

Community Service and Green Economy-Based MSME Strengthening in Supporting Sustainable Poverty Alleviation

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Abstract

This study aims to enrich the literature on community service in the context of strengthening Micro, Small, and Medium Enterprises (MSMEs) based on the green economy to support sustainable poverty alleviation. The research employs a qualitative approach using a literature review method, analyzed descriptively. Data were obtained from Google Scholar and various credible websites with a publication range from 1991 to 2026. Out of 50 articles identified in the initial stage, a rigorous selection process was conducted based on relevance, quality, and methodological suitability, resulting in 36 articles for further analysis. The findings indicate that community service plays a strategic role in enhancing MSME capacity through knowledge transfer, mentoring, and participatory empowerment. The integration of green economy principles, such as resource efficiency, waste management, and renewable energy utilization, has proven to improve operational efficiency, product value, and MSME competitiveness. Furthermore, this approach contributes to improving community welfare and reducing poverty in a sustainable manner. However, its implementation still faces various challenges, including limited environmental literacy, technological access, and policy support. Therefore, synergy among government, academia, and the private sector is required to develop integrated and sustainable community service programs.

Keywords: Community Service, MSMEs, Green Economy, Empowerment, Sustainable Poverty Alleviation

Pengabdian Masyarakat dan Penguatan UMKM Berbasis Green Economy dalam Mendukung Pengentasan Kemiskinan Berkelanjutan

Abstrak

Penelitian ini bertujuan untuk menambah referensi terkait pengabdian masyarakat dalam konteks penguatan Usaha Mikro, Kecil, dan Menengah (UMKM) berbasis green economy guna mendukung pengentasan kemiskinan berkelanjutan. Penelitian menggunakan pendekatan kualitatif dengan metode tinjauan pustaka, yang dianalisis secara deskriptif. Data diperoleh dari Google Scholar dan berbagai website kredibel dengan rentang tahun publikasi 1991–2026. Dari 50 artikel yang teridentifikasi pada tahap awal, dilakukan seleksi ketat berdasarkan relevansi, kualitas, dan kesesuaian metodologi, sehingga diperoleh 36 artikel yang dianalisis lebih lanjut. Hasil penelitian menunjukkan bahwa pengabdian masyarakat berperan strategis dalam meningkatkan kapasitas UMKM melalui transfer pengetahuan, pendampingan, dan pemberdayaan berbasis partisipatif. Integrasi prinsip green economy, seperti efisiensi sumber daya, pengelolaan limbah, dan pemanfaatan energi terbarukan, terbukti mampu meningkatkan efisiensi operasional, nilai tambah produk, serta daya saing UMKM. Selain itu, pendekatan ini juga berkontribusi terhadap peningkatan kesejahteraan masyarakat dan pengurangan kemiskinan secara berkelanjutan. Meskipun demikian, implementasi di lapangan masih menghadapi berbagai tantangan, seperti keterbatasan literasi lingkungan, akses teknologi, dan dukungan kebijakan. Oleh karena itu, diperlukan sinergi antara pemerintah, akademisi, dan sektor swasta dalam mengembangkan program pengabdian masyarakat yang terintegrasi dan berkelanjutan.

Kata kunci: Pengabdian Masyarakat, UMKM, Green Economy, Pemberdayaan, Pengentasan Kemiskinan Berkelanjutan

INTRODUCTION

Sustainable poverty alleviation is one of the strategic issues in global and national economic development, particularly in developing countries such as Indonesia. This effort requires not only increasing community income but also adopting approaches that consider environmental aspects and resource sustainability. In this context, the concept of the green economy has become increasingly relevant as it integrates economic growth with environmental preservation and social equity. This approach is believed to create new inclusive economic opportunities while reducing negative environmental impacts, thereby contributing to more holistic sustainable development.

