“Nexus between green financial management and sustainable competitive advantage: Evidence from Indonesia”

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NEXUS BETWEEN GREEN FINANCIAL MANAGEMENT AND SUSTAINABLE COMPETITIVE ADVANTAGE: EVIDENCE FROM INDONESIA

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Abstract

With increasing environmental and strategic challenges, achieving sustainable competitive advantage is crucial for businesses. This study aims to examine the impact of strategic risk and green financial management on sustainable competitive advantage, focusing on the mediating role of sustainable business resilience and the moderating effect of government policy. A quantitative approach was utilized, applying the SMART-PLS methodology to analyze data gathered through a survey of 316 small and medium-sized enterprise (SME) owners in Indonesia, selected for their direct involvement in daily operations and strategic decision-making. The response rate was 63.2%, representing various industry sectors. The results indicate that strategic risk significantly enhances sustainable business resilience ($\beta = 0.796$ and p-value < 0.01), which is strongly associated with sustainable competitive advantage ($\beta = 0.458$ and p-value < 0.01). Green financial management, however, does not significantly impact resilience ($\beta = 0.008$ and p-value = 0.89). Both strategic risk and green financial management, nonetheless, indirectly influence competitive advantage through resilience, reflecting partial mediation ($\beta = 0.112$, p-value = 0.02 and $\beta = 0.053$, p-value = 0.04, respectively). Additionally, government policy strengthens the effect of green financial management on resilience ($\beta = 0.556$ and p-value < 0.01). These findings underscore the importance of firms managing strategic risks proactively and providing supportive regulations to encourage sustainable business practices by governments. The study provides practical insights for businesses and policymakers aiming to foster corporate resilience and enhance sustainable competitive positioning.

Keywords green financial management, strategic risk, sustainable business resilience, sustainable competitive advantage, government policy

JEL Classification G32, D81, Q01, L10, Q58

INTRODUCTION

In the last decade, businesses have increasingly integrated environmental concerns into their corporate strategies, recognizing sustainability as a driver of innovation and long-term competitiveness rather than merely a cost. This global shift reflects the growing importance of environmental stewardship in shaping business success, offering opportunities for market expansion and sustainable wealth creation (Nauck et al., 2021; Sadiq et al., 2022).

Porter (2020) introduced the concept of shared value, which highlights the interconnectedness of business performance and societal progress. Today, companies gain competitive advantage not only through operational efficiency but by embedding sustainability into their core strategies. Aligning financial goals with environmental and social responsibilities has become critical for long-term resilience and success

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(Gómez Gutiérrez Torrenova, 2021). This strategic approach allows businesses to better manage the increasing risks associated with global environmental challenges (Sharapov & Ross, 2023).

The relationship between strategic risk management and sustainable business resilience has become an interdisciplinary focus, drawing attention from business management and environmental studies alike (Petersen, 2013). Effective risk management, combined with the adoption of green financial practices, is crucial for strengthening competitiveness. Companies that neglect these aspects risk losing their market positioning (Huseynova, 2024; Nohong et al., 2024b).

Recent disruptions, such as those caused by the COVID-19 pandemic, have highlighted the need for businesses to build resilience. In Indonesia, the pandemic significantly impacted operations, with many companies forced to halt or reduce activities, resulting in economic decline and disrupted supply chains (Vo et al., 2022). These challenges further underscore the importance of sustainability and risk management in ensuring long-term corporate success. The increasing complexity of global environmental and economic challenges necessitates the integration of sustainability into strategic risk management. This approach is essential for businesses striving to build resilience and maintain competitiveness in an ever-evolving marketplace.

1. LITERATURE REVIEW AND HYPOTHESES

The concept of sustainable competitive advantage has become increasingly important in modern business, where firms face complex and rapidly evolving environmental and strategic challenges. Sustainable competitive advantage is defined as a firm's ability to maintain a unique position in the market over time, driven by resources and capabilities that are not easily replicated by competitors (Porter, 1985). This concept is particularly relevant for small and medium-sized enterprises (SMEs), which are often more vulnerable to external shocks due to their limited resources. As such, a growing body of research emphasizes the need for SMEs to develop strategies that strengthen their resilience against environmental and market disruptions.

Strategic risk encompasses uncertainties and potential disruptions impacting an organization's long-term goals. These risks can arise from various factors, including market volatility, regulatory changes, technological advancements, and competitive pressures (Resick et al., 2023; Syrová & Špička, 2023). Managing strategic risk is essential to ensuring business continuity for SMEs, which often lack the financial and operational buffers of larger firms. Research suggests that strategic risk management enables organizations to anticipate and mitigate threats, adapt to changing conditions, and even identify opportunities within disruptions (Das et al., 2023).

To effectively manage strategic risk, organizations adopt various frameworks and tools, such as scenario planning, risk assessment models, and mitigation strategies. Scenario planning, for example, allows firms to envision different future scenarios and prepare accordingly, thus enhancing their ability to adapt to unexpected changes (Sharapov & Ross, 2023). However, despite the established benefits of strategic risk management, there is a paucity of empirical studies that examine its direct impact on resilience in the context of SMEs, especially in emerging markets where resources and access to risk management tools may be limited.

