



Research Article

The Influence Of Green Banking, Green Finance, And Green Innovation On Green Sustainability: The Mediation Role Of Top Management Support

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Abstract. This study aims to analyze the influence of green banking, green finance, and green innovation on green sustainability with the mediating role of top management support. The research method used is a Systematic Literature Review (SLR) by analyzing 25 journal articles published between 2021-2025 obtained from Google Scholar. The findings indicate that green banking contributes to sustainability through digital banking, paperless banking, energy efficiency, and environmentally friendly financing. Green finance helps direct investments toward sustainable economic activities and supports environmental impact reduction. Meanwhile, green innovation improves operational efficiency and creates environmentally friendly technologies and business processes. This study also finds that top management support plays an important role in strengthening the relationship between green banking, green finance, and green innovation on green sustainability. Management support assists companies in developing sustainability strategies and creating organizational cultures that support green business practices. Therefore, the implementation of

sustainability in the banking sector requires the integration of green financial systems, green innovation, and management commitment to achieve long-term sustainability.

Keywords: Green Banking, Green Finance, Green Innovation, Green Sustainability, Top Management Support, Systematic Literature Review.

INTRODUCTION

Environmentally damaging economic and industrial activities have led to increased carbon emissions and ecosystem degradation, creating the need for a transformation toward sustainable development. In this context, the financial sector plays a crucial role through the implementation of the green banking concept, which incorporates ecological elements into operations and financing, thereby reducing negative environmental impacts and supporting sustainable development. (Khaer & Anwar, 2023) Research shows that green banking plays a role in building a more sustainable and environmentally friendly banking system. The concept of sustainable development requires companies to focus not only on economic profit but also on environmental and social factors. In this context, green banking, green finance, and green innovation are crucial strategies to support the realization of green sustainability. (Danilevi, 2023) Green sustainability refers to an organization's capability to maintain a balance between economic development and environmental sustainability through environmentally friendly business practices. Various countries, including Indonesia, are beginning to incorporate sustainable finance policies to support the Sustainable Development Goals (SDGs) and reduce carbon emissions. (Zournatzidou, 2025).

Climate change, global warming, and environmental degradation are global issues that have prompted many industrial sectors to adopt the concept of sustainable development, including the banking sector. The banking sector plays a crucial role in supporting environmental sustainability through environmentally conscious funding, investment, and operational policies. The concept of green banking emerged as a manifestation of banks' responsibility to minimize the negative consequences of economic activities on the environment by reducing paper use, energy efficiency, digital banking, and financing sustainable projects. Research (Ojha, 2025) Studies have shown that implementing green banking can improve sustainability performance and support the Sustainable Development Goals (SDGs). Furthermore, green banking is also considered to enhance a bank's reputation and competitiveness in the long term. (Ubaidillah, Akhris, 2024).

Green banking and green finance are inseparable because they support each other in building a sustainable financial system. Green finance is a financing mechanism aimed at environmentally friendly economic activities such as renewable energy, carbon emission reduction, and sustainable investment. (Nagina, 2025) In Indonesia, the implementation of green finance is growing along with the implementation of the Sustainable Finance Roadmap by the Financial Services Authority (OJK). (Zulbetti & Muzaffirah, 2025) However, the reality is that the implementation of green finance still faces various challenges, such as low

organizational readiness, limited green innovation, and suboptimal integration of environmental policies into corporate strategies.(Nagina, 2025)Previously, it was shown that green finance has a positive impact on sustainability performance and green economic growth in the banking sector.

In addition to green banking and green finance, green innovation is a crucial factor in improving a company's green sustainability. Green innovation involves the creation of products, services, technologies, and business processes that can reduce environmental impact and increase resource efficiency.(Qing & Jin, nd)In the banking industry, green innovation is realized through digital banking, paperless transactions, environmentally friendly financial products, and technologies focused on energy efficiency. Previous research(Yousaf, 2021)Studies show that green innovation has a positive impact on corporate sustainability and environmental performance. In fact, green innovation is seen as strengthening the relationship between ESG and corporate sustainability through environmentally focused digital transformation.

The successful implementation of green banking, green finance, and green innovation is highly dependent on top management support. Top management support reflects the dedication of company leaders in providing resources, formulating sustainability strategies, and creating an organizational culture that supports the implementation of environmentally friendly policies. Top management commitment is crucial because without strong organizational commitment, the implementation of green banking and green innovation tends to be unsuccessful. Research proves that top management commitment moderates (strengthens) the positive relationship between green banking adoption practices and environmental performance, operational performance, and financial performance.(Tian, 2024.)Other research also reveals that environmental sustainability in the banking sector is greatly influenced by management's commitment to supporting green investment and the Company's environmental strategy.(Nawangarsi et al., 2021).