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in Indonesia's economic structure, both in terms of the number of business units and their contribution to employment absorption. MSMEs have proven to be relatively resilient in facing economic crises and have significant potential in supporting poverty alleviation (Zaman et al., 2025). However, most MSMEs still face various limitations, such as limited access to technology, managerial skills, and understanding of sustainable business practices (Ausat & Suherlan, 2021). This condition indicates the need for systematic interventions to strengthen MSME capacity for sustainable growth.

In efforts to strengthen MSMEs, community service activities serve as an important instrument to bridge the gap between academic knowledge and practical implementation. Community service conducted by higher education institutions has significant potential to transfer knowledge, technology, and innovation to MSME actors. Through mentoring, training, and empowerment programs, community service can improve production capacity, marketing, and business management of MSMEs (Silfiani et al., 2026). These activities have a significant economic impact.

Along with the growing global environmental issues, integrating green economy principles into MSME strengthening has become increasingly important. MSMEs that adopt environmentally friendly practices, such as energy efficiency, waste management, and the use of sustainable raw materials, can enhance their product competitiveness in the market (Achmad & Wiratmadja, 2025). Modern consumers tend to prefer products with sustainability value (Nguyen Tran Cam, 2023), making this approach an opportunity to access broader markets. The green economy approach in MSMEs is thus a relevant strategy to improve community welfare.

However, implementing the green economy in MSMEs is not without challenges, especially for business actors with limited resources and knowledge. Many MSMEs do not yet understand the long-term benefits of environmentally friendly practices and perceive their implementation as costly. In addition, limited access to green technology and insufficient policy support are major barriers to adopting this concept. Therefore, active involvement from various stakeholders, including academia, government, and the private sector, is necessary to encourage MSME transformation toward a green economy.

In this context, community service can act as a catalyst in accelerating the adoption of green economy practices among MSMEs. Through participatory and locally based approaches, community service programs can provide practical and easily implementable

solutions for business actors. Continuous mentoring also enables changes in behavior and mindset regarding the importance of sustainability. Community service thus promotes a transition toward more responsible business practices (Ferrante & Scandurra, 2025).

Several previous studies indicate that integrating community service with a green economy approach can generate positive impacts on MSME performance and community welfare. Research by Kardiansya et al. (2024) found that green investment and employment significantly contribute to poverty alleviation through sustainable development. Additionally, Ilham et al. (2025) demonstrated that the green economy approach in MSME empowerment enhances the economic independence of local communities. From an operational perspective, Marsela and Fitrianna (2025) revealed that resource efficiency practices improve production efficiency while reducing environmental impact. Other findings also show that green economy practices contribute to increased productivity and income of MSMEs, although implementation challenges remain (Pradani et al., 2023). Furthermore, community service programs based on the green economy have been proven to strengthen community capacity and maintain the sustainability of local resources (Hadikusumo, 2025; Sulaiman et al., 2022). These findings reinforce the argument that an integrated approach combining community service and green economy has strong potential to support inclusive economic development and sustainable poverty alleviation.

Based on the above discussion, it can be concluded that community service and green economy-based MSME strengthening represent a relevant strategy for supporting sustainable poverty alleviation. The synergy between capacity building and sustainability principles is expected to create a more resilient, inclusive, and environmentally friendly economic system. Therefore, this study is important to further examine the implementation and effectiveness of this approach in real-world contexts. The findings are expected to contribute both theoretically and practically to the development of sustainable MSME empowerment models.

Community Service

Community service is one of the main pillars of the Tri Dharma of Higher Education, focusing on the application of knowledge, technology, and research outcomes to provide direct benefits to society (Lutfiyah, 2025). This activity aims to enhance community capacity, independence, and welfare through various programs such as training, mentoring, and empowerment. In an economic context, community service serves as a bridge between academia and practical implementation, particularly in assisting MSMEs in adopting innovations and more effective and sustainable business practices.