The literature on resilience identifies various strategies for building organizational resilience, including investing in flexible resources, diversifying supply chains, and fostering a culture of continuous learning and innovation. For instance, supply chain diversification is seen as a way to reduce dependency on specific suppliers, thereby minimizing the impact of disruptions (Audretsch & Belitski, 2023; Khan et al., 2024). Despite these insights, existing research has largely focused on resilience as an outcome rather than examining it as a mediating factor that translates strategic risk management into sustainable competitive advantage. This study seeks to address this gap by exploring resilience as a key organizational capability that links risk management practices with long-term competitiveness.

The resource-based view (RBV) theory posits that a firm's sustainable competitive advantage arises from resources and capabilities that are valuable, rare, difficult to imitate, and non-substitutable (Barney, 1991). In this framework, resilience can be viewed as a strategic capability that enables firms to leverage their resources effectively, even in adverse conditions. According to RBV, firms with resilient capabilities are better positioned to maintain their competitive edge because they can respond to challenges more flexibly and recover from disruptions faster than their competitors (Chetanraj et al., 2024).

Building resilience through RBV involves the development of adaptive capabilities that allow firms to reconfigure resources in response to changing conditions. Resilience, in this sense, is not merely a defensive mechanism but a proactive strategy that enables firms to capitalize on new opportunities created by disruptions. Although RBV provides a theoretical foundation for understanding resilience, empirical studies on resilience as a mediating variable between strategic risk and competitive advantage remain limited, particularly in the context of SMEs.

Green financial management refers to the integration of environmental considerations into financial decision-making processes. This approach is increasingly adopted by firms that seek to balance profitability with environmental responsibility, recognizing that sustainable practices can yield both economic and social benefits (Dong, 2022; Hung, 2021). Green financial practices, such as investments in energy-efficient technologies and waste reduction initiatives, can enhance a firm's competitive position by improving operational efficiency and appealing to environmentally conscious stakeholders (Ai et al., 2024; Molina-Azorín et al., 2009).

For SMEs, green financial management presents both challenges and opportunities. While eco-friendly investments may require upfront costs, they can lead to long-term cost savings and open access to new markets or customer segments prioritizing sustainability (Chițimiea et al., 2021). Nevertheless, the direct impact of green financial management on resilience has not been extensively studied. It is unclear whether environmentally focused financial strategies directly strengthen a firm's ability to withstand disruptions or if they primarily enhance competitiveness by improving brand reputation and stakeholder relations.

Government policy plays a crucial role in promoting sustainable business practices, particularly in areas such as green finance and environmental regulation. Governments around the world are implementing policies that incentivize companies to adopt sustainable practices, including tax breaks for eco-friendly investments, carbon pricing, and renewable energy subsidies (Ashfaq et al., 2024; Qian, 2024; Vinh Quang et al., 2024). These policies serve not only as incentives but also as regulatory frameworks that mandate transparency and accountability in corporate environmental practices.

By enforcing standards for environmental impact reporting, governments can encourage firms to assess and disclose their environmental risks, which can lead to better risk management and resilience (Porter, 2020). Government policies are especially impactful in developing economies, where businesses may lack the resources to implement green practices independently. In this context, regulatory support can be essential for fostering resilience among SMEs. This study contributes to the literature by examining how government policy moderates the relationship between green financial management and resilience, particularly within SMEs in Indonesia.

While much of the literature on strategic risk, resilience, and green finance is rooted in studies from developed economies, there is a growing need to understand these dynamics within the context of emerging markets. SMEs in countries like Indonesia face unique challenges related to limited access to capital, evolving regulatory landscapes, and heightened exposure to environmental risks. As such, insights from studies conducted in developed economies may not fully capture the complexities faced by SMEs in emerging markets, underscoring the importance of region-specific research.

Global studies reveal that companies adopting green financial practices tend to perform better in competitive environments, especially in regions with strong environmental regulations

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(Aziakpono et al., 2014; Kim & An, 2024). However, the effectiveness of green finance as a resilience strategy remains debated, with some scholars arguing that the benefits are contingent on supportive regulatory frameworks. By exploring the interplay between green finance and government policy, this study adds a nuanced perspective to the global literature on sustainable competitive advantage.

Despite the insights provided by previous studies, several gaps remain in the literature. First, there is limited research examining resilience as a mediating factor between strategic risk management and competitive advantage, especially in the context of SMEs. While resilience is widely recognized as a valuable organizational capability, its role in translating risk management efforts into long-term competitive gains has not been thoroughly investigated. Second, the influence of green financial management on resilience and competitive advantage is underexplored, particularly for SMEs in emerging markets where regulatory and financial constraints differ significantly from those in developed economies.

Finally, the role of government policy as a moderating factor in green finance-related resilience strategies is not well understood. While there is consensus that regulatory support can enhance sustainable practices, few studies have examined how such support affects the resilience-building capacity of SMEs. This study addresses these gaps by focusing on strategic risk, green financial management, resilience, and government policy within the context of Indonesian SMEs, providing a comprehensive analysis of how these variables interact to influence sustainable competitive advantage.

Given the gaps identified, this study aims to provide a more nuanced understanding of the mechanisms through which strategic risk and green financial management contribute to sustainable competitive advantage in SMEs. By focusing on resilience as a mediating factor and government policy as a moderating variable, the study offers insights that are both theoretically significant and practically relevant.

This study tries to fill this gap by investigating how green financial management influences resilience and, consequently, competitive advantage. Furthermore, this study aims to contribute to the literature by addressing the need for empirical evidence on resilience and green finance within the SME sector, particularly in emerging markets where sustainable business practices are still evolving.

