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Building Sustainability Bridges: Analyzing The Relationship Between Risk-Taking And The Effectiveness Of Green Finance In Companies Listed On The IDX

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ABSTRACT

This study aims to empirically examine the relationship between risk-taking willingness, green finance, and corporate sustainability performance.Using a quantitative method with Partial Least Square (PLS) analysis, data were analyzed from 99 observations across 25 companies listed on the Indonesia Stock Exchange that published Sustainability Reports during the 2013-2022 period. The study reveals a negative and significant correlation between risk-taking willingness and green finance, but no significant impact on overall sustainability performance. This suggests that although risk-taking may impede green financial practices, it doesn't directly influence a company's sustainability performance. The findings underscore the importance of robust risk management within sustainability frameworks for achieving corporate sustainability objectives, indicating the model's strong predictive capacity. The study offers theoretical insights into how risk-taking behavior affects the effectiveness of green finance in IDX-listed firms, stressing the alignment of short-term financial objectives with enduring environmental responsibilities. It underscores the significance of bold decision-making, transparent communication, and holistic risk management in driving sustainable financial strategies, thereby enhancing their implementation in corporate environments. Managers can incorporate long-term impact and sustainability analyses into strategic planning while offering incentives for eco-friendly projects. Collaboration with regulators and financial institutions, such as issuing guaranteed green bonds, can mitigate risks and promote the adoption of green finance, demonstrating that long-term benefits outweigh short-term risks.

1. INTRODUCTION

Environmental degradation can be caused by the human desire to meet needs by exploiting natural resources uncontrollably. These needs are met through production mechanisms carried out by companies, which often neglect environmental sustainability. This is evident in the ways companies obtain raw materials and dispose of production waste. Environmental damage worsens as companies frequently do not attempt to treat production waste, thereby polluting water, soil, and air. This phenomenon illustrates the risk-taking willingness involved in environmental conservation, related to the companies' goals of achieving maximum profit [1]. Empirical evidence from a Gartner survey [2] of 402 companies in America shows that 8% of company leaders do not believe that sustainability is important. Regulations and laws are expected to raise awareness among companies that the impacts of production activities not only harm society but also broadly affect managerial and economic decisions.

The willingness to take risks is often considered a primary driver of innovation, which is crucial for achieving sustainability. Sustainable innovation requires the courage to try new approaches, technologies, and processes that can enhance resource efficiency, reduce environmental impact, and create social value. Research indicates that companies more willing to take risks tend to be more innovative and have better sustainability performance. Smith et al. [3] showed that companies embracing risk-taking are more likely to invest in innovative sustainable technologies and practices, which can improve sustainability performance. Effective risk management is also a critical component in achieving sustainability performance. Companies must be able to identify, assess, and manage risks related to sustainability, including environmental, social, and economic risks. Willingness to take risks in this context means being prepared to face uncertainty and change, as well as having the capability to develop effective mitigation strategies. The study by Jones and Bartlett [4] confirms that effective risk management is essential for sustainability performance

because it allows companies to anticipate and handle potential sustainability-related risks, ensuring long-term operational stability. While risk-taking can drive innovation and sustainability improvements, there are challenges and trade-offs to consider. Not all risks will yield positive outcomes, and some can result in significant losses. Therefore, it is important for companies to balance the courage to take risks with caution in evaluating their potential impacts. Harris and White [2] emphasize that balancing risk-taking with careful evaluation is crucial to ensure that efforts to achieve sustainability do not lead to unintended negative consequences.

In the entrepreneurial context, according to Short et al [6], entrepreneurial orientation encompasses the dimensions of the desire to innovate, take risks, and be more proactive compared to competitors. The relationship between entrepreneurial orientation and sustainability performance tends to be complex, where the ecological value generated becomes key in shaping a sustainable business. Research conducted by Schaltegger and Wagner [7] found that entrepreneurship focused on sustainability can produce innovations that drive sustainability, turn market imperfections into business opportunities, replace unsustainable production and consumption methods, and create value for various stakeholders.