Micro, Small, and Medium Enterprises (MSMEs)

Micro, Small, and Medium Enterprises (MSMEs) are a strategic sector in driving economic growth and employment absorption, especially in developing countries such as Indonesia (Sutrisno, 2023; Sutrisno, Ausat, et al., 2023; Sutrisno, Permana, et al., 2023). MSMEs are characterized by relatively small business scale, limited capital, and high

flexibility in adapting to market changes. Despite their significant potential, MSMEs often face various challenges, including limited access to financing, technology, and markets. Strengthening MSME capacity is therefore essential to enhance their competitiveness and contribution to national economic development.

Green Economy

The green economy is an economic development concept that emphasizes the balance between economic growth, environmental preservation, and social welfare (Telukdarie et al., 2024). This approach promotes efficient resource utilization, carbon emission reduction, and the implementation of environmentally friendly production and consumption practices. In the MSME context, the application of green economy principles may include the use of sustainable raw materials, waste management, and renewable energy utilization. This concept creates new market opportunities and increases product value.

Empowerment

Empowerment is the process of enhancing the capacity of individuals or groups to gain the ability, access, and control over resources needed to improve their quality of life (Domínguez-Cruz et al., 2018). In an economic context, empowerment involves improving skills, knowledge, and self-confidence of business actors so they can become independent and competitive. This approach is participatory in nature, where communities are actively involved in decision-making and program implementation processes. Empowerment leads to sustainable social transformation.

Sustainable Poverty Alleviation

Sustainable poverty alleviation refers to systematic efforts to reduce poverty levels by considering long-term economic, social, and environmental aspects (Nzasabayezu et al., 2024). This approach focuses on enhancing community capacity so that individuals can escape poverty independently and sustainably. Strategies include job creation, improving access to education and technology, and developing productive enterprises such as MSMEs. Poverty alleviation is expected to create equitable welfare without harming the environment by integrating sustainability principles.

METHOD

This study employs a qualitative approach using a literature review method, aimed at enriching references related to community service, particularly in the context of strengthening green economy-based MSMEs to support sustainable poverty alleviation. This research does not involve primary data collection; instead, it focuses on reviewing and synthesizing various relevant scientific literature sources to strengthen the conceptual and empirical foundations of the topic. Therefore, this study is expected to contribute to expanding academic knowledge, particularly in developing sustainable community service models. The data sources in this study were obtained from various scientific publications accessed through the Google Scholar database and other credible websites, including

accredited national journals and reputable international journals. The publication period ranges from 1991 to 2026, ensuring that the literature analyzed is both relevant and up-to-date. The literature search process was conducted using keywords related to community service, MSMEs, green economy, and poverty alleviation, in both Indonesian and English.

At the initial stage, a total of 50 articles were identified as relevant to the research topic. Subsequently, a rigorous selection process was conducted based on inclusion and exclusion criteria, such as topic relevance, publication quality, methodological clarity, and contribution to the research discussion. After this screening process, 36 articles were selected as the main sources for analysis. The selected articles were analyzed using descriptive analysis techniques, involving the identification, comparison, and synthesis of previous research findings to obtain a comprehensive understanding of the role of community service in strengthening green economy-based MSMEs. Through this approach, the study is expected to produce a systematic mapping of the literature and provide an in-depth overview of trends, challenges, and opportunities in the implementation of community service oriented toward the green economy. Furthermore, the findings are expected to serve as an academic reference that reinforces the urgency of developing community service programs as a strategic instrument in sustainable economic development.

