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The Development of Green Innovation: A Bibliometric Analysis

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Abstract: This study conducts This study aims to (1) examine the evolution of green innovation research, (2) evaluate the objectives and key findings of recent studies, and (3) identify leading authors in the field. From an initial pool of 2,830 Scopus-indexed documents, 101 relevant articles were selected for analysis using VOSviewer software to construct bibliometric networks. The findings reveal significant growth in publications, peaking in 2022. Keyword co-occurrence analysis identified 86 items grouped into 9 distinct thematic clusters. Strong conceptual relationships were found between green innovation and environmentally friendly innovation processes, sustainability strategies, and environmental performance. The analysis highlights practical implications for reducing industrial environmental impacts, enhancing corporate competitiveness through green practices, and improving organizational reputation via sustainable development initiatives. This research provides a valuable foundation for scholars and practitioners, offering insights for future studies in green innovation and sustainable business practices.

Keywords: Green Innovation, Environmentally Friendly Innovation, Bibliometric Analysis

Introduction

In recent years, the increasing attention from consumers, governments, and society towards environmental health has underscored the importance of green innovation among industrial sectors in developing countries (Novitasari & Agustia, 2021) (Singh et al, 2016). As the world grapples with challenges such as climate change, pollution, and resource depletion, the role of innovation in driving environmentally-friendly practices has gained significant attention (Chen et al, 2006) (Mondal & Giri, 2022). This article aims to provide a comprehensive overview and bibliometric analysis of the role of environment-friendly innovation, highlighting its significance in addressing global environmental issues. Innovation has long been recognized as a key driver of economic growth and societal progress (Singh et al, 2016). However, the focus on environment-friendly innovation goes beyond traditional notions of technological advancements and economic prosperity (Ahmed et al, 2023). It encompasses a broader perspective that emphasizes the development and adoption of innovative solutions that minimize negative environmental impacts and promote ecological sustainability (Lu et al, 2020) (Mahsina & Agustia, 2023).

It should be noted that national economic development is built through booming industrial activities (Stel et al, 2005). In essence, (Abu Seman et al, 2019) (Ahmed et al, 2023)

provides empirical evidence to support the notion that innovation at the firm level plays a significant role in driving economic growth. The implementation of green innovation offers various benefits, including pollution prevention, facilitating waste recycling, and promoting conservation of non-biodegradable energy resources (Lu et al, 2020). Furthermore, green technology can also contribute to achieving sustainable development (Gunasekaran et al, 2017). Organizations continuously strive to create economically valuable products (Ahmed et al, 2023). Alongside this, decision-makers within organizations always consider environmentally-friendly products and processes, which must meet environmental sustainability standards (Lu et al, 2020).

It is of utmost importance for organizations and communities; investigations in this domain have particularly witnessed an increasing trend in recent years (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013). Moreover, environmental degradation has evolved into a major threat to human survival (Karimi Takalo et al, 2021). A significant number of organizations and communities have embraced GI as a strategy to achieve environmental protection and economic growth(Karimi Takalo et al., 2021). Environmental sustainability and economic profitability also hold significant importance(Fliaster & Kolloch, 2017). Through green innovation, organizations can lead in achieving sustainable competitive advantage (Hur et al, 2013) (Mahsina & Agustia, 2023).

Currently, green innovation (GI) has emerged as a crucial strategy for businesses to enhance their market presence and ensure long-term viability (Karimi Takalo et al, 2021) (Novitasari & Agustia, 2023). Effective implementation of GI practices not only strengthens market position and attracts customers but also enables the provision of environmentally friendly services, leading to competitive advantage (Karimi Takalo et al, 2021). Consequently, the various benefits of GI have prominently positioned it on the managerial agendas of diverse organizations and garnered significant attention from researchers (Karimi Takalo et al, 2021)

Green innovation or eco-innovation can be defined as a process that aims to create new production and technology with the purpose of reducing environmental risks (Lin et al., 2019), such as pollution and negative impacts from resource utilization (e.g., energy) (Bodas Freitas et al, 2017). Innovation has been divided into product/service innovation and process innovation. The ultimate goal of product/service innovation is to enhance the functionality of products and services for customers and clients (Karimi Takalo et al, 2021). Therefore, GI serves as a vital tool that can assist communities, organizations, and companies in achieving environmental sustainability and plays a crucial role in attaining competitive advantage (Chu et al, 2019) and improving economic performance, addressing environmental and sustainability challenges (Mondal & Giri, 2020).

On the other hand, GI prevents opportunities for imitation (Albort-Morant et al., 2018). Mentioning these factors adds to the significant impact of these factors within organizations, companies, and even across communities (Karimi Takalo et al, 2021). However, the success of organizations in terms of innovation requires the acceptance of green methods (Huang & Li, 2017). Nonetheless, there are challenges faced in the implementation of these innovation strategies. Green innovation (GI), including environmentally friendly technologies and environmental issues (Gerstlberger et al, 2014),

faces several challenges that need to be overcome. These challenges include the risk of implementation failure (Lee & Kim, 2011), high research and development costs (Kunapatarawong & Martínez-Ros, 2016), difficulties in collecting relevant data (Schweitzer, 2015), increased workload and job dissatisfaction among employees (Iranmanesh et al., 2017). limited funding for green project implementation (Wakeford et al., 2017), and negative impacts from external knowledge (Zimmerling et al, 2017).

Moreover, the lack of risk-taking in organizations (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013), inadequate understanding of green initiatives (Ebrahimi & Mirbargkar, 2017), and inefficient government support (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013) can also hinder the implementation of GI at both the organizational and societal levels (Mondal & Giri, 2022). These challenges are factors that can influence the direction and progress in implementing GI. However, with the awareness of the importance of environmental sustainability and the long-term benefits that can be derived from GI, organizations and society are expected to overcome these challenges and move towards broader and successful implementation of green innovation. This review article aims to explore various dimensions of environment-friendly innovation. By examining various scientific literature, research articles, and patents, this study aims to identify trends, patterns, and key themes that have emerged in the field of environment-friendly innovation. Specifically, this article will focus on the following questions:

Q1: To what extent has research on green innovation developed in the past five years using the Scopus database?

Q2: What are the objectives, and outcomes of research in green innovation over the past five years?

Q3: Who are top authors in this field??

Therefore, this article aims to highlight the importance of environment-friendly innovation in addressing pressing environmental issues. By examining the existing literature and utilizing bibliometric analysis, this study will provide a comprehensive overview of this field, helping shape future research agendas and policies that focus on environment-friendly innovation. The research findings have the potential to inspire and guide individuals, organizations, and policymakers in their efforts to embrace and promote environment-friendly innovation for a greener world.

Methodology

This study employs bibliometric techniques to analyze a collection of scientific articles and related publications on environment-friendly innovation. The dataset includes articles from the Scopus database, covering a five-year time span. Bibliometric analysis involves a systematic approach to selecting articles based on keywords in their titles or abstracts. The filtered results are then stored in CSV file format and analyzed using VOSviewer software. This research utilizes a systematic approach to conduct bibliometric analysis. According (Wijaya & Qamari, 2024), the literature review process consists of five distinct steps. Here are the steps involved in conducting a literature review. We examined the articles in the context of four themes: trends and publication developments, research objectives, methodologies, and study results; limitations exist in the research; and the

integration of Green Innovation to emphasize important issues in this work to validate the framework, model relationships, processes, and strategies.