Accordingly, the following hypotheses are proposed:

H1: Strategic risk has a significantly positive effect on sustainable business resilience.

H2: Green financial management has a significantly positive effect on sustainable business resilience.

H3: Sustainable business resilience has a significantly positive effect on sustainable competitive advantage.

H4: Strategic risk positively and significantly affects sustainable competitive advantage.

H5: Green financial management positively and significantly affects sustainable competitive advantage.

H6: Sustainable business resilience mediates the relationship between strategic risk and sustainable competitive advantage.

H7: Sustainable business resilience mediates the relationship between green financial management and sustainable competitive advantage.

H8: Government policy moderates the effect of green financial management on sustainable business resilience.

2. METHODS

This study adopts a quantitative approach, employing the SMART-PLS methodology to analyze the relationships among strategic risk, green financial management, government policy, sustainable business resilience, and sustainable competitive advantage. The sample was sourced from the Ministry of Cooperatives and SMEs of Indonesia, focusing on regions identified by the national

waste management information system as areas with significant SME-generated waste. The data capture waste volumes produced by SMEs in two primary business categories: food and drink, and non-food and drink.

A total of 500 questionnaires were distributed to SME owners actively involved in daily operations and strategic decision-making within their businesses. These owners were selected based on their capacity to provide insights into resilience and competitive advantage within their industry context. Of the distributed questionnaires, 316 were completed and returned, yielding a response rate of 63.2%, which was considered sufficient for reliable statistical analysis across a diverse range of sectors. The survey instrument was adapted from prior research (Nohong et al., 2024a) and administered electronically, with participation secured through informed consent.

The questionnaire consisted of two sections: the introductory section outlining the survey's purpose and the second section capturing demographic data and measuring the primary constructs using a 5-point Likert scale, where responses ranged from "strongly disagree" to "strongly agree." Detailed information on the measurement items, along with validity and reliability metrics such as composite reliability and item loadings, is provided in Appendix A to ensure transparency regarding the internal consistency of each construct.

The collected data were analyzed both descriptively and inferentially to evaluate the relationships within the proposed model. The SMART-PLS approach was selected for its effectiveness in handling complex models and smaller sample sizes, making it well-suited to this study's examination of SMEs across various industries.

Table 1 shows that most of the respondents' businesses are non-food and drink, such as souvenirs (11.12%), wooden furniture (11.12%), convection and clothing (11.10%), printing (17.11%), processed wood products (12.01%), tiles and ceramics (10.01%), wooden interiors (26.19%), and doors and frames (1.34%).

Evaluating small and medium-sized businesses (SMEs) typically revolves around their financial performance and sales growth. Consistent sales figures are crucial for SMEs, signaling overall progress. When it comes to sales, SMEs are categorized into different ranges: 300-450 million (27.22%), over 450-600 million (46.20%), over 600-750 million (4.43%), over 750-900 million (5.06%), over 900-1,500 million (9.81%), and over 1,500 million (7.28%). Regarding employment, most surveyed SMEs have 5-10 employees (78.16%), while the remaining have more than 10 employees (21.84%).

The data underscore the significant role played by SMEs in regional employment. Not only do SMEs generate job opportunities, they also foster skill development and entrepreneurship. Their capacity to adapt to market changes and innovate positions them as essential contributors to workforce growth. Furthermore, SMEs often op-

Table 1. Respondents' information

Description	Respondents, *n*	Total respondents, %
Product/core business		
food and drink	121	38.29
non-food and drink	195	61.71
Sales value		
between 300 and 450 million	86	27.22
more than 450 and 600 million	146	46.20
more than 600 and 750 million	14	4.43
more than 750 and 900 million	16	5.06
more than 900 and 1,500 million	31	9.81
more than 1,500 million	23	7.28
Employees		
5 to 10	247	78.16
more than 10	69	21.84
Total	316	100.00

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erate in sectors critical to economic development, such as manufacturing, agriculture, and services. Understanding how SMEs contribute to workforce growth can assist policymakers and stakeholders in providing targeted support for these businesses. Valuable support measures can be implemented by addressing the challenges that SMEs encounter in maximizing their role in workforce growth.

3. RESULTS AND DISCUSSION

The distribution and variability of the variables under investigation are depicted in the descriptive statistics presented in Table 2. The strategic risk (SR) variable reveals a moderate level of variance in the firms' perceptions of strategic risks, with a mean of 0.75, values ranging from 0.65 to 0.86, and a standard deviation of 0.07. In contrast, green financial management (GFM) displays greater diversity in the adoption of green financial principles, with a mean of 0.75, a broader range of 0.55 to 0.85, and a standard deviation of 0.11.

Government policy (GP) exhibits the highest mean within the sample, measuring 0.86, with values closely clustered between 0.76 and 0.91 and a standard deviation of 0.05. This indicates that the sample largely shares consistent views regarding robust government policies. Sustainable business resilience (SBR), with a mean of 0.80, a standard deviation of 0.06, and scores ranging from 0.73 to 0.85, reflects relatively strong and stable levels of business resilience. Conversely, sustainable competitive advantage (SCA) is the most variable, with a mean of 0.78, a range of 0.53 to 0.88, and a standard deviation of 0.14, suggesting significant differences in how companies perceive their competitive advantages. These findings underscore the diversity in green financial practices, competitive advantage, and strategic risk management within the context of sustainability, highlighting the various strategies businesses employ to adapt and thrive in a dynamic business landscape.

