK.

β_2 to β_5 : Direct effect of control variables on OPERISK.

This dynamic model aims to reduce concerns related to residual persistence as well as the relationship between past and future values. Bank fixed effects and time effects are taken into account in the estimate. The variable δ_t is the dummy of the year, while α_i is a bank-specific fixed effect used to consider the characteristics of a bank that does not change over time. This approach follows the guidance of (Galletta et al., 2023).

Results and Discussion

Based on data from banks listed on the IDX during the period 2019 to 2023, the number of banks that have ESG score data consists of only 17 banks (Table 2), with a total of 73 observations over five years.

Tabel 2
Daftar Bank

Kode Emiten	Nama Bank
ARTO	Bank Jago Tbk.
BBCA	Bank Central Asia Tbk.
BBNI	Bank Negara Indonesia (Persero)
BBRI	Bank Rakyat Indonesia (Persero)
BBTN	Bank Tabungan Negara (Persero)
BDMN	Bank Danamon Indonesia Tbk.
BMRI	Bank Mandiri (Persero) Tbk.
BNGA	Bank CIMB Niaga Tbk.
BNII	Bank Maybank Indonesia Tbk.
BNLI	Bank Permata Tbk.
BRIS	Bank Syariah Indonesia Tbk.
BTPS	Bank BTPN Syariah Tbk.
BANK	Bank Aladin Syariah Tbk.
MEGA	Bank Mega Tbk
PNBN	Bank Pan Indonesia Tbk
BTPN	Bank SMBC Indonesia Tbk
BBHI	Allo Bank Indonesia Tbk

Source: Bloomberg Terminal, data processed by the author (2024)

Table 3 presents descriptive statistics. The average value of operational risk (OPERISK) is 15.3% with a standard deviation of 13.0%. This suggests that operational risk is only a small part of the bank's total risk, which is most likely dominated by credit risk and market risk. The average ESG score is 2.61, which reflects moderate environmental, social, and governance performance among the banks in the sample, but it is still far from the highest scale of 10, where currently the highest score is only 4.86.

Bank size measured by the total assets natural logarithm (SIZE) has an average value of 0.018, which indicates that the size of the banks in the sample is relatively uniform with a range from -0.159 to 0.114. Return on assets (ROA) has an average of 9.7%, while return on equity (ROE) averages 18.9%, reflecting the bank's profitability. Cost-to-income (CINC) as a measure of operational efficiency has an average of 89.4%, which shows that about 89% of a bank's operating income is absorbed by operational costs, including labor, administrative costs, and other overhead costs.

Multicollinearity analysis through the Variance Inflation Factor (VIF) shows that most VIF values are below 5, except for ROA reaching 7,570), but still within the tolerance threshold. These results show that there are no serious multicollinearity issues in the data.

Tabel 3
Deskripsi Statistik

Variabel	VIF	Obs	Mean	SD	Min	Max
OPERISK		73	0,153	0,130	0,000	0,686
ESG SCORE	1,334	73	2,606	0,872	1,150	4,860
SIZE	2,641	73	0,018	0,041	-0,159	0,114
ROA	7,570	73	0,097	0,146	-0,890	0,273
ROE	4,472	73	18,897	2,019	13,481	21,500
CINC	4,588	73	0,894	0,613	0,438	4,284

Note: Observation, mean, standard deviation, minimum and maximum

Source: Python, data processed by the author (2024)

Pearson correlation is presented in Table 4. The correlation coefficient in bold was significant at the level of 5%. Overall, most correlations have absolute values below 0.5, which indicates that the relationship between variables is at low to moderate strength.

Table 4
Pearson Correlation

Variable	OPERISK	ESG SCORE	ROA	ROE	SIZE	CINC
OPERISK	1					
ESG SCORE	-0,202	1				
ROA	0,433	0,151	1			
ROE	0,120	0,242	0,801	1		
SIZE	-0,339	0,494	0,259	0,505	1	
CINC	-0,023	-0,303	-0,804	-0,638	-0,507	1

Note: Coefficients in bold are significant at 5%.

Source: Python, data processed by the author (2024)

Table 5 displays the results of econometric modeling using the lag of ESG SCORE as a predictor to consider the influence of ESG levels in the previous period, as well as fixed effects based on time and entities. The results of the dynamic panel regression show that the influence of past operational risk (Lag_OPERISK) on current operational risk has a negative coefficient which indicates that past operational risk tends to reduce current operational risk, but is not statistically significant (p-value 0.0943). This shows that previous operational risks do not exert a strong influence on current operational risks in the context of this model. Similarly, the past ESG Score has a coefficient of -0.0165 with a p-value of 0.3536. A negative coefficient indicates that an increase in ESG scores tends to lower operational risk. However, these results are also not statistically significant. This insignificance is different from previous research conducted by (Galletta et al., 2023) which can be caused by differences in geographical context, sample characteristics, or the level of variability of ESG scores in this research dataset.