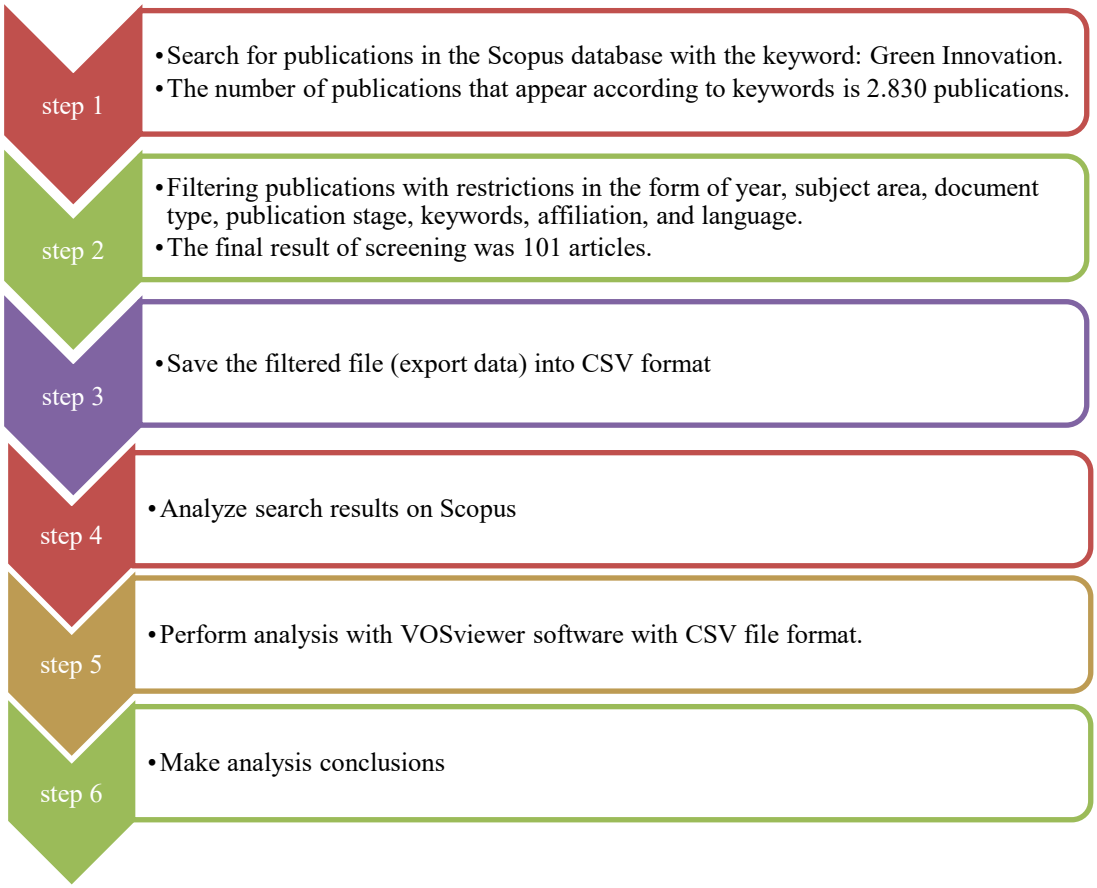

Figure 1. Research methods.

Result and Discussion

A. Objectives, And Outcomes

Several studies have been conducted by various researchers in the field of green supply chain management (GSCM) and green innovation and their impact on firm performance. In the article authored by (Novitasari & Agustia, 2021), the research aimed to examine the relationship between GSCM and firm performance, with green innovation as a mediator. The research findings indicate that GSCM has a positive influence on green innovation, and green innovation also has a positive impact on firm performance. Furthermore, the study revealed that green innovation mediates the relationship between GSCM and firm performance, suggesting that GSCM can enhance green innovation, which, in turn, enhances firm performance.

In 2023 (Novitasari & Agustia, 2023) conducted another study with the aim of testing the hypothesis that competitive advantage serves as a mediator in the relationship between green innovation and firm performance. Their research results demonstrated that green innovation has a positive impact on competitive advantage, which can provide companies with advantages in terms of pricing, quality, and services. Another study by Mondal and Giri (Mondal & Giri, 2020)on pricing and the collection of used products in a closed-loop

supply chain found that the optimal strategies depend on the level of greenness and demand that is dependent on effort. The authors also found that the optimal collection strategies depend on the level of greenness and the associated collection costs. In 2022, (Mondal & Giri, 2022)conducted another study investigating the impact of retailer fairness behavior and product recycling on the performance of an environmentally friendly supply chain. The research results indicated that retailer fairness behavior significantly influences the performance of the supply chain, while product recycling has a positive impact on supply chain performance.

Additionally, a study conducted by Abu Seman, Govindan, Mardani, Zakuan, Mat Saman, Hooker, and Ozkul (2019) (Abu Seman et al., 2019), examined the influence of green supply chain management on environmental performance, with green innovation as a mediator. The results showed that green supply chain management has a positive impact on green innovation and environmental performance, and green innovation mediates the relationship between green supply chain management and environmental performance.

Other research was also carried out by (Imran et al, 2021) This research aims to develop and test a theoretical model that empirically tests how green organizational culture influences organizational performance. In addition, it investigates and statistically explores the study model and its mediating role on environmental performance and green innovation, which previously received little attention. Furthermore, the findings reveal that environmental performance and green innovation fully mediate the relationship between green organizational culture and organizational performance. However, this study has several limitations that point to future research directions. The most significant weakness of this study is that the data was collected only from Malaysian industries, making generalization difficult. Additionally, cross-sectional data add further limitations. However, by discussing organizational performance, which has not been researched empirically, this research adds to the current literature on green organizational culture, environmental performance, and green innovation. In addition, this research also provides a new theoretical explanation of this relationship by understanding the mediating role of environmental performance and green innovation.

In Bataineh. (2023) conducted a study to investigate the extent to which organizational innovation drives environmental innovation at the company level. The study aimed to examine whether environmental innovation is affected when companies adapt their environmental strategies to align with their organizational structure. Additionally, the study aimed to explore whether there is a significant disparity in environmental innovation between companies in dirty and clean sectors. The main findings confirmed that the organizational innovation variable studied does drive environmental innovation and that companies in dirty sectors are more likely to engage in environmental innovation compared to companies in cleaner sectors. The study conducted by (Bataineh et al., 2023) contributes to the understanding of the relationship between organizational innovation and environmental innovation. The study highlights the importance of organizational innovation in driving environmental innovation and provides insights into the factors that influence environmental innovation in different sectors. The findings of this study can be used to guide companies in developing effective environmental strategies that align with their organizational structure. Additionally, the study can serve as a basis for future

research on the relationship between organizational innovation and environmental innovation.

Then on the research carried out by (Shuwaikh et al, 2023) Green innovation has been found to have a positive impact on both environmental and financial performance in companies that prioritize sustainability and environmental protection. Additionally, research has shown that green innovation mediates the relationship between environmental and financial performance. The following are some of the key findings from previous studies: Green innovation activities have a significant effect on a company's environmental performance and competitive advantage. Eco-innovation strategies have a positive impact on cost performance and economic performance. ESG performance can influence corporate green innovation, and good ESG performance can have positive economic consequences. Based on these findings, it can be suggested that green innovation is a profitable long-term strategy that can positively influence a firm's environmental and financial performance. By adopting green innovation practices, companies can improve their environmental performance, strengthen their competitive advantage, and enhance their reputation with green investment and development. Additionally, companies that prioritize ESG performance can benefit from positive economic consequences. Overall, the findings of these studies can help guide companies in developing effective green innovation strategies that align with their organizational goals and values.