The outcomes of the validity and reliability assessments for the strategic risk variables are detailed in Appendix A. The indicators for strategic risk variables achieved a composite reliability (CR) value surpassing 0.6 and a reliability coefficient of 0.936, demonstrating the appropriateness and reliability of the corresponding question items. Similarly, the indicators and variables related to green financial management, government policy, sustainable business resilience, and sustainable competitive advantage also achieved a CR value and reliability exceeding 0.5, thereby affirming their validity and reliability. The analysis results outlined in Appendix A show that the CMIN (chi-square minimum) value is 2.344, which is below the threshold of 3. The goodness of fit index (GFI) is 0.921, closely approaching 1, with the GFI standard value also at 0.921.

According to the goodness of fit analysis (Table 3), the tested model exhibits excellent alignment with the observed data. The chi-square minimum/degrees of freedom (CMIN/df) value of 2.344 is below the conventional threshold of 3, indicating a satisfactory model fit. The goodness of fit index (GFI) of 0.921, comparative fit index (CFI) of 0.989, and parsimony-adjusted comparative fit index (PCFI) of 0.987 all surpass the 0.9 benchmark, suggesting that the model fits the data very well. Moreover, the root mean square error of approximation (RMSEA) value of 0.046 is under the 0.05 threshold, indicating an excellent fit with the data.

The fit minimum function (FMin) value of 1.378, while not perfectly close to zero, remains within an acceptable range, confirming that the model is reasonably well-fitted. Overall, all indicators dem-

Table 2. Descriptive statistics

Variables	Maximum	Minimum	Mean	St. Deviation
SR	0.86	0.65	0.75	0.07
GFM	0.85	0.55	0.75	0.11
GP	0.91	0.76	0.86	0.05
SBR	0.85	0.73	0.80	0.06
SCA	0.88	0.53	0.78	0.14

Note: SR = strategic risk; GFM = green financial management; GP = government policy; SBR = sustainable business resilience; SCA = sustainable competitive advantage.

Table 3. Goodness of fit

Criteria	Rule of thumb	Result
Chi-square Minimum/degrees of freedom (CMIN/df)	< 3	2.344
Goodness of Fit Index (GFI)	> 0.9	0.921
Comparative Fit Index (CFI)	> 0.9	0.989
Parsimony-Adjusted Comparative Fit Index (PCFI)	> 0.9	0.987
Fit Minimum function (FMin)	almost 0	1.378
Root Mean Square Error of Approximation (RMSEA)	< 0.05	0.046

onstrate that the model fits well with the observed data, satisfying stringent goodness of fit criteria. These findings suggest that the proposed model is both reliable and valid for further analysis, offering a robust foundation for interpretation and application in related research.

The results of the structural model within the PLS-SEM analysis are depicted in Figure 1. During the hypothesis testing process, the expected direction, path coefficient, and significance of each variable relationship are estimated if the necessary conditions are met.

Specifically, the PLS-SEM analysis reveals that strategic risk significantly enhances sustainable business resilience, with a coefficient of β = 0.796 and a *p*-value < 0.01. However, there is no statistically significant positive relationship between green financial management and sustainable business resilience (β = 0.008 and *p*-value = 0.89). Consequently, sustainable business resilience strongly influences sustainable competitive advantage (β = 0.458, *p*-value < 0.01).

Additionally, strategic risk exhibits a weakly positive, though not highly significant, effect on sustainable competitive advantage (β = 0.459, *p*-value = 0.08). The relatively low direct effect of green financial management on sustainable competitiveness (β = 0.213, *p*-value = 0.06) may be due to challenges in effectively implementing green practices, the long-term nature of their benefits, or external factors such as market conditions and regulatory environments that could dilute the immediate impact on a firm's competitiveness.

Table 4 presents the path coefficients and *p*-values for the proposed relationships between strategic risk, sustainable competitive advantage, green financial management, and sustainable business resilience. It is important to note that the model