Table 5
Dynamic panel data estimation results

PanelOLS Estimation Summary

Dep. Variable:	OPERISK	R-squared:	0.8159			
Estimator:	PanelOLS	R-squared (Between):	-131.36			
No. Observations:	56	R-squared (Within):	0.8076			
Date:	Sun, Dec 08 2024	R-squared (Overall):	-127.97			
Time:	22:00:58	Log-likelihood	119.48			
Cov. Estimator:	Unadjusted					
Entities:	17	F-statistic:	22.165			
Avg Obs:	3.2941	P-value	0.0000			
Min Obs:	2.0000	Distribution:	F(6,30)			
Max Obs:	4.0000					
Time periods:	4	F-statistic (robust):	22.165			
Avg Obs:	14.000	P-value	0.0000			
Min Obs:	11.000	Distribution:	F(6,30)			
Max Obs:	17.000					
Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
lag_OPERISK	-0.2594	0.1501	-1.7280	0.0943	-0.5659	0.0472
lag_ESG_SCORE	-0.0165	0.0175	-0.9422	0.3536	-0.0523	0.0193
SIZE	-0.1178	0.0210	-5.6214	0.0000	-0.1606	-0.0750
ROA	2.9163	0.8366	3.4858	0.0015	1.2077	4.6249
ROE	-0.3174	0.1077	-2.9463	0.0062	-0.5375	-0.0974
CINC	0.0256	0.0375	0.6819	0.5006	-0.0511	0.1022
F-test for Poolability: 5.3606						
P-value: 0.0000						
Distribution: F(19,30)						
Included effects: Entity, Time						

Source: Pyhton, data processed by the author (2024)

In the control variable, bank size (SIZE) had a negative and significant relationship with operational risk ($p = 0.0000$). These results show that larger banks tend to have a better capacity to diversify their assets and sources of income, thus being able to share risk and reduce it.

On the other hand, ROA shows that operational risk (OPERISK) increases in line with the growth of return on assets (ROA) with a positive coefficient and significant with operational risk ($p = 0.0015$). This indicates that banks that are more focused on their core business tend to have a higher level of operational risk. However, this increase in risk is in line with greater levels of profitability, suggesting that banks that are more committed to their core activities are riskier but also more profitable compared to banks that are less focused on core business. This phenomenon reflects the trade-off between risk and profitability in the management of bank operational activities, which is in line with the results of the research of (Galletta et al., 2023).

Furthermore, ROE has a significant negative relationship with operational risk ($p = 0.0062$). This negative coefficient indicates that an increase in bank equity is correlated with a decrease in operational risk, which may reflect the bank's ability to withstand operational shocks through a stronger capital structure.

Finally, the CINC variable, which represents operational efficiency, did not show a significant relationship with operational risk ($p = 0.5006$). This suggests that the operational efficiency in this sample may not directly affect the level of operational risk.

Overall, control variables such as bank size (SIZE), return on assets (ROA), and return on equity (ROE) have a significant influence, supporting the importance of internal factors in determining bank operational risk."

Model Significance

The significance test of the model showed a p-value of 0.0000, which showed that the fixed effects (entity effects and time effects) were statistically significant. Thus, this model is better compared to the one without fixed effects. This model explains 81.59% of the variance

of operational risk in the sample. This shows that the model has good predictive ability for dependent variables in the framework of this study.

The results of this study show that past operational risk (Lag_OPERISK) and past ESG score (Lag_ESG_SCORE) do not have a significant influence on current operational risk in the context of this study. Conversely, control variables such as bank size (SIZE), profitability (ROA), and return on equity (ROE) have a significant influence. These findings highlight the importance of internal bank factors in determining the level of operational risk.

However, these results differ from the findings of previous research by (Galletta et al., 2023) which showed a significant influence of bank reputation measured through ESG scores on the reduction of operational risk. These differences may reflect differences in geographic context, bank characteristics, or time periods in the study. For further exploration, the use of additional lag or waiting for a longer period where more banks already have ESG scores can provide additional insights.

Conclusion

This study evaluates the relationship between past ESG scores (Lag_ESG_SCORE) and bank operational risk (OPERISK) by considering control variables such as bank size (SIZE), profitability (ROA, ROE), and operational efficiency (CINC). The results show that ESG scores do not have a significant effect on current operational risk, although the coefficients indicate a negative relationship. In the Indonesian context, this result can be explained by the fact that the implementation of ESG in the banking sector is still in its early stages. OJK has issued various regulations, such as POJK Number 51/POJK.03/2017 which requires sustainability reporting, as well as the Sustainable Finance Roadmap Phase II (2021–2025) which encourages the integration of ESG principles in risk management. However, the implementation of ESG by banks in Indonesia faces various challenges, such as the lack of uniform reporting standards and limited supporting infrastructure.

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