Although extensive research has been conducted on green banking, green finance, green innovation, and green sustainability, there are still research gaps in previous studies. First, most previous research, such as(Nawangarsi et al., 2021)Some studies have focused more on the implementation of green banking and sustainable banking in general without examining in-depth the mediating role of top management support in improving corporate green sustainability. Second, previous research has shown differing findings regarding the influence of green finance on corporate sustainability performance. Several studies have suggested that green finance and green banking can improve corporate environmental performance and sustainability.(Chen et al., 2022), while other research shows that the implementation of sustainability in the banking sector is still not optimal and requires stronger governance support and organizational strategies.(Juniati Gunawen, 2021)Third, previous research has mostly used an empirical approach in specific countries and sectors, thus not providing a comprehensive picture of the relationship between green banking, green finance, green innovation, and green sustainability from a systematic literature review perspective.(Elisa Aracil, Juan José Nájera-Sánchez, 2021)Therefore, this research is important to systematically identify, analyze, and

synthesize various previous research results so as to provide a more comprehensive understanding of the relationships between these variables.

Based on these phenomena, empirical data, and research gaps, this study aims to conduct a systematic literature review on the influence of green banking, green finance, and green innovation on green sustainability, with top management support as a mediating variable. This research is expected to provide theoretical contributions to enrich the literature on sustainability in the banking sector and provide practical contributions to financial institutions in developing effective sustainability strategies. Furthermore, this study is also expected to serve as a reference for further research in developing a more comprehensive sustainability model in the modern banking industry.

LITERATURE REVIEW

Green Banking

Green banking is a banking concept that integrates environmental aspects into operational activities, financing, investments, and business strategies to support sustainable development. Green banking focuses not only on profitability but also considers environmental sustainability through environmentally friendly policies such as paperless banking, digital banking, energy efficiency, and green project financing. Research conducted by (Fajar Adhityaa, 2023) states that green banking is a way for banks to participate in preserving the environment through financing and operational activities that take ecological factors into account. This research indicates that banks play a crucial role in encouraging entrepreneurs to conduct more environmentally conscious businesses so that business sustainability can be realized in the long term. The research findings indicate that the implementation of green banking can increase environmental awareness among business sectors that receive financing from banks. In addition, this research (Murshudli, 2023) explains that green banking is a crucial strategy for sustainable development because banks function as intermediary institutions that can direct financing toward green economic activities. The study confirms that green banking helps reduce the negative impact of economic activity on the environment through the implementation of environmental sustainability strategies and green innovation in the financial sector.

In Indonesian research, research (Ashura & Syahputri, 2023) This study shows that green banking has an impact on sustainable development banking. This study also explains that the implementation of green banking encourages the transformation of banking business practices to be more environmentally responsible through green investments and sustainable operations. (Nasution & Agustina, 2023) also explained that implementing green banking in Indonesia is an urgent need due to increasing environmental damage and global climate change. The research findings indicate that the green banking concept requires banks to consider environmental protection aspects in their operations and financing distribution.

Green Finance

Green finance is a funding system aimed at supporting environmentally friendly economic activities, such as renewable energy, energy efficiency, carbon emission

reduction, sustainable transportation, and sustainable investment. Green finance aims to achieve a balance between economic growth and environmental sustainability by investing funds in environmentally friendly projects. Research conducted by (Rahman et al., 2023) explains that green finance plays a crucial role in supporting the achievement of the Sustainable Development Goals (SDGs), particularly climate action and clean energy. The research shows that green finance plays a role in directing funds to environmentally friendly projects and promoting responsible banking practices and sustainable investment. Research by (Li & Chen, 2024) shows that sustainable finance combined with financial technology can improve the efficiency of green credit in the banking sector. The research findings indicate that green finance can improve economic benefits while simultaneously strengthening banks' sustainability performance through green financing and digital transformation.

In addition, research (Manurung et al., 2024) A study on sustainable lending at state-owned banks in Indonesia shows that banks have significant capacity to support the SDGs through sustainable financing. The study found that sustainable lending supports the establishment of a financing system that focuses more on long-term environmental and economic sustainability. (Murta et al., 2024) also indicates that sustainability is related to the domestic credit activity of commercial banks. The research findings emphasize that financial institutions that support sustainability tend to make a more significant contribution to sustainable economic development.