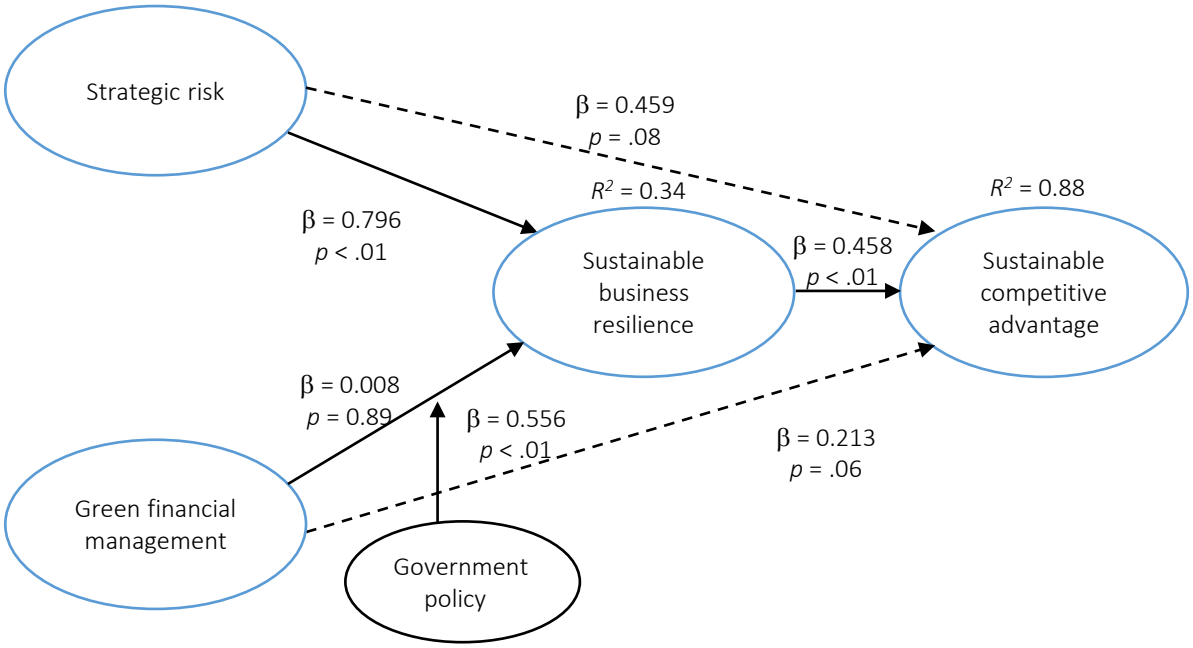

Figure 1. PLS-SEM analysis

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assessing the influence of green financial management and strategic risk on the resilience of sustainable businesses is insufficient, with an R^2 value of only 20%.

H1 is supported by the path coefficient of 0.796, which is highly significant at the 1% level ($p < 0.01$) from strategic risk to sustainable business resilience. This implies that a stronger correlation exists between elevated levels of strategic risk and more sustainable business resilience. Because they create jobs, SMEs contribute significantly to the fight against poverty and unemployment. This is mostly due to their effective risk management strategies (Begum et al., 2022; Mondal et al., 2021).

H2 is not supported, however, as the path coefficient from green finance management to sustainable business resilience is 0.008 and not significant. This suggests that, in this particular setting, green financial management approaches do not improve firm resilience in a statistically significant way. In the context of SMEs, green practices and financing may prioritize product costs (Azadda et al., 2023).

The path coefficient of 0.458, which is highly significant at the 1% level ($p < 0.01$), from sustainable business resilience to sustainable competitive advantage, supports the validation of *H3*. This result indicates a strong correlation between increased sustainable business resilience and enhanced sustainable competitive advantage. While the study's findings suggest that green financial management has a minimal impact on resilience, they emphasize the pivotal role of strategic risk management in bolstering resilience and achieving a competitive advantage.

Table 5 outlines the results of the direct and indirect effects of strategic risk and green financial management on sustainable competitive advantage, considering sustainable business resilience and government policy as mediating and moderating variables. Table 5 includes path coefficients, *p*-values, and corresponding interpretations based on various levels of significance.

For the direct effects, with a *p*-value of 0.082 and a path coefficient of 0.459 from strategic risk to sustainable competitive advantage, *H4* is supported at the 10% significance level. Accordingly, strategic risk significantly and favorably affects long-term competitive advantage. The determination of a company's long-term competitive advantage is contingent upon its strategic risk (Nohong et al., 2019). It may be difficult to maintain market position and lose competitiveness if these risks are not identified and managed. As a result, businesses must actively detect and assess strategic risks, create backup plans, and modify their strategy as necessary. Opportunities to obtain a competitive edge can also arise from handling strategic risks well (Liwafa et al., 2023).

Parallel to this, at the 10% significance level, *H5* is supported by the coefficient of 0.213 for green financial management to sustainable competitive advantage, with a *p*-value of 0.056. Accordingly, green finance management strongly impacts sustainable competitive advantage. Businesses can benefit from green finance management by being able to anticipate new rules and comply with existing ones. Enterprises can avert non-compliance fines and acquire a competitive advantage over less agile rivals by proactively implementing sustainable practices. Ultimately, access to money and investments can be generated through green finance management (B. Kumar et al., 2024; S. Kumar & Anbanandam, 2020).

The pathway from strategic risk to sustainable competitive advantage via sustainable business resilience demonstrates a partial mediation effect in terms of indirect effects, with a coefficient of 0.112 and a *p*-value of 0.024. Organizations can mitigate the impact of these risks by implementing climate

Table 4. Path coefficients and *p*-values

Interaction	Expected sign	Path coefficients	Interpretation
Strategic risk → Sustainable business resilience	(+)	0.796***	*H1* is supported
Green financial management → Sustainable business resilience	(+)	0.008	*H2* is not supported
Sustainable business resilience → Sustainable competitive advantage	(+)	0.458***	*H3* is supported

Note: Significant level = * (α = 10%), ** (α = 5%), *** (α = 1%).

Table 5. Direct and indirect effects

Structural paths	Coefficient	*p*-value	Interpretation
Direct Effect			
Strategic risk → Sustainable competitive advantage	0.459	0.082	*H4* is supported
Green financial management → Sustainable competitive advantage	0.213	0.056	*H5* is supported
Indirect Effect			
Strategic risk → Sustainable business resilience → Sustainable competitive advantage	0.112	0.024	Partial mediation
Green financial management → Sustainable business resilience → Sustainable competitive advantage	0.053	0.036	Partial mediation
Green financial management → Government policy → Sustainable business resilience	0.556	0.000	Moderation

adaptation strategies and sustainable resilience measures (Azadda et al., 2023; Gray & Jones, 2016; Huang et al., 2022). The indirect impact of green financial management on sustainable competitive advantage through resilient businesses has a 0.053 coefficient and a *p*-value of 0.036, suggesting partial mediation as well. It follows that incorporating sustainability into financial decision-making can have positive effects on stakeholder relations, cost savings from lower energy use, and availability of green financing options (Wan et al., 2022).