In Lin. (2019) conducted a study to test whether the size of a company affects the impact of green innovation strategy on corporate financial performance in the automotive sector. The research findings revealed that company size significantly influences the impact of the green innovation strategy on corporate financial performance. Larger companies are more likely to benefit from green innovation strategies, such as increased production efficiency, reduced operational costs, and increased market share. The findings of this study suggest that the impact of green innovation on corporate financial performance may vary depending on the size of the company. Small companies may have different investment returns compared to large companies, and they may be more likely to seek variation and visibility to access better resources. Additionally, the findings suggest that the intensity of market resources, market turmoil, and technological turn oil can influence the relationship between green innovation and financial performance of the company. Overall, the findings of this study can help guide companies in developing effective green innovation strategies that align with their organizational goals and values. By considering the impact of company size and other contextual factors, companies can develop strategies that are tailored to their specific needs and circumstances. Additionally, the findings can help researchers and practitioners better understand the complex relationship between green innovation and corporate financial performance.

B. Publication Per Year

The evolution of publications about the role of Green Innovation over the last 5 years, as depicted in Figure 2, is very interesting. Figure 2 depicts a continuing upward trend from 2019, peaking in 2022. before declining in 2023. Remarkably, the COVID-19 pandemic from 2019 to 2021 did not result in a decline in publications.

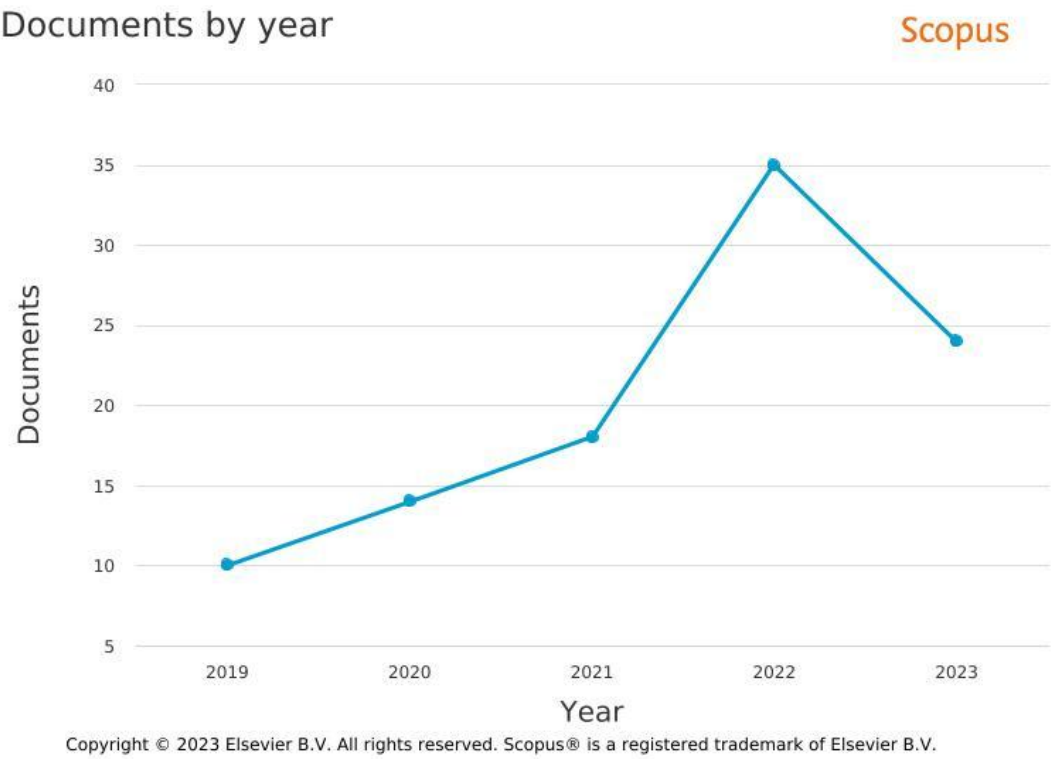

Figure 2. Annual Publications.

C. Documents By Affiliation

Based on Figure 3, it is evident that green innovation experienced the highest increase in publication count during the last 5-year period, with 101 publications. Universitas Airlangga ranked first with 6 articles, followed by 6 educational institutions, namely University of Southampton, Parthenope University of Naples, Universiti Putra Malaysia, Sapienza Università di Roma, University of Jyväskylä, and Universitas PGRI Madiun, each contributing three publications, securing the second position. The findings of this analysis suggest that Universitas Airlangga is a prominent contributor to research on green innovation. The university's strategic initiative called SMART, which stands for Sustainable education for all, Meaningful research and community services, Advancing innovation, enterprising, and industry linkages, Responsive and lean management, and Topping up resources utilization, reflects its commitment to promoting sustainable development and innovation. The university's efforts to improve the relevance and eligibility of graduates through its "Sustainable Education for All" program can also contribute to the development of green innovation practices.

The contributions of other educational institutions, such as University of Southampton, Parthenope University of Naples, Universiti Putra Malaysia, Sapienza Università di Roma, University of Jyväskylä, and Universitas PGRI Madiun, also highlight the global interest in green innovation practices. The findings of this analysis can help guide future research efforts and ensure that resources are allocated to areas that are most in need of attention. By continuing to explore the potential of green innovation practices, researchers

and practitioners can help promote sustainable development and create a more environmentally friendly future.

