

FROM BARRIERS TO SOLUTIONS: IMPLEMENTING GREEN ENTREPRENEURSHIP IN MSMEs

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Abstract

This study examines the importance of green entrepreneurship in micro, small, and medium-sized enterprises (MSMEs), focusing on integrating sustainable practices to enhance competitiveness and sustainability. The main objective is to identify the challenges MSMEs face in adopting green practices and how these challenges are impacted and resolved. Using a literature review approach, this study uses AI, SCISPACE, to sort previous literature and uses PRISMA guidelines to filter it. The results reveal that MSMEs face several challenges, including a lack of Entrepreneurial Skills, Technology Barriers, limited access to finance, complexity in navigating environmental regulations, and cultural Resistance. The conclusions drawn from this study highlight the need for tailored training programs, simplified regulatory frameworks, and targeted financial support mechanisms to drive MSMEs towards sustainability. Overall, this article underlines the critical role of external stakeholders, including government and educational institutions, in supporting the transition of MSMEs towards green entrepreneurship, thereby contributing to broader environmental goals.

Keywords: Green entrepreneurship, MSMEs, challenges, solutions, sustainability.

INTRODUCTION

Green entrepreneurship is increasingly becoming a focus for Micro, Small, and Medium Enterprises (MSMEs) in Indonesia, especially after the COVID-19 pandemic. In 2023, 84 percent of young entrepreneurs are interested in environmentally friendly businesses, then 58 percent start businesses to improve the environment, and around 56 percent produce environmentally friendly clothing, low-carbon products, and waste reduction systems (Amani, 2023). This transformation aligns with the Sustainable Development Goals (SDGs), which emphasize the importance of sustainable practices in driving economic growth and environmental management (Kurniaty et al., 2024; Yusfiarto, 2023). In addition, the growing demand for sustainable practices positions green entrepreneurship as a critical driver of economic and social well-being, ultimately facilitating the transition to a greener society (Speckemeier & Tsivrikos, 2022). This transition is important, as our environmental crises require innovative solutions that can only be achieved through entrepreneurial initiatives prioritizing sustainability. The strategic role of MSMEs in the Indonesian economy must be addressed. MSMEs play a crucial role in job creation and economic stability, particularly during times of crisis. The integration of green entrepreneurship in MSMEs is not just a trend but a necessary evolution to ensure long-term survival and competitiveness. Green entrepreneurship is increasingly recognized as an essential approach to promoting sustainable economic development, especially in the context of Micro, Small, and Medium Enterprises (MSMEs). MSMEs implementing the green entrepreneurship model must have a green entrepreneurial orientation. Green entrepreneurial orientation (GEO) is a new concept that integrates environmental sustainability into the entrepreneurial framework, especially in micro, small, and medium enterprises (MSMEs). GEO

encompasses a company's proactive attitude towards environmental issues, emphasizing innovation, risk-taking, and the pursuit of sustainable opportunities. GEO has three main dimensions: proactivity, risk-taking, and innovation, which are explicitly tailored to environmental sustainability (Chen et al., 2023; Makhloufi et al., 2021; Yin et al., 2022).

In a business, integrating green innovation into business strategy is another important aspect of green entrepreneurship. Ganapathy et al. noted that green innovation is a promising approach to reducing environmental impact while increasing business value (Ganapathy et al., 2014). This innovation consists of many forms, from developing new sustainable products to optimizing production processes to minimize waste. The emphasis on green innovation aligns with the broader goal of a circular economy, which aims to create closed-loop systems that minimize waste and enhance resource efficiency. Entrepreneurs who embrace green innovation can contribute to environmental sustainability and tap into new markets and customer segments that prioritize green products and services.

The green entrepreneurship model emphasizes the creation of environmentally friendly products and services while promoting sustainable business practices that contribute to ecological preservation and social responsibility. The importance of green entrepreneurship lies in its potential to address pressing environmental challenges, such as climate change and resource depletion, while enhancing the competitiveness and resilience of MSMEs in a rapidly evolving market landscape (Endris & Kassegn, 2022; Ni et al., 2023). By integrating sustainability into their core operations, MSMEs can comply with regulatory requirements and meet the growing demand from consumers for eco-friendly products, thereby positioning themselves well in the market. Recent studies show that many MSMEs are adopting green business practices driven by consumer demand for sustainable products and the need to comply with environmental regulations. For example, adopting Green Human Resource Management practices is essential for MSMEs to contribute positively to environmental sustainability while increasing the market.