Achieving sustainability depends on the need for decisions regarding sustainable financing sources that require internal and external information at both macro and microeconomic levels. This includes information about environmental and social issues as well as financial and non-financial information. Research by Sokol [8] and Wissoker [9] shows that green finance, as a foundation for building sustainable businesses, demonstrates the financial industry's various capabilities in facilitating and enforcing social and economic transformation. Green finance is a crucial instrument to prevent existential threats from climate change. Financial institutions have long considered climate change-related risks to the stability of the financial system and financial regulators [10]. The risk-taking associated with green finance has a significant impact on corporate sustainability performance. Green finance supports environmentally friendly projects, providing financial incentives for sustainable investments, which not only reduce the impact of climate change but also drive long-term profitability. Recent research shows that green finance policies can enhance a company's environmental, social, and governance (ESG) performance, which in turn improves their sustainability performance [11]. Companies that are concerned with environmental issues tend to be more proactive in adopting sustainable practices, strengthening the relationship between green finance and sustainability performance [12].

Wales et al. [13] identified five classifications of mediating variables commonly used in previous entrepreneurial orientation research, such as networking, strategy, organizational structure, organizational learning, and performance. Similarly, recent studies on sustainable entrepreneurial orientation (GEO) by Amankwah et al. [14] and Olawale [15] have utilized technology, operations, and product variables as mediators. Consequently, it is evident that previous research indicates a limited exploration of the role of sustainable financial management in entrepreneurial orientation studies as a mediator for creating sustainable performance. Therefore, this research aims to examine and analyze the influence of risk-taking willingness on sustainable performance through green finance as a mediating variable.

2. TEORETICAL FRAMEWORK

2.1. Literature Review

The sustainability theory developed by Meadows [16] refers to "The Limits to Growth," a report published in 1972 by a team of researchers from the Massachusetts Institute of Technology (MIT). In "The Limits to Growth," Meadows and his team used mathematical models to examine the impact of economic and population growth on natural resources and the environment. They estimated how sustainable economic and population growth would interact with the availability of limited resources and various environmental constraints. This approach emphasizes that there are physical and environmental limits to endless economic growth.

According to sustainability theory, companies must respond to societal expectations, including social, environmental, and economic well-being. This response should meet the needs of both the current and future generations. The concept of sustainability is currently applied in the corporate context. Artiach et al. [17] and Pemer et al. [18] state that businesses and investments will thrive through balancing the needs of current and future stakeholders. Sustainability performance measurement is provided by a series of disclosure standards created by the Sustainability Accounting Standards Board (SASB). Corporate sustainability is considered a business and investment strategy that aims to use best business practices to meet and balance the needs of current and future stakeholder.

Henry Mintzberg, one of the first experts to recognize the benefits of strategic models in entrepreneurial organizations, was followed by Miller, who stated that the idea of corporate entrepreneurship deserves scientific attention [19]. Miller argued that corporate entrepreneurship is identified in companies engaged in product-market innovation, undertaking risky ventures, and being pioneers in innovation. The three basic elements—innovation, proactivity, and risk-taking—were identified by Miller [20] as fundamental components of entrepreneurial orientation and are often integrated to create a higher level of entrepreneurial dimensions within a company [21].

Regarding green entrepreneurial orientation, Gilbert et al. [22] explained that green financing, in a broad sense, refers to financial investments flowing into sustainability development projects and initiatives, environmental products, and policies that encourage more sustainable economic development. Green funding involves financing climate-related issues but is not limited to them. It also encompasses broader environmental goals such as reducing industrial pollution, providing water sanitation, and protecting biodiversity. The goal of green finance is to mobilize financial resources to address environmental challenges, support sustainable development, and promote the transition to a low-carbon and resource-efficient economy [23].