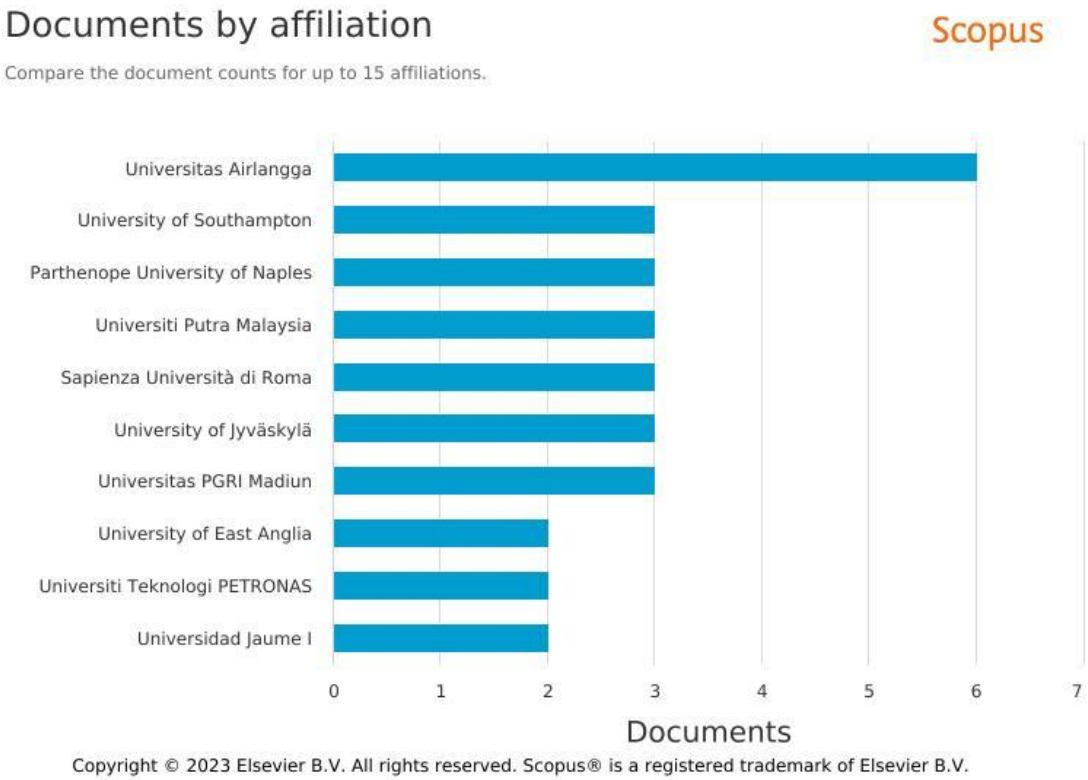

Figure 3. Annual Publications

D. Documents By Author And Country

Figure 4 displays the top 10 authors with the highest number of publications on the topic of environmentally friendly innovation. Agustia, Dian, an Indonesian author, emerges as the leading contributor according to the Scopus database, with 55 publications. Her works have been cited in 269 documents. Next is Novitasari, Maya, another Indonesian author. Following them is Giri, B.C., an Indian author, who has produced 205 documents cited in 6,554 different publications. **Figure 5** classifies the relevant research publications by country, highlighting those that have made significant contributions. China, with 26 documents, is recognized as the top-ranking country, followed by the United Kingdom with 20 documents, and Italy in third place with 15 documents.

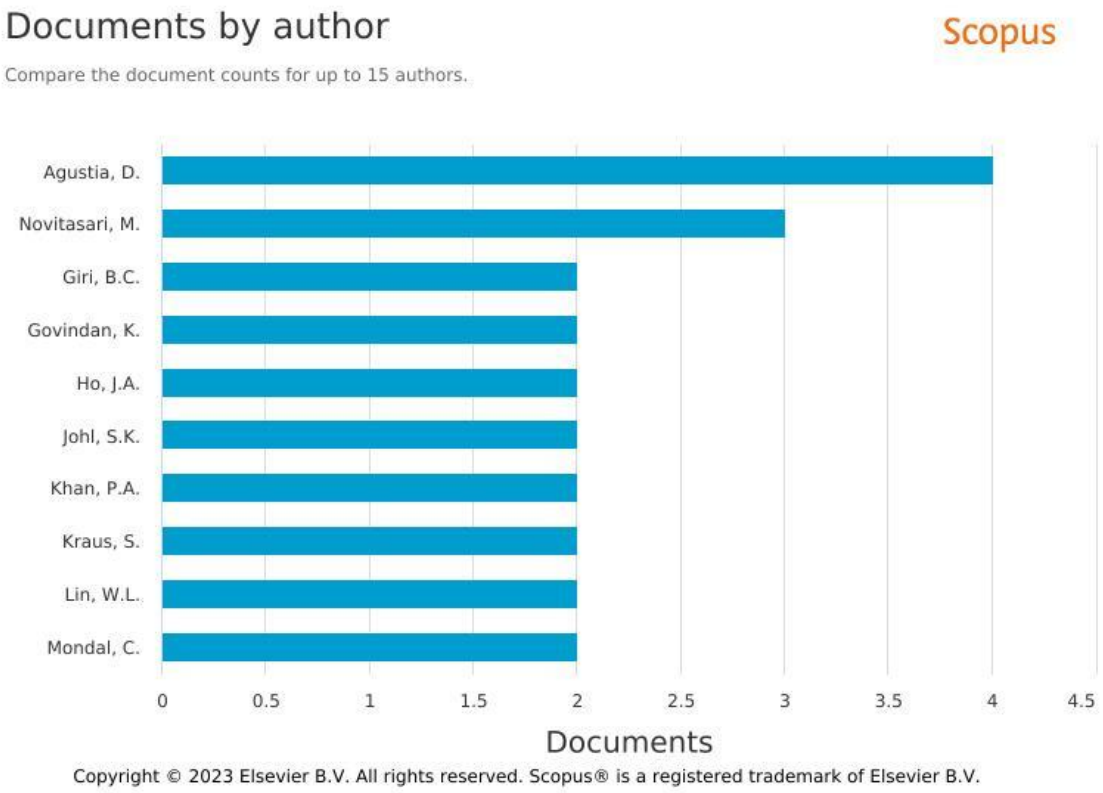

Figure 4. Documents by author

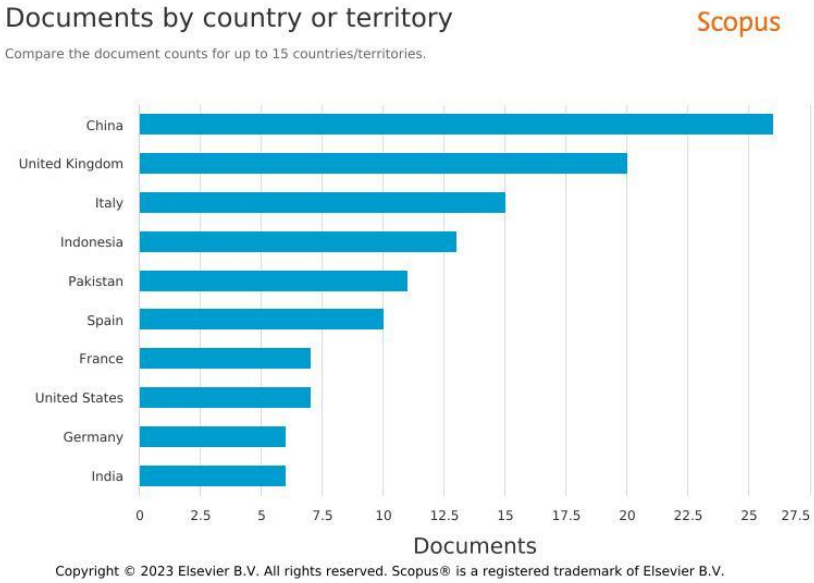

Figure 5. Documents by county

The findings of this study indicate that environmentally friendly innovation is a globally compelling topic, with contributions from authors and countries worldwide. The leading authors and countries identified in this study provide insights into key players in the field of environmentally friendly innovation and can guide future research efforts. Furthermore, these findings suggest that environmentally friendly innovation is a complex, multifaceted concept requiring a holistic approach. By continuing to explore the potential

of environmentally friendly innovation practices, researchers and practitioners can help advance sustainable development and foster a greener future.

E. Documents Per Year By Source

Figure 6 provides an overview of the publications on various topics during the 5-year period, and the majority of publications come from various sources. The Journal Of Cleaner Production ranks first with 13 publications, followed by Business Strategy And The Environment with 11 publications. Technological Forecasting And Social Change contributed to 9 publications, and Journal Of Innovation And Knowledge with 4 publications. The findings of this analysis suggest that the Journal Of Cleaner Production and Business Strategy And The Environment are the most prominent sources of publications on green innovation. These journals may be a useful resource for researchers and practitioners who are interested in exploring the latest developments in the field of green innovation. Additionally, the findings of this analysis can help guide future research efforts and ensure that resources are allocated to areas that are most in need of attention. By continuing to explore the potential of green innovation practices, researchers and practitioners can help promote sustainable development and create a more environmentally friendly future.