Additionally, digitalization plays a vital role in the development of green entrepreneurship among MSMEs. Implementing digital marketing strategies has enabled these companies to reach a broader market and promote their sustainable products more effectively (Junaedi et al., 2023; Octaviana & Andni, 2023). Leveraging digital tools enables MSMEs to optimize their operations, reduce waste, and implement environmentally friendly practices more efficiently (Langelo et al., 2024).

Furthermore, the educational aspect of green entrepreneurship is critical to fostering a culture of sustainability among future business leaders. Yasir et al. (2021) emphasize that sustainable entrepreneurship education can significantly influence the development of entrepreneurial intentions that prioritize environmental and social values (Yasir et al., 2021). Educational institutions can play a critical role in shaping a new generation of environmentally conscious leaders by equipping aspiring entrepreneurs with the knowledge and skills necessary to navigate the complexities of sustainable business practices. This educational focus is essential to ensure sustainability becomes a core of entrepreneurial thinking and practice.

However, the transition to green entrepreneurship has its challenges. The high costs of implementing sustainable practices remain a significant barrier for many MSMEs (Yusfiarto, 2023). To overcome these challenges, various things need to be done, including support from various parties. Research that describes the challenges, impacts, and solutions in implementing green entrepreneurship in MSMEs is necessary.

The gap in this research is that the discussion of a comprehensive and systematic literature review on the application of green entrepreneurship in MSMEs is still lacking, especially in terms of challenges and solutions. Existing studies often lack a holistic approach, and a systematic review can provide strategic insights into addressing the challenges of the circular economy. This understanding is vital for both researchers and practitioners. Consequently, the main objective of this study is to answer these research questions:

RQ1. What is the profile of previous studies that describe green entrepreneurship that explain the challenges and strategic solutions for sustainability in MSMEs (e.g., publication trends, publishers, journal quality, and regional classification)?

RQ2. What are the challenges in implementing green entrepreneurship in MSMEs, as reported in the existing literature?

RQ3. What strategic solutions have been proposed or implemented to address the challenges of implementing green entrepreneurship in MSMEs?

This study is poised to make a significant contribution by providing a systematic literature review (SLR) on green entrepreneurship in micro and small enterprises (MSMEs). Starting from identifying the challenges associated with implementing green entrepreneurship in MSMEs, then explaining strategic solutions that have proven effective and highlighting areas that require further research. This work will not only advance academic understanding but also provide practical guidance for policymakers and businesses seeking to promote sustainable economic practices in developing countries. This study aims to bridge a critical knowledge gap and contribute to the sustainable development of MSMEs for a sustainable economy.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Adopting green entrepreneurship in micro, small, and medium enterprises (MSMEs) is increasingly recognized as an essential strategy to drive sustainable economic growth while addressing environmental challenges. This approach integrates ecological considerations into business practices, ensuring MSMEs can thrive economically without compromising environmental integrity. The main theories related to green entrepreneurship, along with recent research findings that illustrate its significance in MSMEs, are the Resource-Based View (RBV). The RBV states that firms can achieve competitive advantage by leveraging unique resources and capabilities. For MSMEs, adopting green practices can serve as a differentiator in the marketplace, enhancing their reputation and customer loyalty while reducing costs through increased efficiency (Achaku et al., 2022).

The second is the Theory of Planned Behavior (TPB). This theory states that attitudes, subjective norms, and perceived behavioral control influence an individual's intention to engage in a behavior. In green entrepreneurship, the positive attitudes of MSME leaders toward sustainability can encourage the adoption of environmentally friendly practices, leading to improved business performance and enhanced customer engagement (Achaku et al., 2022). The theory of planned behavior (TPB) also relates to a firm's approach to sustainability, and its management practices can lead to more effective implementation of green initiatives (Christodoulou & Cullinane, 2021). It shows that external pressures, such as institutional pressures, can positively influence entrepreneurial performance through entrepreneurial orientation (Liu et al., 2022). These insights suggest that MSMEs should focus on internal capabilities and actively engage with external stakeholders to enhance their sustainability efforts. Third, Triple Bottom Line (TBL). The TBL framework emphasizes the balance of economic, social, and environmental outcomes. SMEs that adopt TBL principles can improve their sustainability by focusing on profits, social responsibility, and environmental impact (Alhaddi, 2015).