The indirect effect of green financial management on sustainable business resilience, moderated by government policy, exhibits a significant influence, with a coefficient of 0.556 and a p-value of 0.000. This finding highlights the critical role of government policy in enhancing the impact of green financial management on competitive advantage and sustainable business resilience. It suggests that environmentally conscious financial management strategies, particularly for small and medium-sized enterprises (SMEs), can foster sustainable business resilience when bolstered by supportive environmental legislation. Furthermore, government policies can establish standards and guidelines for environmental compliance, ensuring that companies are held accountable for their environmental impact. Therefore, the effectiveness of green financial management strategies and their contribution to sustainable business resilience is fundamentally determined by state policy (Lee et al., 2021; Park & Kim, 2020).

CONCLUSION

This study examines the impact of strategic risk and green financial management on sustainable competitive advantage, highlighting the mediating role of business resilience in translating these factors into long-term sustainability. The mediating role of resilience means that while strategic risk and green finance strategies may not directly result in competitive advantage, they do so indirectly by fostering a firm's capacity to adapt and thrive amidst challenges. Resilience acts as a bridge, transforming effective risk management and green finance practices into enhanced competitive positioning. The analysis demonstrates that strategic risk management significantly bolsters business resilience, which in turn strengthens a firm's ability to maintain a sustainable competitive edge, particularly in volatile environments. This finding underscores the importance of resilience as an essential organizational capability that connects strategic risk practices with sustainable competitive performance.

Moreover, while green financial management did not show a direct impact on resilience, it contributed to a competitive advantage when supported by government policy, indicating that regulatory frameworks are vital in amplifying the benefits of green finance. This study offers novel insights into the interplay between government policy and green finance, suggesting that policy interventions can significantly enhance the resilience and sustainability of SMEs. Practically, the results imply that businesses aiming for sustainable competitiveness should prioritize strategic risk management and integrate green financial initiatives supported by regulatory frameworks that promote sustainable practices.

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Future research should consider a broader and more diverse sample to confirm these findings in different geographical and industrial contexts. Additionally, longitudinal studies could deepen understanding of the long-term effects of strategic risk and green financial management on resilience and competitive advantage. Exploring other moderating factors, such as corporate governance and organizational culture, could further enhance insights into the mechanisms through which resilience mediates competitive outcomes in sustainability-focused firms.

AUTHOR CONTRIBUTIONS

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REFERENCES

1. Ai, M., Luo, F., & Bu, Y. (2024). Green innovation and corporate financial performance: Insights from operating risks. *Journal of Cleaner Production, 456,* Article 142353. https://doi.org/10.1016/j.jclepro.2024.142353
2. Ashfaq, S., Liangrong, S., Waqas, F., Gulzar, S., Mujtaba, G., & Nasir, R. M. (2024). Renewable energy and green economic growth nexus: Insights from simulated dynamic ARDL. *Gondwana Research, 127,* 288-300. https://doi.org/10.1016/j.gr.2023.08.014
3. Audretsch, B. D., & Belitski, M. (2023). The limits to open innovation and its impact on innovation performance. *Technovation, 119,* Article 102519. https://doi.org/10.1016/j.technovation.2022.102519
4. Azadda, W. N., Koomson, S., & Klutse, S. K. (2024). Sustainable finance and business risk resilience: A conceptual perspective and suggestions for upcoming research. *Vilakshan – XIMB Journal of Management, 21*(1), 66-78. https://doi.org/10.1108/xjm-02-2023-0034
5. Aziakpono, M., Bauer, R., & Kleimeier, S. (2014). Financial globalisation and sustainable finance: Implications for policy and practice. *Journal of Banking & Finance, 48,* 137-138. https://doi.org/10.1016/j.jbankfin.2014.09.020
6. Barney, J. (1991). Firm resources and sustained competitive advantage. *Southern Management Association, 17*(1), 99-120. https://doi.org/10.1177/014920639101700108.
7. Begum, H., Abbas, K., Alam, A. S. A. F., Song, H., Chowdhury, M. T.,

& Abdul Ghani, A. B. (2022). Impact of the COVID-19 pandemic on the environment and socio-economic viability: A sustainable production chain alternative. *Foresight, 24*(3/4), 456-475. https://doi.org/10.1108/FS-02-2021-0053