The strategy of integrating environmental aspects into corporate financial decision-making through green finance does not always produce positive outcomes in generating financial profits [1]. Green finance often faces specific challenges, particularly because its investment

returns are long-term and heavily reliant on the stability of frequently fluctuating regulations. This creates significant uncertainty, especially in developing countries like Indonesia, where environmental and energy policies are dynamically evolving. According to stakeholder theory, companies tend to prioritize satisfying stakeholders such as governments, investors, and the broader public by adhering to established sustainability standards. Meanwhile, legitimacy theory emphasizes that corporate sustainability is more influenced by efforts to maintain social legitimacy than by exploring risks associated with green innovation. Consequently, companies often avoid risks in green initiatives with high potential for failure, opting instead for measures that ensure compliance with regulations and social expectations. This focus not only limits the scope for innovation but also shifts corporate priorities from creating transformative green solutions to managing reputation and administrative compliance. In the long term, this approach risks slowing down the sustainability transition, as companies concentrate more on risk avoidance than on developing proactive strategies that could accelerate climate change mitigation and the achievement of sustainable development goals.

Risk management is a structured approach to handling the uncertainties associated with threats [24]. Risks arise from activities undertaken by a company to achieve its strategic objectives. Risks must be managed well to minimize the impact of losses. Anthony S. and Marcia [25] stated that the primary goal of a company is to seek profit for its owners. However, this pursuit is accompanied by costs and risks that the company must face. Some of these risks include interest rate risk, credit risk, liquidity risk, foreign exchange risk, country or political risk, market risk, off-balance-sheet risk, technological risk, operational risk, and bankruptcy risk [26].

Research by Linshan Li [27] on the impact of risks on financial performance shows that complex business development requires a more sophisticated risk management framework at the top organizational level. Companies always aim for growth in their corporate value, and to achieve this, management must face various risks. If a company manages risks well, it faces smaller losses. If risk control is poor, the company will face significant losses, which can cause problems for the company, lead to a decline in business, and ultimately result in bankruptcy. The model of the relationship between variables can be seen in Figure 1 below.

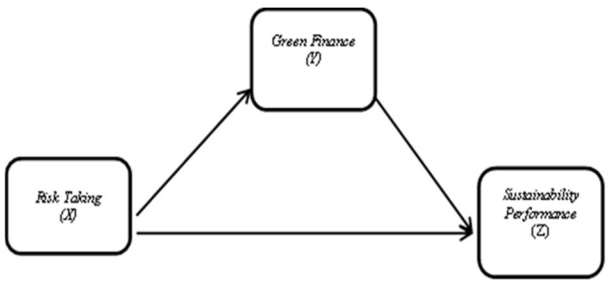

Figure 1. Model Of The Relationship Between Variables

Risk management, green finance, and sustainability theory are closely related in the effort to create economically, socially, and environmentally sustainable businesses. Risk management helps companies identify and manage risks associated with unsustainable practices, while green finance mobilizes financial resources for projects that support sustainable environments and communities. Sustainability theory provides a conceptual framework for companies to integrate sustainable practices into their overall business strategies, ensuring that economic, social, and environmental considerations are factored into decision-making. Thus, these three elements work together to help companies achieve their sustainability goals by managing risks, allocating capital, and integrating sustainable values into the corporate structure.

2.2. Research Hypotheses

Taking risks in green finance involves investing in initiatives with initial uncertainty, such as market acceptance and financial risks, which may hinder the development of sustainable projects. This uncertainty often leads to excessive caution, slowing the flow of capital into green projects and delaying the realization of positive environmental impacts and long-term benefits. Furthermore, challenges such as information asymmetry and inconsistent standards can amplify investment risks, reducing investor interest and undermining the perceived stability of the green finance sector. Therefore, a high willingness to take risks may create instability that hinders the growth of green finance. Based on this description, the first hypothesis can be proposed as follows:

H1: There is a negative influence of risk-taking willingness on green finance.

The willingness to take risks is a key factor in improving a company's sustainability performance. By adopting sustainable practices such as the use of renewable energy or clean production systems, companies can create long-term value through carbon emission reduction and operational efficiency improvements, even though it may require significant initial investments and face short-term uncertainty. Proper risk identification is crucial for understanding and managing risks effectively, allowing companies to avoid undesirable negative impacts. Uncertainty is an essential element of economic decision-making, often associated with risk (Benoit et al., 2011). Moreover, taking risks also involves setting ambitious sustainability policies, such as achieving net-zero emissions or 100% renewable energy use, which, although challenging, can provide a competitive advantage by enhancing customer and investor trust in sustainability. Based on this description, the second hypothesis can be proposed as follows:

H2: There is an influence positive of risk-taking willingness on sustainability performance.