Several studies indicate that green entrepreneurship enhances the performance of MSMEs. For instance, research in North-Central Nigeria found that environmentally friendly practices reduced negative impacts and boosted profitability by fostering innovative production methods that increase competitive advantage and customer loyalty (Achaku et al., 2022). Education and targeted training programs are essential in equipping entrepreneurs with sustainability-related skills (Iswanti et al., 2020). Effective collaboration among government agencies, the private sector, and NGOs further supports resource sharing, improves supply chain efficiency, and stimulates market growth for sustainable products. Recognizing that these practices face challenges, this study

conducts a systematic literature review on the difficulties, impacts, and potential solutions for implementing green entrepreneurship in MSMEs.

RESEARCH METHODS

3.1 Inclusion and exclusion criteria

The inclusion and exclusion criteria were carefully selected to ensure the accuracy and relevance of the literature review results. The inclusion criteria included publications in English and articles that specifically discussed green entrepreneurship in MSMEs. Conversely, the exclusion criteria involved the removal of studies from non-peer-reviewed books, book chapters, conference papers, practice reports, theses and dissertations, works in predatory journals, and articles that lacked a clear connection to the challenges and solutions of implementing green entrepreneurship in MSMEs. This selective process ensured that the literature review included only high-quality sources relevant to the research topic. The inclusion and exclusion criteria can be seen in Table 1.

Table 1. Inclusion and exclusion criteria

Inclusion	Exclusion
Published in English	Ignoring studies originating from non-peer-reviewed books, book chapters, conference papers, practical reports, theses/dissertations, working papers, and predatory journals
10 Years (2014-2024)	The article is missing a connection between challenges and solution strategies for the application of green entrepreneurship in SMEs
The final Paper was published in an academic journal article.	
Articles that emphasize and have relevant challenges and solution strategies for the application of green entrepreneurship in SMEs	

3.2 Data screening and selection

This study uses AI, SCISPACE, to sort previous literature. AI can automate the screening of articles and extract relevant data, particularly useful in systematic literature reviews (SLRs) (Bolanos et al., 2024; Reason et al., 2024). The questions used are, "What challenges do SMEs face when adopting green entrepreneurship, and what are the impacts and solutions?" with filters from the last ten years, top-tier papers, and journal article publication types. Using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines provides a framework for conducting and reporting systematic literature reviews. This study uses a step-by-step guide to conduct a systematic literature review on challenges, impacts, and solutions for implementing green entrepreneurship in MSMEs (Moher et al., 2016). The initial search resulted in 92 journal articles. After examining Potentially relevant articles based on title keywords and abstracts, 89 articles were obtained. Then, after examining Potentially relevant articles for full-text review, 30 articles were obtained for further analysis.

RESULTS AND DISCUSSION

4.1 Research profile of the reviewed articles

Research Trends and Journal Publishers: The first article on challenges, impacts, and solutions for implementing green entrepreneurship in MSMEs appeared in 2014. The number of articles published from 2014 to 2024 was 30, with the majority published in 2022, specifically 10 articles. As many as 50% of them were published in the Sustainability journal, owned by the Multidisciplinary Digital Publishing Institute (MDPI) in Switzerland, while the rest were published by various publishers, including Taylor and Francis, Sage, Wiley, Springer, Palgrave, Elsevier, and Frontiers. Then, as many as 93% or as many as 28 articles were Scopus articles with quartile Q1, while the other two articles were Scopus articles with quartile Q2. These articles were published in four countries, namely Switzerland, the US, the UK, and the Netherlands.



Figure 1. Research profile of the article being reviewed

4.2 Challenges in Implementing Green Entrepreneurship for MSMEs

Implementing green entrepreneurship in micro, small, and medium enterprises (MSMEs) presents several challenges that must be overcome to facilitate their transition to sustainable practices. First, in terms of entrepreneurial expertise, many MSMEs need more knowledge or skills in implementing sustainable practices. Green entrepreneurship requires a deep understanding of sustainable innovation and environmentally friendly business strategies (Rashid, 2019; Reuther et al., 2023). MSMEs also face significant knowledge and capacity challenges in adopting sustainable practices. Prieto-Sandoval et al. (2019) note that implementing circular economy (CE) principles requires new knowledge and eco-innovation processes that often need to be developed internally within these companies.

Second, technological barriers are also a significant challenge. Many MSMEs lack access to the latest technology required to implement sustainable practices. At the same time, research indicates that investing in green technology and innovation can enhance the environmental

performance of MSMEs (Khan et al., 2020; Kumar et al., 2020). However, access to this technology is often limited by high costs and the need for more support from governments or financial institutions (Kekkonen et al., 2023).