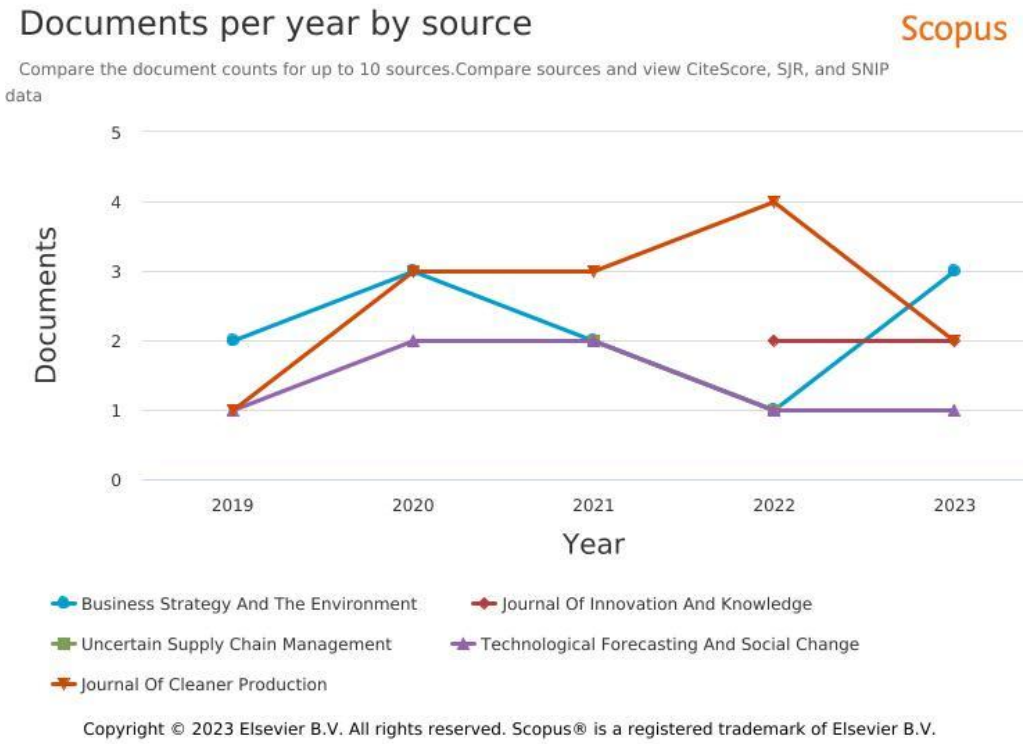

Figure 6. Documents by source

F. Co-Occurrence Of Keywords

Based on the VOSviewer analysis, the co-occurring event networks visualization of keywords is presented in Figure 7. The visualization displays 86 items, which are divided into 9 clusters, each represented by a different color. Cluster 1 consists of 19 components,

including corporate social responsibility, environmental management, environmental performance, environmental strategy, and green manufacturing. Cluster 2 includes 19 different topics, such as green innovations, green products, green technology, and green entrepreneurship. Cluster 3 consists of fifteen items, including corporate financial performance, corporate strategy, developing countries, environmental economics, and environmental governance. The VOSviewer analysis provides a useful tool for visualizing bibliometric networks and identifying the main areas of research in a particular field. The visualization of co-occurring event networks based on keywords can help researchers identify the main themes and trends in research on green innovation. The clusters identified in the analysis can provide insights into the different areas of research within the field and help researchers identify potential areas for future research. Overall, the VOSviewer analysis can help researchers gain a better understanding of the research landscape in the field of green innovation and guide future research in this area.

G. Co-Occurrence Of Keyword: Information System

Visualization of the co-occurrence network based on the keyword "Green innovation" reveals various relationships according to the analysis carried out with VOSviewer, as shown in Figure 8. It has been noted that the term "green innovation" is connected to several different things. Green innovation, green innovation process, green innovation strategy and environmental performance are all recognized as having strong network links. The network also shows links to other things like green competitive advantage, and environmental innovation.

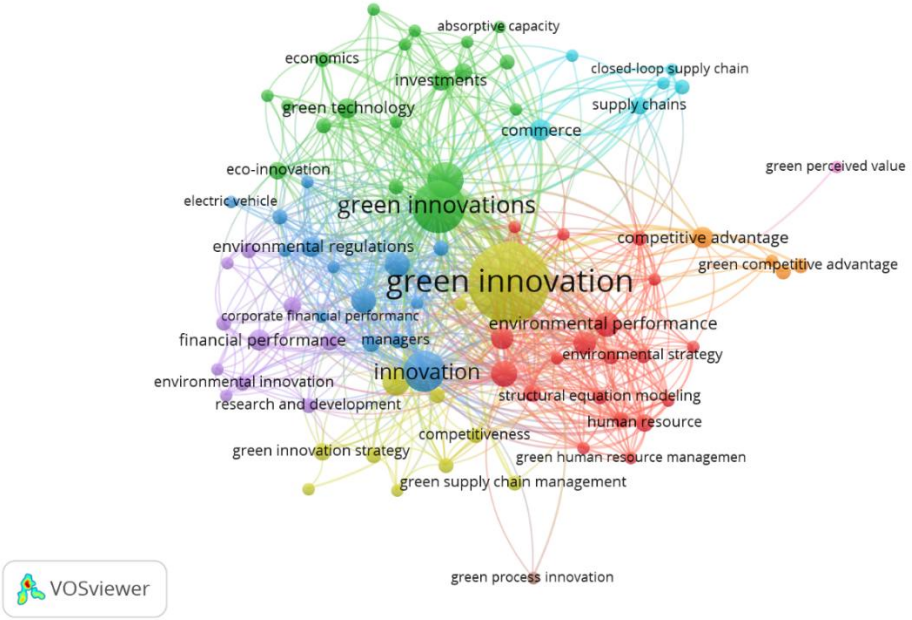

Figure 7. Network visualization of co-occurrence based on keyword

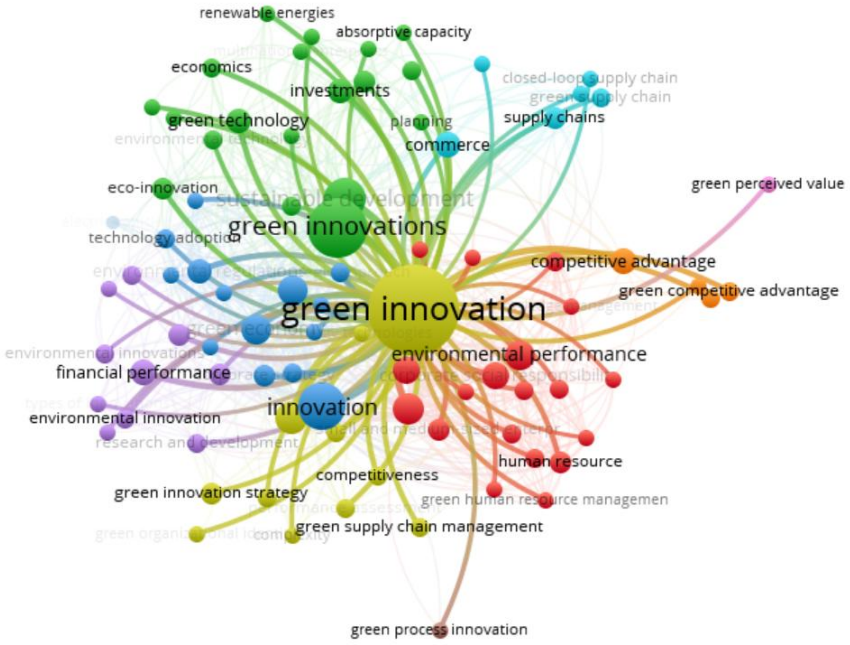

Figure 8. Network visualization of co-occurrence based on keyword: Green Innovation

H. Overlay Visualization Of Green Innovation

Figure 9 provides an overview of the historical development of research on green innovation over the past five years, as analyzed using VOSviewer. The visualization displays 86 items, with darker tones indicating older publications and lighter tones indicating more recent publications.