Green Innovation

Green innovation is innovation focused on reducing environmental impact by developing more sustainable products, services, technologies, and business processes. Green innovation aims to increase resource efficiency, reduce waste, and support corporate sustainability. (Garg & Kumar, 2024) Research shows that digital transformation in the banking sector is closely linked to triple bottom line sustainability. The research reveals that digital technology supports the banking sector in creating operational efficiencies, reducing physical resource use, and promoting sustainability through environmentally friendly technological innovation.

Research by (Siswanti et al., 2024) revealed that digital transformation and green banking impact bank financial performance. The research findings indicate that digital innovation linked to green banking can strengthen corporate sustainability and increase bank competitiveness. (Murshudli, 2023) also stated that green innovation is a crucial element in environmental sustainability strategies in the banking sector, as this innovation enables companies to develop more efficient and sustainable operations. Green innovation in the banking sector is also realized through paperless banking, mobile banking, electronic statements, and the use of digital technology that reduces energy and paper use in bank operations. The implementation of these environmentally friendly innovations is considered to improve environmental performance and company sustainability in the long term.

Green Sustainability

Green sustainability is an organization's ability to maintain a balance between economic development, environmental sustainability, and social responsibility by implementing environmentally friendly business practices. Green sustainability is a primary focus in the implementation of green banking, green finance, and green innovation. Research (Rahman et al., 2023) The study shows that green banking and green finance contribute to sustainability by funding environmentally friendly projects and reducing environmental impacts. The study underscores that sustainability can be achieved if the financial sector supports economic activities that prioritize climate action and clean energy. (Ashura & Syahputri, 2023) describes that sustainable banking development can be achieved through the consistent implementation of green banking and green investment. This research shows that banks that implement sustainability principles make a more significant contribution to sustainable economic growth.

In addition, research (Murta et al., 2024) indicates that sustainability is related to the growth of local credit markets. The research findings reveal that sustainability is not only related to environmental aspects, but also to economic stability and the continuity of financial systems worldwide. The research, conducted by (Garg & Kumar, 2024) also revealed that sustainability in the banking sector can be achieved by integrating digital technology, green banking, and environmentally friendly innovations that support the sustainability of the triple bottom line, namely profit, society, and the environment.

Top Management Support Mediation

Top management support is the commitment and assistance from organizational leaders in providing resources, formulating strategies, and creating an organizational culture that supports the implementation of sustainable and environmentally friendly practices. Support from top management is crucial for the successful implementation of green banking, green finance, and green innovation. Research (Fakhira et al., 2023) published in the International Journal of Business and Entrepreneurship revealed that top management support has a significant impact on green banking adoption. This study shows that support from company leaders plays a crucial role in creating a more effective green banking strategy by strengthening innovation, brand image, and corporate value creation. The research, conducted by (Siswanti et al., 2024) explained that the success of green banking and digital transformation is significantly influenced by management support in integrating sustainability into corporate strategy. The findings of this study indicate that management commitment supports companies in achieving better financial and sustainability performance.

In addition, research (Murshudli, 2023) emphasizes that environmental sustainability strategies require a strong commitment from top management for optimal implementation of green innovation and green banking. Without support from organizational leaders, implementing sustainability policies consistently across company operations is often difficult. Top management support also serves as a mediating variable because it can strengthen the link between green banking, green

finance, and green innovation and green sustainability. The stronger the leadership's support for sustainability strategies, the greater the company's chances of achieving long-term environmental and business sustainability.

RESEARCH METHODOLOGY

This study uses the Systematic Literature Review (SLR) method to identify, evaluate, and synthesize various previous studies related to the influence of green banking, green finance, and green innovation on green sustainability with the role of top management support. The SLR approach was chosen because it is able to provide a systematic, objective, and comprehensive understanding of research developments on the topic of sustainability in the banking sector. The literature search strategy was carried out using an academic database in the form of Google Scholar with a combination of keywords: "Green Banking" AND "Green Finance" AND "Green Innovation" AND "Green Sustainability" AND "Top Management Support". These keywords were used to obtain articles relevant to the research focus.

Initial Identification

In the initial stage, the literature search process resulted in 148 documents consisting of international journal articles, proceedings, and empirical research related to green banking, green finance, green innovation, green sustainability, and top management support in the banking sector and corporate sustainability.