The third challenge is the need for more access to financial resources, which is critical for MSMEs to invest in green technologies and practices. MSMEs also need help accessing the knowledge and resources needed to implement green initiatives effectively (Fang et al., 2021). Zhao & Wang (2022) emphasized that although China's green finance reform policy aims to ease financing constraints, the benefits are not evenly distributed among different types of enterprises. State-owned and low-pollution enterprises tend to benefit more from these reforms, leaving non-state-owned and high-pollution enterprises at a disadvantage. This imbalance highlights the need for more inclusive financial policies to ensure that all MSMEs can access the funding to pursue green entrepreneurship.

Fourth, complex regulations often act as a barrier for MSMEs to adapt to sustainable practices. Many MSMEs find it difficult to understand and comply with existing environmental regulations, which can result in non-compliance and legal risks.(Dharmawan et al., 2021). Fifth, cultural and organizational challenges further complicate the landscape of green entrepreneurship in MSMEs.Kok et al. (2019) discuss how conflicting organizational cultures and incompatible logic can hinder the implementation of sustainability practices in a company. Employees may have varying perceptions about the company's sustainability, which can lead to resistance to green initiatives. Additionally, many SMEs lack an appropriate organizational framework that supports environmental practices, often relying on a single decision-maker whose values may not align with sustainability goals (Sáez-Martínez et al., 2016).

4.3 The Impact of Green Entrepreneurship Implementation Challenges on MSMEs

The implementation of green entrepreneurship in micro, small, and medium-sized enterprises (MSMEs) has a significant impact on both the business and the broader environment. One of the most significant impacts is the potential for improved financial performance through the implementation of sustainable practices. Khan et al. (2020) highlighted that green entrepreneurial orientation, characterized by proactive, innovative, and risk-taking behavior, could lead to the successful implementation of green marketing strategies and eco-labeling. This, in turn, improves the overall business performance of MSMEs. The study suggests that by embracing sustainability, MSMEs contribute to environmental protection and position themselves competitively in the market, promoting economic resilience. In addition to improving the performance of MSMEs by reducing environmental impacts, green entrepreneurship by implementing environmentally friendly innovation strategies simultaneously increases their market competitiveness (Ganapathy et al., 2014; Rodríguez-García et al., 2019). This dual benefit is significant in a landscape where consumers increasingly prefer sustainable products and services, thus creating a market for environmentally friendly products (Khan et al., 2020; Speckemeier & Tsivrikos, 2022).

The impact of increasing green entrepreneurship extends not only to the economic dimension but also to the social dimension. Javeed et al. (2022) emphasized that corporate management plays a crucial role in driving green innovation through environmental strategies. The commitment to sustainability in MSMEs is often influenced by the strategic orientation and management values of its leaders, which can encourage the implementation of sustainable practices (Achi et al., 2022; Jansson et al., 2017).

However, research indicates that MSMEs frequently struggle to innovate sustainably due to limited internal knowledge development, which impacts their competitive advantage in today's environmentally conscious markets (Endris & Kassegn, 2022). Competencies critical to effective environmental management and innovation are often lacking in these firms, hampering their growth potential and market relevance (Endris & Kassegn, 2022; Wei et al., 2023). Furthermore, the lack of structured training programs in sustainable entrepreneurship can further exacerbate the

knowledge gap among MSMEs, hampering their ability to implement necessary changes (Iskandar et al., 2023).

Furthermore, lack of access to necessary technologies hampers sustainable innovation and environmentally friendly operations (Singh et al., 2022). High upfront costs associated with green technologies can limit uptake, and lack of financial and Government support exacerbates the problem (Ng'ora et al., 2022; Singh et al., 2022). Without the ability to invest in and access such technologies, MSMEs may lag in the sustainability race, ultimately affecting their market competitiveness and growth trajectory. Investments not only enhance operational efficiency but can also improve financial performance by promoting increased environmental responsibility (Nursyabani et al., 2023). Thus, bridging the technology gap is crucial for enabling MSMEs to meet their sustainability goals (Kusuma et al., 2023).

Furthermore, greater access to financial resources is crucial for these firms to implement green initiatives effectively. Unfortunately, the green financing landscape often favors larger, less polluting firms at the expense of smaller players (Behera et al., 2024). This financial gap creates significant barriers for MSMEs as they struggle to leverage the capital required for a sustainable transition (Rajamani et al., 2022). As a result, the growth prospects of these firms are reduced, potentially causing them to miss out on lucrative green market opportunities (Kurniaty et al., 2024). The presence of sound financial policies and support mechanisms specifically designed for MSMEs can increase their capacity to invest in sustainable practices, thereby driving their growth and contribution to economic development (Kwartawaty et al., 2023; Masnila et al., 2024).