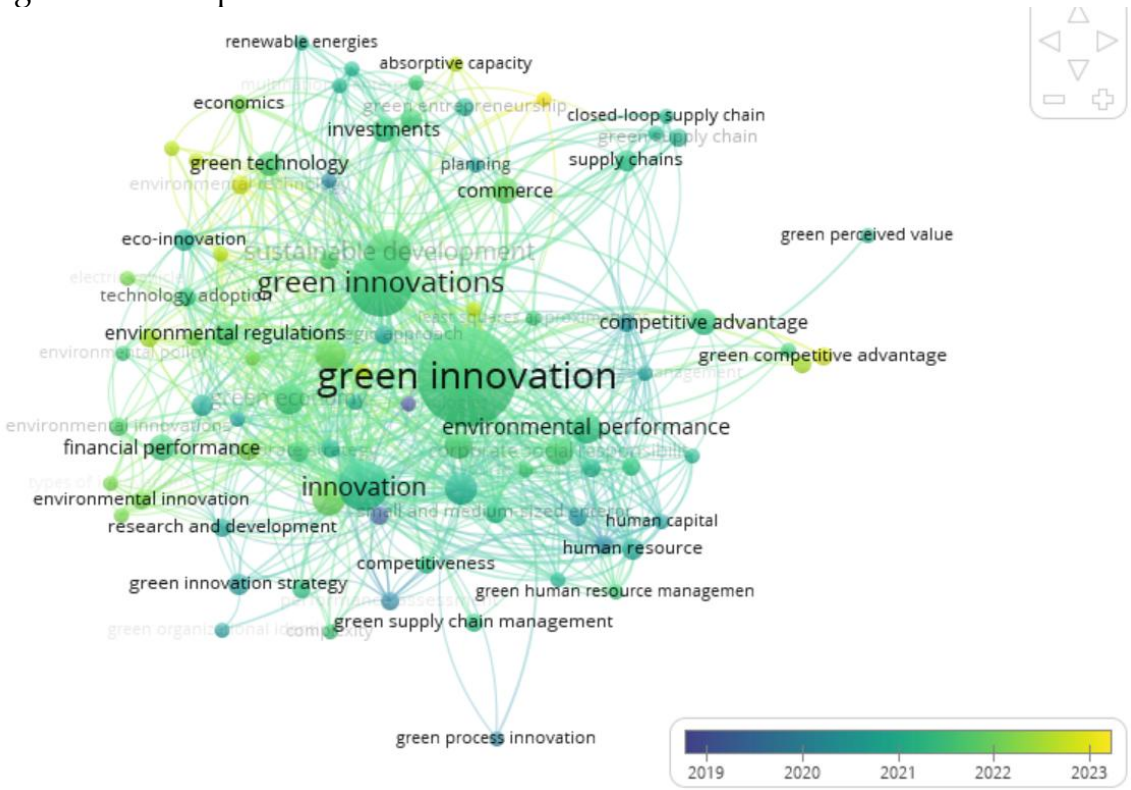

Figure 9. Overlay visualization of green innovation 2019-2023.

The results show that a large number of publications have been produced during this time period. Publications created between 2022 and 2023 are shown in yellow. The visualization also identifies nine clusters, each represented by a different color. Cluster 1, represented in blue, includes 19 components such as corporate social responsibility, environmental management, environmental performance, environmental strategy, and green manufacturing. Cluster 2, represented in red, includes 19 different topics such as green innovations, green products, green technology, and green entrepreneurship. Cluster 3, represented in green, consists of fifteen items including corporate financial performance, corporate strategy, developing countries, environmental economics, and environmental governance. The overlay view of the historical development of research on green innovation provides a useful tool for visualizing the trends and themes in research on this topic. The visualization can help researchers identify the main areas of research within the field and guide future research in this area. Additionally, the visualization can provide insights into the different areas of research within the field and help researchers identify potential areas for collaboration and interdisciplinary research.

I. Item Density Visualization Of Green Innovation

Figures 10 and 11 provide a density visualization that shows the emphasis and distribution of research within an organization. These visuals can help identify under-explored study areas. Lighter nodules signify areas that have been thoroughly explored, while darker nodules signify areas that have not been thoroughly investigated. The use of density visualization can be a powerful tool for identifying gaps in research and areas that require further investigation. By analyzing the distribution of research within an organization, researchers can identify areas that have been thoroughly explored and areas that require further investigation. This can help guide future research efforts and ensure that resources are allocated to areas that are most in need of attention. For example, in the medical field, density visualization can be used to identify areas of the body that have been thoroughly studied and areas that require further investigation. This can help guide research efforts and ensure that resources are allocated to areas that are most in need of attention. Overall, the use of density visualization can help researchers gain a better understanding of the research landscape and guide future research efforts

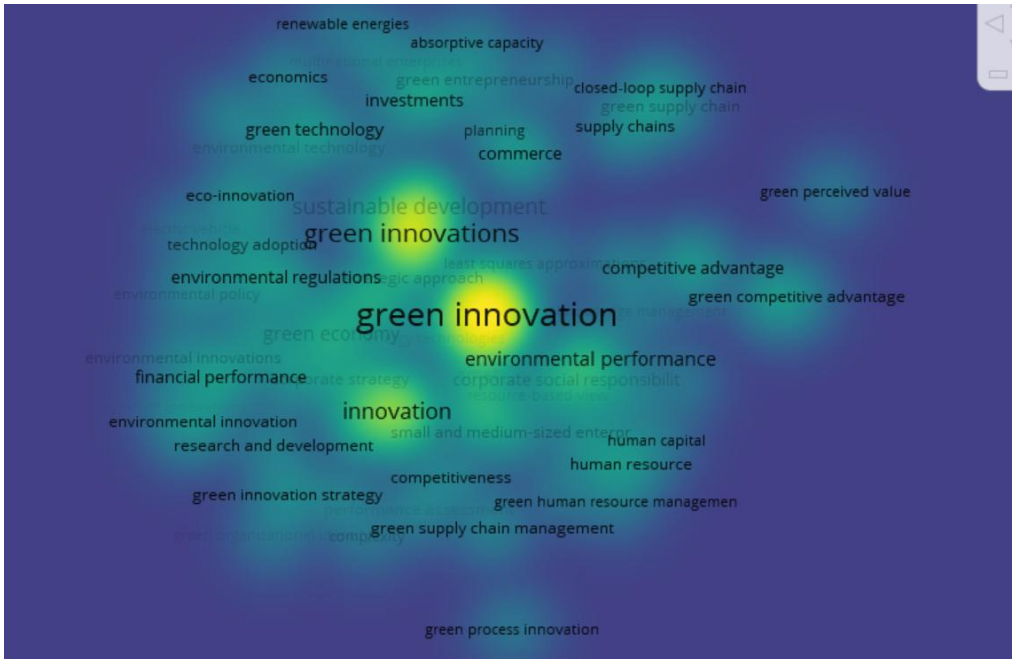

Figure 10. Item density item density visualization of green innovation publications 2019-2023.