Taking risks in green finance can enhance a company's reputation and competitiveness in the market. Companies that boldly invest in sustainable projects are often valued by consumers, partners, and investors, which not only improves the company's image but also opens new business opportunities and increases customer loyalty [28;29]. Additionally, proactively managing environmental and social risks helps companies avoid crises and significant losses, such as those arising from environmental disasters or stringent regulatory pressures [30]. Green finance provides a framework for reporting the positive impact of green investments, fostering innovation, and reducing long-term risks, thereby accelerating the transition to a more sustainable economy [31;32]. Thus, the hypothesis can be proposed as follows:

H3: There is an influence positive of risk-taking willingness on sustainability performance through green finance.

3. METHODOLOGY

The population in this study consists of all companies listed on the Indonesia Stock Exchange (IDX) in 2022, totaling 825 issuers. The research sample was selected using non-probability sampling with a purposive sampling method, which involves non-random sample selection based on the following criteria: (1) listed on the Indonesia Stock Exchange in 2022, (2) issued a Sustainability Report from 2013-2022, and (3) included in the SRI-KEHATI index. Based on these predetermined criteria, only 25 out of the 825 listed issuers met the criteria. Data analysis utilized secondary company data obtained through library research sourced from the Sustainability Reports of companies listed on the IDX from 2013 to 2022, resulting in a total of 250 observations from 25 companies.

The data analysis used in this research is Partial Least Square Path Modeling with a Structure Variance approach, specifically Structural Equation Modeling (SEM) using the Partial Least Square (PLS) method. The Partial Least Squares Structural Equation Modeling (SEM PLS) analysis in this study is employed to analyze panel data, aiming to model and understand the relationships between observed variables consisting of several business units over multiple time periods. The structural model testing aims to determine the percentage of variation explained by the exogenous variables for each endogenous variable in the model. The assessment of the structural model can be done by considering the significance probability. This serves as a reference for accepting or rejecting statistical hypotheses. In this case, a significance level of 5% or $P < 0.05$ is used, and the critical ratio (c.r) value must be greater than 1.96. The goodness of fit (GoF) value is used as an indicator for comparing the specified model with the covariance matrix between the indicators or observed variables. If the GoF produces a good value, then the results of the model are accepted. However, if the GoF value is not good, the model results must be rejected or the model needs to be revised. Variable measurement in this study uses proxy values, which can be seen in Table 1.

Table 1. Measurement Of Research Variables

Variables	Proxy	Informations
Sustainability Performance	Disclosure score = the total number of items disclosed divided by the total number of core items disclosed based on the type of GRI index used. [34;35]	- Economic Disclosure - Environmental isclosure, - SocialDisclosure,
Green Finance	$\frac{environmental\ and\ climate\ investment\ proportion}{Total\ Asset}$ Yang *et.al* [36]	- Environmental and Climate Investment includes the total investment made by the company for projects aimed at reducing environmental impact and lowering gas emissions. - Total Assets includes the total amount of assets owned by the company within a specific time period.
Taking Risk	*Debt-to-Equity Ratio* $\frac{Total\ Debt}{Equity}$ Kreiser *et al* [37]	- Total debt is the amount of debt owed by the company. - Equity is the amount of capital owned by the shareholders.

The econometric equation model of the influence of risk-taking willingness on sustainability performance through green finance is as follows:

$GF = - \beta 1\ TR + \varepsilon$

$CSP = \beta 2\ TR + \varepsilon$

$CSP = \beta 3\ GF + \delta 2\ TR + \varepsilon$

$\delta 2$ adalah koefisien pengaruh TR terhadap CSP melalui GF

$CSP = \beta 4\ GF + \varepsilon$

The Q-square (Q^2) test is used to measure how well a statistical model or predictive model generates observed values and estimates the parameters within the model [38]. The Robustness test is used to assess the reliability and consistency of findings by testing various model specifications or methodological changes [39]. This test is crucial for evaluating the sensitivity of results to different assumptions or parameters in the analysis, ensuring the robustness and generalizability of the conclusions.