On the regulatory side, studies indicate that many MSMEs struggle to comply with existing environmental regulations due to their complexity, which can lead to legal sanctions and operational risks (Lwesya et al., 2021). This regulatory burden can discourage MSMEs from pursuing green initiatives, as fear of non-compliance creates uncertainty and additional costs (Ailani et al., 2023). The lack of clarity in the existing regulatory framework further complicates the problem, discouraging MSMEs from experimenting with new sustainable practices (Prihastiwi et al., 2023). Simplifying these regulations and providing clear guidelines can facilitate greater compliance and encourage MSMEs to adopt more sustainable practices (Susiaty et al., 2024).

Furthermore, the cultural context in which MSMEs operate significantly influences their ability to adopt environmentally friendly practices. Kok et al. (2019) discuss how conflicting organizational cultures and incompatible logic can hinder the implementation of sustainability initiatives. Different employee perceptions of corporate sustainability can lead to resistance to green initiatives, making it essential for SMEs to foster a cohesive organizational culture that prioritizes sustainability. By fostering a shared understanding of sustainability goals among employees, SMEs can increase their capacity to implement effective green practices and achieve better environmental outcomes. Research indicates that a sustainable entrepreneurship curriculum can significantly increase individuals' intention to engage in green business practices (Anghel & Anghel, 2022; Yasir et al., 2021). This educational foundation is, therefore, essential to equip future entrepreneurs with the skills and knowledge necessary to navigate the complexities of sustainable business operations.

Finally, the role of external stakeholders, including government policies and market dynamics, is critical in shaping the impact of green entrepreneurship. Thompson (2018) highlighted that sustainable enterprises often navigate complex institutional environments where legitimacy and stakeholder engagement are paramount. The ability of MSMEs to align their operations with regulatory frameworks and societal expectations can significantly impact their success in adopting green practices. Therefore, supportive policies and stakeholder collaboration are critical to creating an enabling environment that encourages green entrepreneurship among MSMEs.

In short, the impact of implementing green entrepreneurship in MSMEs spans various dimensions, including economic, social, and environmental. By adopting sustainable practices, MSMEs can improve their financial performance, contribute to circular economy initiatives, promote diversity in leadership, and navigate complex cultural and institutional landscapes.

Policymakers and stakeholders must recognize these dynamics and implement supportive measures that empower MSMEs to embrace green entrepreneurship effectively.

4.4 Solutions for Implementing Green Entrepreneurship in MSMEs

Implementing green entrepreneurship in micro, small, and medium enterprises (MSMEs) presents several challenges that need to be addressed. A fundamental solution is enhancing knowledge and skills related to sustainable innovation and environmentally friendly business practices (Rashid, 2019; Reuther et al., 2023). Research shows that entrepreneurship training focused on sustainability can significantly improve these competencies and motivate entrepreneurs to adopt green practices (Kummitha & Kummitha, 2021).

Additionally, external support through partnerships with research institutions and larger companies can aid in knowledge transfer and resource provision for MSMEs. Collaborative networks involving Government and educational institutions are crucial in offering relevant training programs to empower MSMEs (Rahnama et al., 2022; Rizos et al., 2016). From a technological perspective, high costs and insufficient support limit MSMEs' access to green technologies (Kekkonen et al., 2023). Creating financing schemes and infrastructure investments tailored to support the adoption of green technology is essential (Akberdina et al., 2023; Zhao & Wang, 2022).

Financial support mechanisms, such as green finance initiatives, can alleviate financial barriers and empower MSMEs to invest in sustainable practices. Yu et al. (2023) note that green finance reforms can significantly benefit enterprise development by providing necessary funding. Policymakers can further stimulate growth in green entrepreneurship through subsidy programs, economic incentives, and tax breaks. Many MSMEs struggle to understand and comply with complex environmental regulations, which can lead to potential legal risks (Dharmawan et al., 2021). Therefore, simplifying regulations and offering clear guidance is crucial for a smoother transition to sustainability (de Oliveira Neto et al., 2022; Duffaut et al., 2022). Cultural challenges also pose significant barriers (Kok et al., 2019), necessitating a cohesive organizational culture that prioritizes sustainability and aligns employee values with corporate goals through effective communication and training.

Moreover, raising consumer awareness about the benefits of green entrepreneurship can foster a supportive market environment that encourages demand for sustainable products. A culture of learning and collaboration is vital for enhancing green entrepreneurship; Torkkeli and Durst (2022) indicate that fostering a learning orientation can boost corporate social responsibility (CSR) efforts, which is integral to sustainable practices. Collaborations between MSMEs, larger firms, and academic institutions can facilitate the transfer of best practices and innovative solutions. Integrating sustainability into the core business strategies of MSMEs is essential, with proactive environmental strategies being linked to successful green innovations (Javeed et al., 2022).