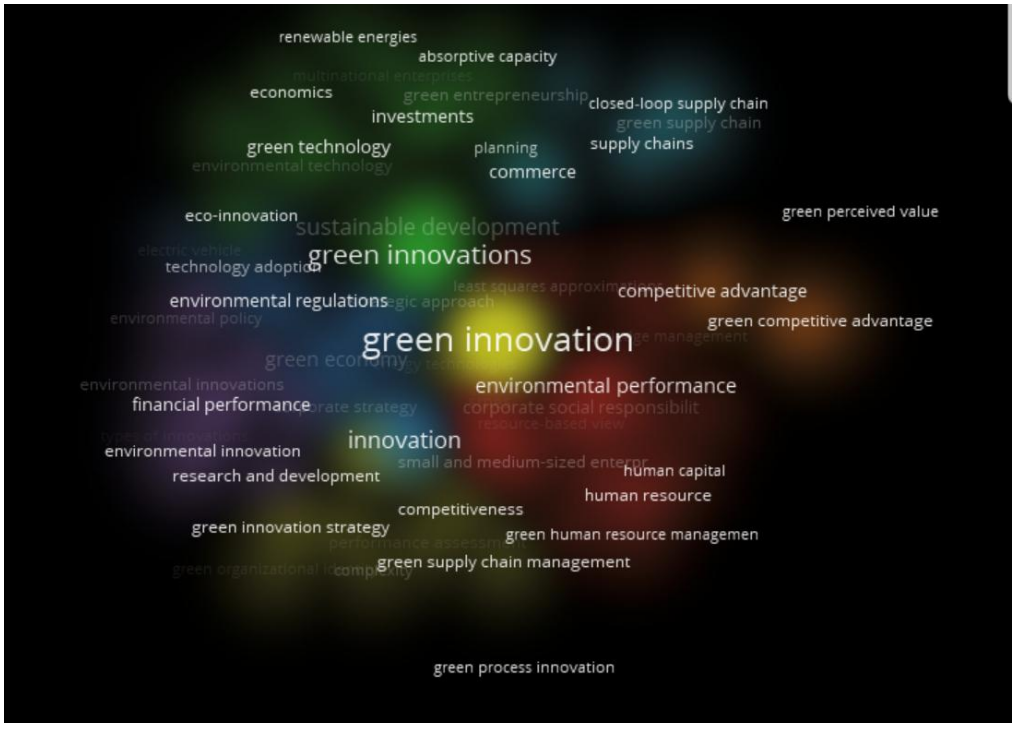

Figure 11. Cluster Density visualization of green innovation publications 2019-2023

In the figure above, it can be seen that there are still many areas for research. Here some research opportunities are defined: Existing studies are mainly related to various industries and manufacturing industries and only a few study Green Innovation in the service sector. Therefore, more attention should be paid to the study and development of new green services. This is an area that could be examined in future research. By reviewing the articles in this study, only a few articles were found about the positive impact of Green

Innovation on other fields. This includes: the positive impact that GI has on work in organizations and corporations, the implementation of various Green Innovation projects in the field of Green Innovation in organizations and companies. Therefore, future research will be driven on the interaction between external knowledge sharing practices and other organizational characteristics, especially support from senior organizational managers to better understand the potential of green innovation.

Discussion

Green innovation has become increasingly important to businesses, organizations, and society as a whole. As a result, there have been many studies on green innovation evolution throughout 2019 to 2023. Research on green innovation is widely read, and there are many barriers and limitations to its application, as described by (Karimi Takalo et al., 2021). This study advances the theory that research explores important issues by conducting a literature review and analysis of the literature on papers published from 2019 to 2023 in this field, with the aim of presenting green innovation practice from a holistic perspective and analyzing learning in previous years. 101 green innovation-related papers were carefully selected for this investigation. Articles are used in the main feature set.

Green innovation practices have a significant impact on environmental and organizational performance. Stakeholders' views on green innovation practices and their consequent effect on environmental and organizational performance have been investigated in several studies. Studies have also examined an increase in awareness, the general public, and stakeholder pressure linked to green environmental issues. Green innovation practices' main objectives are to minimize environmental hazards resulting from industrial manufacturing, strengthen the corporate competitive advantage, and improve the corporation's reputation with green investment and green development. Green innovation can be described as the fundamental business principle that highlights environmental ethics. It can help the corporation to improve its reputation with green investment and green development.

Conclusion

In conclusion, green innovation practices have become increasingly important to businesses, organizations, and society as a whole. Research on green innovation is widely read, and there are many barriers and limitations to its application. Several studies have investigated stakeholders' views on green innovation practices and their consequent effect on environmental and organizational performance. The main objectives of green innovation practices are to minimize environmental hazards resulting from industrial manufacturing, strengthen the corporate competitive advantage, and improve the corporation's reputation with green investment and green development. Green innovation practices have three dimensions: green product innovation, recycling, and green publicity. Green innovation can be described as the fundamental business principle that highlights environmental ethics. It can help the corporation to improve its reputation with green investment and green development. The literature on green innovation has been analyzed using various methods, including bibliometric analysis and stakeholder perspectives. The results of these studies

have shown that green innovation is a complex and multifaceted concept that requires a holistic approach. The use of density visualization has also been shown to be a powerful tool for identifying gaps in research and areas that require further investigation. Overall, the findings of these studies can help guide future research efforts and ensure that resources are allocated to areas that are most in need of attention. By continuing to explore the potential of green innovation practices, researchers and practitioners can help promote sustainable development and create a more environmentally friendly future.

Based on the findings, future research should prioritize longitudinal studies to assess the long-term economic and environmental ROI of green innovation strategies, and employ mixed-methods approaches to quantitatively measure performance outcomes while qualitatively exploring the complex barriers to adoption, such as internal resistance or supply chain complexities. Practical recommendations include developing integrated frameworks that help organizations simultaneously implement the three dimensions—green product innovation, recycling, and green publicity—and creating standardized metrics for tracking and reporting their impact on competitive advantage and corporate reputation to stakeholders.

References

Abu Seman, N. A., Govindan, K., Mardani, A., Zakuan, N., Mat Saman, M. Z., Hooker, R. E., & Ozkul, S. (2019). The mediating effect of green innovation on the relationship between green supply chain management and environmental performance. *Journal of Cleaner Production*, *229*, 115 – 127. https://doi.org/10.1016/j.jclepro.2019.03.211

Aguilera-Caracuel, J., & Ortiz-de-Mandojana, N. (2013). Green Innovation and Financial Performance: An Institutional Approach. *Organization and Environment*. https://doi.org/10.1177/1086026613507931

Ahmed, R. R., Akbar, W., Aijaz, M., Channar, Z. A., Ahmed, F., & Parmar, V. (2023). The role of green innovation on environmental and organizational performance: Moderation of human resource practices and management commitment. *Heliyon*, *9*(1). https://doi.org/10.1016/j.heliyon.2022.e12679

Albort-Morant, G., Leal-Rodríguez, A. L., & De Marchi, V. (2018). Absorptive capacity and relationship learning mechanisms as complementary drivers of green innovation performance. *Journal of Knowledge Management*, *22*(2), 432 – 452. https://doi.org/10.1108/JKM-07-2017-0310

Bataineh, M. J., Sánchez-Sellero, P., & Ayad, F. (2023). The role of organizational innovation in the development of green innovations in Spanish firms. *European Management Journal*. https://doi.org/10.1016/j.emj.2023.01.006