The mediation model test aims to understand the extent to which a mediating variable influences the relationship between the independent variable and the dependent variable. A variable acts as a mediator when the previously significant relationship between the independent and dependent variables is no longer significant, with the strongest demonstration of mediation occurring when the indirect path is zero[40] .

4. RESULTS AND DISCUSSION

4.1 Results

This research uses panel data, a statistical approach that allows the analysis of data from various units over one or several periods. The balanced panel data used in this study includes 250 observations. However, the presence of many empty cells in the data requires special handling steps. Removing incomplete data is crucial to ensure the accuracy of the analysis and the interpretation of the research results. By using only complete samples, researchers can avoid biases that may arise from incomplete or invalid data [41]. Consequently, the number of observations is reduced to 99, making the analysis more focused and concentrated on relevant information.

Data analysis in this research employs SEM PLS (Structural Equation Modeling Partial Least Squares). SEM PLS is chosen because it can maximize the use of available

data and reduce the impact of missing data [42]. According to Memon et al [43], a practical rule in statistical analysis is to have at least 10 samples per independent variable. Therefore, with 99 observations, the use of SEM PLS is recommended in this study. The results of the descriptive statistical processing can be seen in Table 2.

Table 2. Descriptive Statistics

Variabel	N	Min	Max	Mean	Std. Deviation	Variance
Risk Taking	99	,153	7,257	2,59092	2,469482	6,098
Green Finance	99	,010	,930	,14725	,220067	,048
Sustainablity Performace	99	3,000	77,000	25,9899	15,348001	235,561
Valid N (listwise)	99					

Source : data analysed, 2024

In the analysis of the risk-taking level, it was found that the minimum value in the sample is 0.153, which is quite low and indicates cases with very minimal risk levels. Conversely, the maximum value reaches 7.257, indicating cases with high-risk levels. The average risk-taking level is approximately 2.59092, reflecting the median value of the data collected. A standard deviation of 2.4694 indicates some variation in risk-taking levels among the data, although this variation is not very large. Overall, the risk-taking level in the sample shows moderate variation, with the average being at a medium level.

Table 3. Correlation Results

		Risk Taking	Green Finance	Sus.Performance
Risk Taking	*Pearson Correlation*	1		
	Sig (2-tailed)			
	N	99		
Green Finance	*Pearson Correlation*	-,429**	1	
	Sig (2-tailed)	,000		
	N	99	99	
Sustainablity Performance	*Pearson Correlation*	-,284**	,141	1
	Sig (2-tailed)	,004	,164	
	N	99	99	99

Source : data analysed, 2024

In Table 3, it can be seen that there is a significant negative relationship between the risk-taking level and green finance of (-0.429), indicating that the higher the risk-taking level, the lower the implementation of green finance. It should be noted that there is a significant negative correlation between the risk-taking level and the Sustainability Performance variable of -0.284 with a significance value of 0.004. In this context, the analysis results show that changes in the risk-taking level significantly affect the Sustainability Performance variable. The correlation analysis shows weak and insignificant coefficients, indicating that the relationships between these variables are not strong, thus avoiding multicollinearity issues. This helps prevent problems in model interpretation, such as unstable estimation coefficients and increased standard variability, which can interfere with the assessment of statistical significance.