Diverse leadership, particularly women's representation in management, can enhance commitment to sustainability and innovation, leading to more effective solutions for environmental challenges. By promoting inclusive leadership, MSMEs can leverage a wider array of perspectives and ideas, ultimately enhancing their sustainability initiatives.

In summary, addressing the challenges of green entrepreneurship in MSMEs requires a multifaceted approach encompassing education, technological access, financial support, regulatory clarity, cultural alignment, and collaboration.

For more details, please see the following table:

Table 1. What are the challenges in implementing green entrepreneurship, what are their impacts, and how can they be solved?

No	Challenge	Impacts	Solutions
1.	Lack of Entrepreneurial Skills	Without the necessary skills, MSMEs struggle to innovate sustainably due to limited knowledge development, hampering their ability to implement necessary changes.	Knowledge Sharing and Collaboration: Governments and industry associations can organize workshops, training programs, and collaborative initiatives to share knowledge and best practices in sustainable entrepreneurship.
2.	Technology Barriers	Without the ability to access such technologies, MSMEs may be left behind in the sustainability race, ultimately impacting their market competitiveness and growth.	Creating a financing scheme that supports the adoption of green technology among MSMEs Infrastructure Improvement: Governments can invest in infrastructure that supports sustainable practices, such as renewable energy systems or waste management facilities.
3.	Financial Access	The financial access gap creates significant barriers for MSMEs as they struggle to access the capital needed for sustainable growth and development.	Economic Incentives: The Government can offer tax breaks, subsidies, or other economic incentives to encourage MSMEs to adopt sustainable practices.
		Growth prospects for these companies are reduced, potentially causing them to miss out on lucrative green market opportunities.	Increasing Access to Finance: Governments and financial institutions can provide green funds or other forms of financing designed explicitly for sustainable projects.
4.	Complex Regulations	Complex regulatory burdens can discourage MSMEs from pursuing green initiatives, as fear of non-compliance creates uncertainty and additional costs.	With an Improved Regulatory Framework, the Government can simplify and streamline regulations related to sustainability, making it

		Lack of clarity in existing regulatory frameworks further complicates matters, discouraging MSMEs from experimenting with new sustainable practices.	easier for MSMEs to operate and innovate.
5	Cultural Resistance	Green initiatives are not recognized and have no social value, making it difficult for SMEs to justify investing in sustainability when direct economic benefits are not visible.	Promoting awareness of the benefits of green entrepreneurship among consumers can create a supportive market environment that encourages MSMEs to adopt sustainable practices by increasing demand for environmentally friendly products.
		Employees may have varying perceptions of corporate sustainability, which can lead to resistance to green initiatives.	Implement effective communication strategies and training programs that align employee values with the company's sustainability goals, fostering a more supportive environment for green entrepreneurship.

4.5 Discussion

4.5.1 Theoretical Implications

The literature suggests that integrating sustainable practices into SMEs is not just a trend but is necessary to achieve long-term survival and competitive advantage. First, the Resource-Based View (RBV) states that firms can gain a competitive advantage by leveraging unique resources and capabilities, which includes adopting environmentally friendly practices in the context of SMEs. This approach enhances their market reputation, fosters customer loyalty, and reduces operational costs through increased efficiency. The Triple Bottom Line (TBL) framework further supports the adoption of sustainable practices, emphasizing the balance of economic, social, and environmental responsibilities. SMEs that embrace TBL principles improve their sustainability and overall performance.

Additionally, collaborative networks play a crucial role in bridging the knowledge gap and enabling SMEs to innovate sustainably. Stakeholders, including governments and educational institutions, can facilitate this process by providing training programs and resources that enhance SMEs' effective implementation of environmentally friendly practices. This collaborative approach is essential, as many SMEs face significant barriers, such as limited access to technology and complex regulatory environments, that hinder their ability to adopt sustainable practices.

The Theory of Planned Behavior (TPB) also offers insights into the motivations behind SMEs' engagement in green entrepreneurship. The theory suggests that entrepreneurs' intentions to adopt

sustainable practices are influenced by their attitudes, perceived social norms, and perceived behavioral control (Meirun et al., 2020). Positive attitudes toward sustainability among SME leaders can significantly drive the adoption of green practices, thereby contributing to broader environmental goals (Meirun et al., 2020).