Bodas Freitas, I., Castellacci, F., Fontana, R., Malerba, F., & Vezzulli, A. (2017). Sectors and the additionality effects of R&D tax credits: A cross-country microeconometric analysis. *Research Policy*, *46*(1), 57 – 72. https://doi.org/10.1016/j.respol.2016.10.002

Chen, Y. S., Lai, S. B., & Wen, C. T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics*, *67*(4), 331 – 339. https://doi.org/10.1007/s10551-006-9025-5

Chu, Z., Wang, L., & Lai, F. (2019). Customer pressure and green innovations at third party logistics providers in China: The moderation effect of organizational culture. *International Journal of Logistics Management*, *30*(1), 57 – 75. https://doi.org/10.1108/IJLM-11-2017-0294

Ebrahimi, P., & Mirbargkar, S. M. (2017). Green entrepreneurship and green innovation for SME development in market turbulence. *Eurasian Business Review*, *7*(2), 203 – 228. https://doi.org/10.1007/s40821-017-0073-9

Fliaster, A., & Kolloch, M. (2017). Implementation of green innovations – The impact of stakeholders and their network relations. *R and D Management*, *47*(5), 689 – 700. https://doi.org/10.1111/radm.12257

Gerstlberger, W., Præst Knudsen, M., & Stampe, I. (2014). Sustainable development strategies for product innovation and energy efficiency. *Business Strategy and the Environment*, *23*(2), 131 – 144. https://doi.org/10.1002/bse.1777

Gunasekaran, A., Papadopoulos, T., Dubey, R., Wamba, S. F., Childe, S. J., Hazen, B., & Akter, S. (2017). Big data and predictive analytics for supply chain and organizational performance. *Journal of Business Research*, *70*, 308 – 317. https://doi.org/10.1016/j.jbusres.2016.08.004

Huang, J. W., & Li, Y. H. (2017). Green Innovation and Performance: The View of Organizational Capability and Social Reciprocity. *Journal of Business Ethics*, *145*(2), 309 – 324. https://doi.org/10.1007/s10551-015-2903-y

Hur, W. M., Kim, Y., & Park, K. (2013). Assessing the Effects of Perceived Value and Satisfaction on Customer Loyalty: A "Green" Perspective. *Corporate Social Responsibility and Environmental Management*, *20*(3), 146 – 156. https://doi.org/10.1002/csr.1280

Imran, M., Arshad, I., & Ismail, F. (2021). Green Organizational Culture And Organizational Performance: The Mediating Role Of Green Innovation And Environmental Performance. *Jurnal Pendidikan IPA Indonesia*, *10*(4), 515 – 530. https://doi.org/10.15294/jpii.v10i4.32386

Iranmanesh, M., Zailani, S., Moeinzadeh, S., & Nikbin, D. (2017). Effect of green innovation on job satisfaction of electronic and electrical manufacturers' employees through job intensity: personal innovativeness as moderator. *Review of Managerial Science*, *11*(2), 299 – 313. https://doi.org/10.1007/s11846-015-0184-6

Karimi Takalo, S., Sayyadi Tooranloo, H., & Shahabaldini parizi, Z. (2021). Green innovation: A systematic literature review. *Journal of Cleaner Production*, *279*, 122474. https://doi.org/10.1016/j.jclepro.2020.122474

Kunapatarawong, R., & Martínez-Ros, E. (2016). Towards green growth: How does green innovation affect employment? *Research Policy*, *45*(6), 1218 – 1232. https://doi.org/10.1016/j.respol.2016.03.013

Lee, K. H., & Kim, J. W. (2011). Integrating suppliers into green product innovation development: An empirical case study in the semiconductor industry. *Business Strategy and the Environment*, *20*(8), 527 – 538. https://doi.org/10.1002/bse.714

Lin, W.-L., Cheah, J.-H., Azali, M., Ho, J. A., & Yip, N. (2019). Does firm size matter? Evidence on the impact of the green innovation strategy on corporate financial performance in the automotive sector. *Journal of Cleaner Production*, *229*, 974 – 988. https://doi.org/10.1016/j.jclepro.2019.04.214

Lu, J., Ren, L., Zhang, C., Rong, D., Ahmed, R. R., & Streimikis, J. (2020). Modified Carroll ' s pyramid of corporate social responsibility to enhance organizational performance of SMEs industry. *Journal of Cleaner Production*, *271*, 122456. https://doi.org/10.1016/j.jclepro.2020.122456

Mahsina, & Agustia, D. (2023). Does green innovation play an important role in the effect board gender diversity has on firm performance? *Intangible Capital*, *19*(2), 146 – 164. https://doi.org/10.3926/IC.2020

Mondal, C., & Giri, B. C. (2020). Pricing and used product collection strategies in a two-period closed-loop supply chain under greening level and effort dependent demand. *Journal of Cleaner Production*, *265*. https://doi.org/10.1016/j.jclepro.2020.121335

Mondal, C., & Giri, B. C. (2022). Investigating A Green Supply Chain With Product Recycling Under Retailer's Fairness Behavior. *Journal of Industrial and Management Optimization*, *18*(5), 3641 – 3677. https://doi.org/10.3934/jimo.2021129

Novitasari, M., & Agustia, D. (2021). Green supply chain management and firm performance: the mediating effect of green innovation. *Journal of Industrial Engineering and Management*, *14*(2), 391 – 403. https://doi.org/10.3926/jiem.3384

Novitasari, M., & Agustia, D. (2023). Competitive advantage as a mediating effect in the impact of green innovation and firm performance. *Business: Theory and Practice*, *24*(1), 216 – 226. https://doi.org/10.3846/btp.2023.15865

Qamari, I. N., & Yogyakarta, U. M. (2023). *Bibliometric analysis of information systems in infection prevention and control*. *June*. https://doi.org/10.31893/multirev.2023006

Schweitzer, F. M. (2015). The negative effect of a perceived lack of an installed base on technology adoption. *International Journal of Innovation Management*, *19*(2). https://doi.org/10.1142/S1363919615500218

Shuwaikh, F., Benkraiem, R., & Dubocage, E. (2023). Investment in Green Innovation: How does It Contribute to Environmental and Financial Performance? *Journal of Innovation Economics and Management*, *41*(2), 107 – 149. https://doi.org/10.3917/jie.pr1.0137

Singh, M. P., Chakraborty, A., & Roy, M. (2016). The link among innovation drivers, green innovation and business performance: Empirical evidence from a developing economy. *World Review of Science, Technology and Sustainable Development*, *12*(4), 316 – 334. https://doi.org/10.1504/WRSTSD.2016.082191

Stel, A. Van, Carree, M., & Thurik, R. (2005). The effect of entrepreneurial activity on national economic growth. *Small Business Economics*, *24*(3), 311 – 321. https://doi.org/10.1007/s11187-005-1996-6

Wakeford, J. J., Gebreeyesus, M., Ginbo, T., Yimer, K., Manzambi, O., Okereke, C., Black, M., & Mulugetta, Y. (2017). Innovation for green industrialisation: An empirical assessment of innovation in Ethiopia' s cement, leather and textile sectors. *Journal of Cleaner Production*, *166*, 503 – 511. https://doi.org/10.1016/j.jclepro.2017.08.067

Zimmerling, E., Purtik, H., & Welpe, I. M. (2017). End-users as co-developers for novel green products and services – an exploratory case study analysis of the innovation process in incumbent firms. *Journal of Cleaner Production*, *162*, S51–S58. https://doi.org/10.1016/j.jclepro.2016.05.160