8. Chetanraj, D. B., Senthil Kumar, J. P., ManiKrishna, V., & Sai, V. S. (2024). Green decisions: The role of environmental strategies and proactivity in India's manufacturing micro enterprises. *Problems and Perspectives in Management, 22*(2), 240-253. https://doi.org/10.21511/ppm.22(2).2024.19
9. Chițimiea, A., Minciu, M., Manta, A.-M., Ciocoiu, C. N., & Veith, C. (2021). The drivers of green investment: A bibliometric and systematic review. *Sustainability, 13*(6), Article 3507. https://doi.org/10.3390/su13063507
10. Das, S., Myla, A. Y., Barve, A., Kumar, A., Sahu, N. C., Muduli, K., & Luthra, S. (2023). A systematic assessment of multi-dimensional risk factors for sustainable development in food grain supply chains: A business strategic prospective analysis. *Business Strategy and the Environment, 32*(8), 5536-5562. https://doi.org/10.1002/bse.3435
11. Dong, L. (2022). On the application of green financial management in financial management. *Financial Engineering and Risk Management, 5,* 1-4. Retrieved from https://www.clausiuspress.com/assets/default/article/2022/07/10/article_1657501391.pdf
12. Gómez Gutiérrez Torrenova, M. (2021). Sustainability. The end of finance as it was. *Studies of Applied Economics, 39*(3). https://doi.org/10.25115/eea.v39i3.5535
13. Gray, D., & Jones, K. F. (2016). Using organisational development and learning methods to develop resilience for sustainable futures with SMEs and micro businesses: The case of the "business alliance." *Journal of Small Business and Enterprise Development, 23*(2), 474-494. https://doi.org/10.1108/JSBED-03-2015-0031
14. Huang, X., Chau, K. Y., Tang, Y. M., & Iqbal, W. (2022). Business ethics and irrationality in SME during COVID-19: Does it impact on sustainable business resilience? *Frontiers in Environmental Science, 10*. https://doi.org/10.3389/fenvs.2022.870476
15. Hung, N. T. (2021). Nexus between green bonds, financial, and environmental indicators. *Economics and Business Letters, 10*(3), 191-199. https://doi.org/10.17811/ebl.10.3.2021.191-199
16. Huseynova, L. (2024). Challenges and opportunities in the development of micro, small, and medium-sized enterprises (MSMEs) in Central and West Asia. *Problems and Perspectives in Management, 22*(2), 527-538. https://doi.org/10.21511/ppm.22(2).2024.41
17. Khan, I. U., Hameed, Z., Khan, S. U., & Khan, M. A. (2024). Green banking practices, bank reputation, and environmental awareness: evidence from Islamic banks in a developing economy. *Environment, Development and Sustainability*, *26*(6), 16073-16093. https://doi.org/10.1007/s10668-023-03288-9
18. Kim, S. H., & An, Y. (2024). Does policy uncertainty affect earnings quality Evidence from China. *International Journal of Managerial and Financial Accounting, 16*(1), 43-68. https://doi.org/10.1504/IJMFA.2024.135352
19. Kumar, B., Kumar, L., Kumar, A., Kumari, R., Tagar, U., & Sassanelli, C. (2024). Green finance in circular economy: A literature review. *Environment, Development and Sustainability, 26,* 16419-16459. https://doi.org/10.1007/s10668-023-03361-3
20. Kumar, S., & Anbanandam, R. (2020). Impact of risk management culture on supply chain resilience: An empirical study from Indian manufacturing industry. *Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability, 234*(2), 246-259. https://doi.org/10.1177/1748006X19886718
21. Lee, J., Park, D., & Tian, S. (2021). *Green finance, innovation, and firm performance: Evidence from the Republic of Korea*. Asian Development Bank. Retrieved from https://www.adb.org/sites/default/files/institutional-document/691951/ado2021bp-green-finance-innovation-rok.pdf
22. Liwafa, A., Suyanto, B., & Choirunnisa, Z. (2023). Sustainable competitive advantage: A literature review and future research. *RSF Conference Series: Business, Management and Social Sciences, 3*(3), 428-439. https://doi.org/10.31098/bmss.v3i3.707
23. Molina-Azorín, J. F., Claver-Cortés, E., López-Gamero, M. D., & Tarí, J. J. (2009). Green management and financial performance: A literature review. *Management Decision, 47*(7), 1080-1100. https://doi.org/10.1108/00251740910978313
24. Mondal, S., Al-Shukaili, A., Kassim, N. M., & Zain, M. (2021). Role of SMEs in Oman: Perspectives of future employment and protection policy response. *SHS Web of Conferences, 124,* Article 11002. https://doi.org/10.1051/shsconf/202112411002
25. Nauck, F., Pancaldi, L., Poppensieker, T., & White, O. (2021). *The resilience imperative: Succeeding in uncertain times*. Retrieved from https://www.mckinsey.com/~/media/mckinsey/business%20functions/risk/our%20insights/the%20resilience%20imperative%20succeeding%20in%20uncertain%20times/the-resilience-imperative-succeeding-in-uncertain-times.pdf
26. Nohong, M., Ali, M., Sohilauw, M., Sobarsyah, M., & Munir, A. (2019). Financial literacy and competitive advantage: SME strategy in reducing business risk. *Revista Espacios, 40*(32). Retrieved from https://www.researchgate.net/publication/336103973_Financial_literacy_and_competitive_advantage_SME_strategy_in_reducing_business_risk
27. Nohong, M., Sobarsyah, M., Alamzah, N., Sylvana, A., & Herman, B. (2024a). Green financial management and its impact on small medium enterprises

http://dx.doi.org/10.21511/ppm.22(4).2024.50

(SMEs): An empirical study in Indonesia. *Journal of Environmental Assessment Policy and Management*, *26*(01), Article 2450001. https://doi.org/10.1142/S1464333224500017