An essential contribution to the literature on green entrepreneurship in MSMEs can be seen from several interrelated aspects, including challenges, opportunities, and strategies for implementing sustainable practices. This study provides in-depth insights into how MSMEs can adapt and innovate in the context of sustainability and how they can utilize existing resources to achieve a competitive advantage. First, the literature indicates that green entrepreneurship is an evolving paradigm that integrates environmental sustainability into the business practices of MSMEs. This includes a better understanding of MSMEs' challenges in adopting sustainable practices, such as high costs and a lack of government support. The study also highlights the importance of digital marketing strategies that enable MSMEs to reach a broader market and promote their sustainable products more effectively. Thus, adopting digital technology is critical to strengthening the position of MSMEs in an increasingly competitive market.

Furthermore, the contribution to the literature is also seen in developing a theoretical framework that links green entrepreneurial orientation (GEO) to business performance. GEO promotes a proactive approach to environmental issues, innovation, and risk-taking, all of which contribute to improved performance for MSMEs. The study demonstrates that investing in green technology and innovation can enhance the environmental performance of MSMEs, ultimately improving their profitability. This suggests a positive relationship between the adoption of sustainable practices and improved business performance.

On the other hand, the literature also highlights the significant challenges that MSMEs face in implementing sustainable practices. Many MSMEs require assistance in understanding and complying with existing environmental regulations, which can lead to non-compliance and associated legal risks. Therefore, simplifying regulations and providing clear guidance are essential to facilitate the transition to sustainable practices. This suggests that support from the Government and financial institutions is essential to help MSMEs overcome existing obstacles.

4.5.2 Practical Implications

The practical implications of implementing green entrepreneurship in MSMEs are crucial to understand, particularly in the context of developing effective sustainability strategies. Green entrepreneurship offers MSMEs numerous opportunities to address existing environmental and social challenges while also enhancing their competitiveness in the market. First, the importance of digitalization in developing green entrepreneurship must be addressed. Implementing digital marketing strategies allows MSMEs to reach a broader market and promote their sustainable products more effectively. By utilizing digital platforms, MSMEs can increase their visibility and attract consumers increasingly concerned about environmental issues. Therefore, training and education on digital technologies should be a priority for MSMEs that want to adopt sustainable practices.

Furthermore, a deep understanding of sustainable innovation and green business strategies is crucial for addressing the knowledge and skills challenges that many MSMEs face. Training programs to enhance entrepreneurs' skills in green innovation can help them develop more sustainable products and services. It can also foster a culture of innovation that encourages MSMEs to adapt to changing market conditions and evolving consumer demands.

On the regulatory side, many MSMEs require assistance in understanding and complying with existing environmental regulations, which can lead to non-compliance and legal risks. Therefore, simplifying regulations and providing clear guidance are essential to facilitating the transition to sustainable practices. The Government and relevant institutions must collaborate with MSMEs to develop policies that support green practices, including financial incentives and access to necessary technologies.

In addition, collaboration between various stakeholders, including the Government, educational institutions, and the private sector, can help bridge the knowledge gap and empower MSMEs to innovate and adopt sustainable practices effectively. Lastly, investing in green technology and innovation can enhance the environmental performance of MSMEs, thereby increasing their profitability and competitiveness. Therefore, MSMEs should explore opportunities to invest in green technologies and develop sustainable business models. In doing so, MSMEs can contribute to broader sustainability goals and improve their overall business performance.

Overall, the practical implications of this draft article and dashboard suggest that MSMEs have great potential to contribute to sustainability through green entrepreneurship. However, to achieve this potential, they need the proper support from various stakeholders, including the government, educational institutions, and the private sector, as well as access to the necessary technology and training.

4.5.3 Social Implications

The social implications of implementing green entrepreneurship in MSMEs are significant, especially in community development, increasing environmental awareness, and creating jobs. Green entrepreneurship focuses on economic benefits and broader social impacts, including improving people's quality of life and environmental sustainability.

First, green entrepreneurship can raise public awareness of environmental issues. By adopting sustainable practices, MSMEs can serve as role models for their communities, demonstrating that businesses can operate ethically and responsibly towards the environment. This can trigger behavioral changes among consumers and other businesses, encouraging more individuals and organizations to consider the environmental impact of their decisions. Additionally, training programs that equip entrepreneurs with sustainability skills are crucial for raising awareness and promoting the adoption of environmentally friendly practices.

Furthermore, green entrepreneurship can contribute to sustainable job creation. With the increasing demand for environmentally friendly products and services, MSMEs focusing on green innovation can create new job opportunities in both the production and service sectors. This is especially important in the context of post-pandemic economic recovery, where many countries face the challenge of high unemployment. Green entrepreneurship can be a solution to create jobs that are not only economically profitable but also support broader sustainability goals.