Year Filtering

Next, we filtered the articles based on publication year, covering the period 2021–2025, to ensure that the data and discussions were up-to-date, reflecting current developments in sustainability issues. After the year filtering process, the number of articles was reduced to 74.

Inclusion Criteria

This study used several inclusion criteria to ensure the selected articles were of good academic quality and relevant to the research objectives. The inclusion criteria used included:

1. Articles are published in reputable international journals and are peer-reviewed.
2. Articles are published in English.
3. Articles published in the period 2021–2025.
4. The article discusses at least two main variables, namely green banking, green finance, green innovation, green sustainability, or top management support.
5. Articles use empirical, quantitative, qualitative, or systematic literature review approaches relevant to the sustainability of the banking sector.
6. Articles are fully accessible (open access) so that the validity and content of the research can be thoroughly examined.

Data Extraction and Analysis

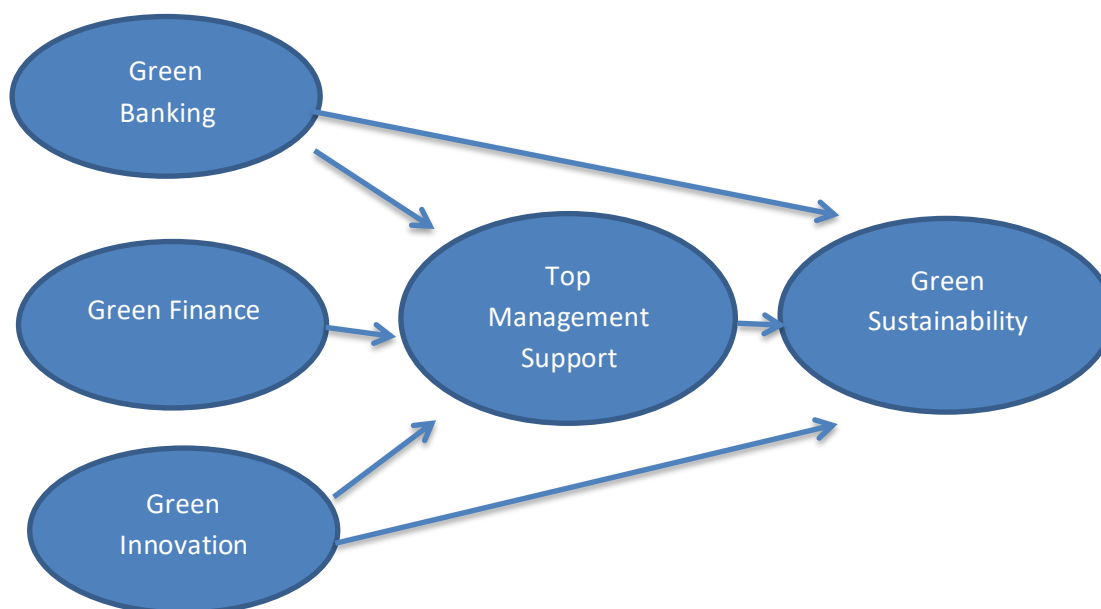
Based on the selection process and quality evaluation of the articles, 25 final articles were obtained with the highest level of relevance to the relationship between

green banking, green finance, green innovation, green sustainability, and top management support. These articles were then analyzed using content analysis techniques to identify: the main research concepts, methods used, relationships between variables, research results, research gaps, and theoretical and practical implications related to the sustainability of the banking sector.

The analysis was conducted systematically to produce a comprehensive literature synthesis on how the implementation of green banking, green finance, and green innovation can improve green sustainability with the support of top management support as an organizational supporting factor.

DISCUSSION

Based on an analysis of 25 international journals, there are several significant common threads regarding the relationship between green banking, green finance, green innovation, and green sustainability with the mediating role of top management support.



The Influence of Green Banking on Green Sustainability

Green banking has a positive influence on green sustainability because the application of this principle supports financial institutions in incorporating environmental elements. Green banking encourages financial institutions to minimize their negative impact on the environment by utilizing digital technology, reducing paper use, promoting energy efficiency, and funding environmentally friendly projects. The implementation of green banking creates a more efficient and sustainable banking system. Digital banking and paperless banking can reduce the use of physical resources, thereby supporting initiatives to reduce carbon emissions and environmental pollution. Furthermore, green financing provided by banks to environmentally conscious companies also contributes to increasing sustainable development.