Table 4. Hypothesis Testing

Hypothesis	Path Coef	P	Stat Test	Concl
- Risk willingness towards green finance	-0.349	0.000	Ho: βx ≤ 0 Ha: βx > 0	Accepted
- Risk willingness towards sustainability performance	-0.038	0.769	Ho: βx ≤ 0 Ha: βx > 0	Rejected
- Green finance towards sustainability performance	0.075	0.518	Ho: βy ≤ 0 Ha: βy > 0	Rejected

Source : data analysed, 2024

In Table 4, it can be seen that there is a significant influence between Risk Taking and Green Finance with a regression coefficient of -0.349, indicating that an increase in Risk Taking is significantly associated with a decrease in the implementation of Green Finance. The t-statistic value of 7.536 and p-value of 0.000 (less than 0.05) indicate a statistically significant influence. These results are consistent with the study by Fernandes et al [44] and Strategic Management Theory Wheelen & Hunger [45], showing a significant influence between Risk Taking and Green Finance. There is not enough evidence to state a significant relationship between Risk Taking and Sustainability Performance, with a coefficient of -0.038, t-statistic value of 0.296, and p-value of 0.769 indicating that an increase in Risk Taking does not significantly affect Sustainability Performance. The influence of Green Finance on Sustainability Performance is also not significant, with a regression coefficient of 0.588, a t-statistic value of 0.647, and a p-value of 0.518 (greater than 0.05), indicating insufficient evidence to state a statistically significant influence between Green Finance and Sustainability Performance.

Tabel 5. Sobel Test

Structural Model	+/-	β	Sobel test Stat	Sig		Conclusion
				one-tailed Prob.	two-tailed Prob	
TRis → GF → SP	-	0,026	-0.644	0.2597	0.5194	Rejected

Source : data analysed, 2024

In testing the hypothesis stating the influence of risk-taking willingness on sustainability performance through green finance (GF), the Sobel statistical test result shows a value of -0.644 with a one-tailed significance value of 0.2597 and a two-tailed significance value of 0.5194, both of which are greater than 0.05. Therefore, the statistical hypothesis (H0) is accepted, and the research hypothesis is rejected

Table 6. Results Of Direct And Indirect Influence.

Structural Model	Direct	Indirect	Total
TRis → SP	-0,038	-	-0,038
TRis → GF	-0,349	-	-0,349
GF → SP	0,075	- 0,026	0,049

Source : data analysed, 2024

The analysis results indicate that green finance (GF) has both a direct and an indirect impact on sustainability performance (SP), with values of 0.075 and -0.026, respectively. The total impact of green finance (GF) on sustainability performance (SP) is 0.049, and the direct influence of decision-making

willingness (TRis) on sustainability performance (SP) is -0.038. In the mediation test, as shown in Figure 2, it is found that there is no mediation of the GF variable explaining the influence of risk-taking on sustainability performance.

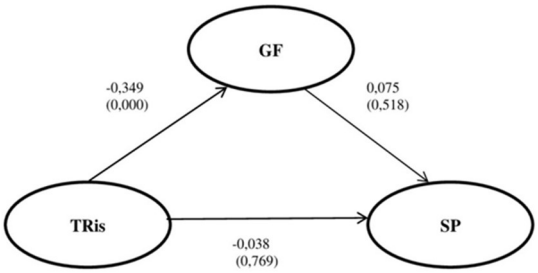

Figure 2. No Mediation

Based on the Q-square (Q^2) test, it can be inferred that both variables have sufficiently good predictive validity, with Q^2 values > 0, although there may be differences in the strength of their predictions.

Table 7. Q-Square Test

Variabels	Q-Square
Green Finance	0,148
Sus Performance	0,062

Source : data analysed, 2024

The Goodness-of-Fit (GOF) test is a process to evaluate how well a hypothesis model fits the observed data. This test is used to assess whether the statistical model used is compatible with the actual data distribution. In the figure below, the results of the data processing are as follows:

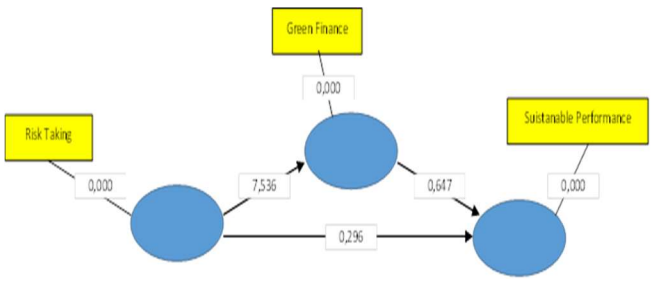

Figure 3. Hypotesis Model

Table 8. Goodness Of Fit Model Test

	Saturated Model	Estimated Model
SRMR	0,000	0,007
d_ULS	0,000	0,001
d_G	0,000	0,000
Chi-Square		0,207
NFI	1,000	0,998

Source : data analysed, 2024

Testing the GOF values shows that the estimated GEOF hypothesis model is very good at describing the data. The SRMR, d_ULS, d_G, Chi-Square, and NFI values all support the model's fit with the data.