However, the challenges faced by MSMEs in adopting sustainable practices also have social implications that must be considered. Many MSMEs require assistance in understanding and complying with applicable environmental regulations, which can result in non-compliance and legal risks. Therefore, simplifying regulations and providing clear guidance for MSMEs is essential to facilitate the transition to sustainable practices. This will not only help MSMEs operate legally but also increase public trust in businesses that are committed to sustainability. In addition, fostering collaborative networks with stakeholders can create an ecosystem that supports green entrepreneurship, which strengthens the social impact of these initiatives.

CONCLUSION

5.1 Conclusion

The study's conclusion on green entrepreneurship among micro, small, and medium-sized enterprises (MSMEs) shows that implementing sustainable practices is essential for environmental sustainability and for providing significant economic and social benefits. Green entrepreneurship has emerged as a paradigm that integrates sustainability into the business models of MSMEs, thereby improving business performance and creating added value for society. First, green entrepreneurship encourages MSMEs to adopt a proactive attitude towards environmental issues, which includes innovation, risk-taking, and seeking sustainable opportunities. By implementing environmentally friendly practices, MSMEs can reduce their negative impacts on the environment

and increase their profitability through operational efficiency and cost reduction. The study shows that investment in green technology and innovation can significantly improve the environmental performance of MSMEs.

However, the challenges MSMEs face in adopting sustainable practices must also be considered. Many MSMEs require assistance in understanding and complying with existing environmental regulations, which can lead to non-compliance and associated legal risks. Therefore, simplifying regulations and providing clear guidance are essential to facilitate the transition to sustainable practices. Additionally, access to the technology required to implement sustainable practices is often limited by high costs and a need for greater support from governments or financial institutions.

From a social perspective, green entrepreneurship can contribute to sustainable job creation and increase public awareness of environmental issues. By fostering collaborative networks between various stakeholders, including government, educational institutions, and the private sector, MSMEs can more easily access the resources and information needed to implement sustainable practices effectively.

5.2 Limitations and Future Research Directions

Exploring green entrepreneurship in small and medium enterprises (SMEs) reveals several limitations that warrant further research. Key challenges include the complexity of the regulatory environment, cultural influences on entrepreneurial behavior, and access to technology. One significant barrier to adopting sustainable practices is the intricate nature of environmental regulations, which many SMEs struggle to understand, often leading to non-compliance. Future research should aim to create simplified regulatory frameworks and clear guidelines to support SMEs in their transition to sustainability, potentially through empirical studies on regulatory reforms that promote green entrepreneurship.

Cultural factors also impact entrepreneurs' attitudes toward sustainability, with existing literature indicating that cultural challenges can hinder the adoption of eco-friendly practices (Kok et al., 2019). Investigating how cultural perceptions and social norms affect the adoption of sustainable practices across various contexts could lead to targeted interventions that encourage green entrepreneurship.

Additionally, access to technology remains a challenge for SMEs, as high costs and insufficient support from government and financial institutions impede the adoption of innovative, environmentally friendly technologies (Kumar et al., 2020). Future research may focus on technology transfer mechanisms and financial support systems that enhance SMEs' capacity to implement sustainable technologies, as well as the effects of Industry 4.0 technologies on their sustainability performance (Hung & Chen, 2023).

Another limitation is the lack of knowledge and skills relating to sustainable practices among SME entrepreneurs, who often require training to implement green strategies effectively. Research should develop comprehensive training programs and evaluate their impact on improving sustainability performance in SMEs.

Although there are theoretical frameworks in place, more empirical evidence and case studies illustrating successful green entrepreneurship in SMEs are needed. Research should document best practices and lessons learned, serving as a roadmap for other SMEs (Rizos et al., 2016). This includes comparative studies across industries and regions to identify common challenges and solutions.

Finally, various stakeholders—such as government agencies, educational institutions, and industry associations—play a crucial role in supporting the transition to green entrepreneurship. Future research should explore collaborative models involving multiple stakeholders to promote sustainable practices, focusing on how these collaborations can be structured for maximum impact (Rahnama et al., 2022). In summary, while the existing literature provides a foundation for understanding the challenges and opportunities of green entrepreneurship in SMEs, addressing

these limitations through targeted research is essential for advancing the field. Future studies should emphasize empirical investigations, stakeholder collaboration, and the development of practical frameworks to enhance the adoption of sustainable practices among SMEs.

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