Green banking not only provides environmental benefits but also economic benefits for banking institutions. Implementing green banking can improve a company's image, strengthen public trust, and enhance the bank's long-term competitiveness. Therefore, the more effective the implementation of green banking, the higher the company's level of green sustainability.

The Influence of Green Finance on Green Sustainability

Green finance has a positive impact on green sustainability because the green financing system can support environmentally friendly and sustainable economic activities. Green finance supports companies in obtaining funding for initiatives focused on carbon emission reduction, renewable energy, energy efficiency, and environmentally friendly technological innovation. Through green finance, financial institutions can direct investments toward economic activities that benefit the environment and society. This contributes to the creation of more sustainable economic growth without disrupting the environmental balance. Furthermore, green finance also contributes to the achievement of sustainable development through more responsible financing.

The implementation of green finance helps companies improve environmental performance and sustainability performance by encouraging them to adopt more environmentally friendly business practices. However, the success of green finance implementation depends heavily on organizational readiness, government regulations, and the company's sustainability strategy. Therefore, green finance plays a crucial role in enhancing green sustainability by strengthening the link between the financial sector and sustainable development.

The Influence of Green Innovation on Green Sustainability

Green innovation has a positive impact on green sustainability because it helps companies create more environmentally friendly technologies, products, and business processes. Green innovation enables companies to increase resource efficiency while reducing negative environmental impacts. In the banking sector, green innovation is implemented through digital banking, mobile banking, paperless transactions, and the use of technologies that support energy efficiency. These innovations contribute to reducing paper use, lowering operational costs, and increasing the efficiency of banking services.

Green innovation also helps companies address the challenges of climate change and global demands for sustainability. Companies that consistently implement environmentally friendly innovations tend to have better sustainability performance and are able to increase their long-term competitiveness. In addition to its environmental impact, green innovation also provides economic benefits by increasing operational efficiency and creating added value for the company. Therefore, the greater the implementation of green innovation, the greater its contribution to green sustainability.

Green Banking, Green Finance, and Green Sustainability Regarding Green Sustainability, the Mediation Role of Top Management

The success of implementing green banking, green finance, and green innovation in enhancing green sustainability is greatly influenced by top management support. Top management support is crucial because sustainability requires organizational commitment, the provision of resources, and company policies that support environmentally friendly business practices. Top management support helps companies develop sustainability strategies, build an environmentally conscious organizational culture, and ensure the consistent implementation of green practices. Support from company leaders also encourages the creation of green innovation and more effective digital transformation in company operations.

Furthermore, top management support acts as a mediating variable because it strengthens the relationship between green banking, green finance, and green innovation and green sustainability. The stronger the management's commitment to sustainability, the greater the company's success in achieving long-term environmental and business sustainability.

Thus, green sustainability is not only influenced by the implementation of green technology and financial systems, but also by management's commitment and support in implementing the company's overall sustainability strategy.

CONCLUSION AND SUGGESTIONS

Conclusion

Based on the results of a Systematic Literature Review (SLR) of 25 international journal articles from 2021–2025, it can be concluded that green banking, green finance, and green innovation have a positive influence on green sustainability in the banking sector and modern businesses. These three variables are important strategies in supporting sustainable development through reducing environmental impacts, efficient use of resources, and increasing environmentally friendly business practices.

Green banking contributes to creating a more sustainable banking system through the implementation of digital banking, paperless banking, energy efficiency, and financing green projects. Green finance helps direct investment and financing toward economic activities that support environmental sustainability, such as renewable energy and carbon emission reduction. Meanwhile, green innovation encourages companies to create more efficient and environmentally friendly technologies, products, and business processes, thereby improving long-term corporate sustainability.

The study also shows that top management support plays a crucial role as a mediating variable in strengthening the relationship between green banking, green finance, and green innovation and green sustainability. Top management support helps companies provide resources, develop sustainability strategies, and build an organizational culture that supports the consistent implementation of green business practices. Therefore, the success of green sustainability is not only influenced by the implementation of green finance and innovation systems, but also by organizational commitment and management support in implementing the company's overall sustainability strategy.

Suggestion

a. For Banking Practitioners:

Banks need to increase the implementation of green banking, green finance, and digital innovation to support environmental sustainability and improve corporate competitiveness.

b. For Regulators:

Regulators are expected to strengthen policies and oversight related to sustainable finance so that the implementation of sustainability in the banking sector runs more optimally.

c. For Future Researchers:

Further research is recommended to expand the research objects and variables so that the study of green sustainability becomes more comprehensive.

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