In this study, a robustness test was conducted by replacing the Sustainability Performance variable with an alternative proxy, namely Return on Investment (ROI). The argument that ROI has a close relationship with a company's sustainability performance is explained by the benefits obtained by companies that focus on sustainability. Sustainable companies tend to reduce waste, save resources, and lessen environmental impact through improved operational processes. These measures not only have a positive impact on the environment but also improve the company's financial reports, thereby increasing ROI.

Table 9. Robustness Test In The Structural Model

			Estimate	S.E.	C.R.	P-value	Conclusion
Taking Risk	→	Green Finance	-0.349	0.044	7.945	0.000*	Accepted
Taking Risk	→	ROI	-0,279	0.098	2.841	0.005	Accepted
Green Finance	→	ROI	-0,028	0.122	0.232	0.816	Rejected
SRMR			0,007				Fit
Chi-Square			0.207				Fit
NFI			0.998				Fit

The TRis variable on GF shows high significance with a p-value of 0.000 and a negative direction, indicating a significant negative influence. This result is consistent with previous analyses, thus the hypothesis is accepted and the results are robust. The TRis variable on ROI also shows significance with a p-value of 0.005 and a negative direction, indicating a significant negative influence. This hypothesis is accepted and the coefficient direction is consistent, although previous analyses showed a p-value of 0.769 and a negative direction, remaining consistent in the coefficient direction. Testing GF on ROI shows a p-value of 0.816 with a negative direction, leading to the conclusion that GF does not have a significant influence on ROI. This result is consistent with previous analyses which showed a positive but not significant influence on SP, thus the hypothesis is not accepted and the results remain consistent (robust).

4.2 Discussion

A high level of risk-taking within companies often drives efforts to achieve rapid financial gains. Such bold decisions tend to prioritize short-term financial results, which frequently increase operational risks. Fernandes et al. [44] assert that financial risks related to green investments are unavoidable and can be objectively assessed. However, attention to sustainable financial practices, such as green finance, may be overlooked due to their slower returns and lack of immediate results. High-risk decisions can also create an unstable business environment, reducing commitment to sustainable financial practices [45]. The initial hypothesis proposed a positive relationship between risk-taking and green finance, based on assumptions from previous literature suggesting that risk stimulates innovation. However, the negative findings indicate that prior studies may have overlooked contextual factors such as a lack of policy support or market perceptions of low returns on green investments. The relatively new concept of green finance faces greater challenges compared to conventional finance due to issues

like information asymmetry, system inefficiencies, inconsistent standards, suboptimal fund allocation, and psychological barriers [46].

High financial priorities often lead companies to prefer opportunities for large profits even if they involve environmentally unfriendly activities. This causes more resources to be allocated to managing financial risks rather than to sustainable financial practices, creating challenges in balancing growth with environmental responsibility [47].

A significant negative impact of high-risk behavior on Green Finance is the decline in investor confidence. Investor trust is crucial for the development of sustainable financial products and initiatives. To enhance the flow of private capital into green investments, Berensmann K. & Lindenberg, N. [48] suggest:

a. Designing a supportive environment for green finance, including a favorable business climate, legal certainty, and investment regimes.
b. Defining green finance more transparently.
c. Encouraging the development of green financial assets through standards and disclosure rules.
d. Providing financial and regulatory incentives.
e. Better coordinating financial, environmental, and regulatory policies.

When companies engage in high-risk activities, investors may doubt the company's ability to manage environmental risks. This can lead investors to turn to alternatives they perceive as safer rather than investing in Green Finance.