28. Nohong, M., Sobarsyah, M., Sohilauw, M. I., & Herman, B. (2024b). Nexus between strategic green finance and green competitive advantage: Study at Indonesia Corporate. *Journal of Environmental Assessment Policy and Management, 26*(02), Article 2450003. https://doi.org/10.1142/S1464333224500030
29. Park, H., & Kim, J. D. (2020). Transition towards green banking: Role of financial regulators and financial institutions. *Asian Journal of Sustainability and Social Responsibility, 5*(1), Article 5. https://doi.org/10.1186/s41180-020-00034-3
30. Petersen, H.L. (2013). Strategic Risk. In S. O. Idowu, N. Capaldi, L. Zu, & A. D. Gupta (Eds.), *Encyclopedia of Corporate Social Responsibility*. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-28036-8_350
31. Porter, M. (1985). *The competitive advantage: Creating and sustaining superior performance*. NY: Free Press. Retrieved from https://resource.1st.ir/PortalImageDb/ScientificContent/182225f9-188a-4f24-ad2a-05b1d8944668/Competitive%20Advantage.pdf
32. Porter, M. (2020). A test of resilience: COVID-19 and the business of Europe's green deal. *European Energy & Climate Journal*. Retrieved from https://fti-communications.com/wp-content/uploads/2020/07/FTI-Consulting_Coronavirus-and-the-EUs-Green-Deal-Brussels.pdf
33. Qian, S. (2024). The effect of ESG on enterprise value under the dual carbon goals: From the perspectives of financing constraints and green innovation. *International Review of Economics & Finance, 93,* 318-331. https://doi.org/10.1016/j.iref.2024.03.010
34. Resick, C. J., Nadkarni, S., Chu, J., Chen, J., Lien, W., Margolis, J. A., & Shao, P. (2023). I did it my way: CEO core self-evaluations and the environmental contingencies on firm risk-taking strategies. *Journal of Management Studies, 60*(5), 1236-1272. https://doi.org/10.1111/joms.12872
35. Sadiq, M., Nonthapot, S., Mohamad, S., Chee Keong, O., Ehsanullah, S., & Iqbal, N. (2022). Does green finance matter for sustainable entrepreneurship and environmental corporate social responsibility during COVID-19? *China Finance Review International, 12*(2), 317-333. https://doi.org/10.1108/CFRI-02-2021-0038
36. Sharapov, D., & Ross, J. M. (2023). Whom should a leader imitate? Using rivalry-based imitation to manage strategic risk in changing environments. *Strategic Management Journal, 44*(1), 311-342. https://doi.org/10.1002/smj.3120
37. Syrová, L., & Špička, J. (2023). Exploring the indirect links between enterprise risk management and the financial performance of SMEs. *Risk Management, 25*(1). https://doi.org/10.1057/s41283-022-00107-9
38. Vinh Quang, L., Ngoc-Long, N., & Xuan Giang, P. (2024). Enterprise risk management and firm performance: Exploring the roles of knowledge, technology, and supply chain. *Problems and Perspectives in Management, 22*(2), 150-164. https://doi.org/10.21511/ppm.22(2).2024.13
39. Vo, A. H. K., Truong, T. T. T., & Huynh, K. D. (2022). The impact of COVID-19 on financing decisions of SMEs in Vietnam. *Asian Academy of Management Journal, 27*(2). https://doi.org/10.21315/aamj2022.27.2.8
40. Wan, Q., Miao, X., & Afshan, S. (2022). Dynamic effects of natural resource abundance, green financing, and government environmental concerns toward the sustainable environment in China. *Resources Policy, 79,* Article 102954. https://doi.org/10.1016/j.resourpol.2022.102954

APPENDIX A

Table A1. Measurement items, validity, and reliability

Variable	Items	C.R.	Reliability
Strategic risk	We always work by considering possible risks.	0.652	0.936
	We always identify the risks faced by the company.	0.723	
	We have a special section tasked with managing company risk.	0.758	
	We always convey the results of risk identification and quantification to the team.	0.759	
	We always utilize the results of risk identification and quantification in decision-making.	0.766	
	We monitor and evaluate risks periodically.	0.864	
Green financial management	We always choose to invest in financial products that have an environmental focus.	0.792	0.949
	We always implement environmentally friendly practices in financial management.	0.803	
	We believe that the integration of environmental factors in financial decision-making can improve long-term profitability.	0.846	
	We prioritize environmental sustainability in our financial decisions.	0.837	
	Our company's financial strategy includes an emphasis on reducing environmental damage.	0.772	
	We invest in environmentally friendly initiatives.	0.663	
	Our company always maintains the importance of transparent financial reporting in measuring environmental impacts.	0.547	
Government policy	The government has regulated company activities that are environmentally friendly.	0.896	0.927
	We adjust financial strategies based on changing environmental regulations.	0.764	
	The government takes firm action against companies whose activities cause environmental pollution (such as plastic waste and not providing rubbish bins).	0.898	
	The regulatory environment has made our company to be more proactive in environmentally friendly initiatives.	0.867	
	The government provides incentives to companies that are deemed to have environmentally friendly activities.	0.870	
	The government has an incentive program for companies that communicate transparently about their financial environmental impacts.	0.870	
Sustainable business resilience	We always identify every risk that has the potential to disrupt business operations.	0.824	0.928
	We always have the ability to operate/produce well.	0.748	
	We have the ability to adapt to environmental changes.	0.732	
	We have the ability to develop new resources amidst environmental changes.	0.853	
	We always try to take advantage of existing opportunities.	0.849	
Sustainable competitive advantage	Our company can access the resources needed for the production process.	0.848	0.932
	Our company adopts technology to make the production process easier.	0.796	
	Our company's products can be easily distinguished by customers because of their quality.	0.531	
	Our company's products are produced at lower costs compared to other companies.	0.829	
	Our company always maintains and improves our brand reputation from time to time.	0.879	

Note: Correlation is significant at the 0.05 level (2-tailed).

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