Many empirical arguments suggest that the relationship between risk-taking and sustainability performance in companies is often weak or even negative. The study by He Feng et al. [49] found a trade-off between sustainable growth and corporate risk-taking behavior, where companies that take high financial risks tend to suffer significant losses that damage their sustainability performance. For example, companies that take on large amounts of debt can fall into bankruptcy risk [50], as seen in the 2008 financial crisis or the collapse of Enron, indicating that excessive risk can lead to substantial losses for companies, society, and the environment.

Financial institutions and credit rating agencies typically assign low ratings to high-risk companies, making it difficult for them to access cheap capital for sustainability investments. Companies that are overly aggressive in risk-taking often lack sustainable strategies for managing natural resources and environmental impacts, which negatively affects their environmental performance. Hariputri's [51] study on the banking industry listed on the IDX shows that the level of risk has a negative impact on corporate sustainability. Additionally, stock market research indicates that companies with high-risk reputations may have lower market values compared to companies that are more conservative in managing risks. The study by Targanski and Murhadi [52] found that the capital market's response to companies implementing ESG principles is still minimal, indicating that investors remain skeptical and perceive the risks of sustainable investments to be greater than those of conventional company stocks.

The findings indicate that the level of risk undertaken by a company does not have a direct or significant impact on sustainability performance, either directly or through the role of green finance (GF) as a mediator [53;54]. This suggests that green finance is not a primary determinant of a company's sustainability performance. Instead, factors such as management commitment, environmental policies, energy efficiency, and other sustainable practices play a more dominant role. While green finance is important, its impact on sustainability performance is influenced more by external factors, such as government regulations, consumer pressures, and market dynamics [55].

In the context of Indonesia's banking industry, although some banks like BNI and BRI have begun limiting credit allocations to unsustainable sectors such as coal, most financing still supports these industries. For instance, Bank Mandiri was the largest financier of the coal industry between 2018 and 2021, with total financing of IDR 69.3 trillion during 2018–2020 and IDR 60.1 trillion during 2019–2021. Meanwhile, BNI restricted credit allocation to the mining sector to 3.23% of its total portfolio in 2022, amounting to IDR 19.1 trillion out of a total corporate credit portfolio of IDR 193.2 trillion. This underscores that while green finance is relevant, it remains only one component of a broader business strategy.

Regulatory barriers in Indonesia, such as unclear regulations and high-risk perceptions, are major obstacles to investments in renewable energy and energy efficiency projects [56]. Therefore, strategic collaboration among the government, regulators, and industries is needed to establish clearer regulations, reduce investment risks, and develop tailored financial instruments and incentives to foster a more conducive investment climate for sustainable projects in Indonesia.

5. CONCLUSION

In balancing short-term financial gains with long-term sustainability, managers can adopt a more measured risk-based approach, such as incorporating long-term environmental and social impact analyses into the company's strategic planning. One strategy is to integrate sustainability factors into investment decision-making, ensuring that financial decisions also consider long-term benefits linked to sustainability, even if these take longer to materialize. Managers can implement incentive-based approaches to motivate investors and stakeholders to prioritize sustainability factors, such as subsidies for environmentally friendly projects.

To promote the adoption of green finance in risk-averse environments, specific strategies, such as collaborative approaches with regulators and financial institutions to create safer and more secure financial instruments (e.g., green bonds with guarantees or insurance), can help reduce uncertainty. This provides evidence that the long-term benefits of green investments can outweigh concerns over short-term risks.

The limitations of this study are acknowledged by the authors, noting that the findings primarily reflect trends in economically and governance-established companies. The results are more representative of firms with high levels of disclosure, and the conclusions may not apply to companies with less comprehensive sustainability reporting. Disclosure score is just one indicator; the research findings could be stronger if integrated with actual performance data.

Future research could focus on companies outside the SRI-KEHATI index by developing research instruments that assess sustainability practices in organizations without formal sustainability reports. Additionally, future studies could use primary data, such as surveys or interviews, to include

companies with limited disclosure and better understand the challenges they face in sustainability reporting.

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