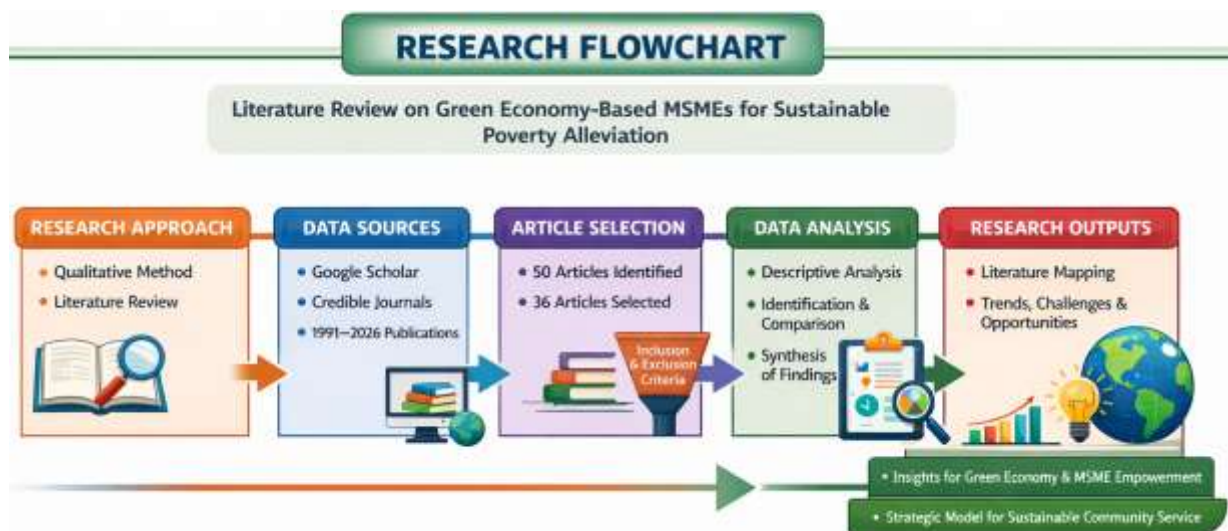


Figure 1. Research Methodology Flowchart

FINDING AND DISCUSSION

The discussion on community service and green economy-based MSME strengthening cannot be separated from the framework of sustainable development, which conceptually emphasizes the harmonious integration of economic, social, and environmental dimensions in the development process. From this perspective, poverty is no longer narrowly understood as a lack of income, but rather as a multidimensional condition that includes limited access to resources, education, and economic opportunities (Grazini,

2025). Poverty alleviation must therefore be directed toward community empowerment efforts that enhance adaptive capacity and sustainable resource management. This concept aligns with the triple bottom line theory, which asserts that the success of economic activities is measured not only by profit but also by contributions to social welfare (people) and environmental sustainability (planet) (Kusmendar et al., 2025). In this context, green economy-based MSME strengthening becomes increasingly relevant as it integrates these three dimensions into real economic practices, ensuring long-term sustainability and social equity.

Furthermore, empowerment theory provides a crucial conceptual foundation for understanding how community service can effectively enhance MSME capacity. This theory emphasizes that sustainable development must focus on improving the ability of individuals and groups to control resources and make decisions that affect their lives (Bonnedahl et al., 2022). In the MSME context, empowerment includes strengthening managerial capacity, financial literacy, and understanding of environmentally based sustainable business practices. Community service functions as a strategic instrument in transforming academic knowledge into practical applications for business actors. Moreover, participatory empowerment approaches enable a two-way learning process, where MSME actors contribute to developing solutions that fit local contexts. Community service thus becomes an important catalyst in driving behavioral and mindset changes toward more adaptive, innovative, and sustainable business practices.

In addition, the diffusion of innovation theory provides a comprehensive analytical framework for explaining the adoption process of innovations among MSMEs, including those based on the green economy. This theory suggests that innovation adoption is influenced by various factors, such as the characteristics of the innovation, communication channels, time, and the surrounding social system (Rogers et al., 2019). In this context, community service acts as a change agent that bridges information gaps and accelerates innovation diffusion through communicative and contextual approaches. Through training, intensive mentoring, and practical demonstrations, MSME actors can better understand the economic and environmental benefits of such innovations. Social interactions among business actors also play a significant role in accelerating adoption through collective learning mechanisms. The success of green economy implementation in MSMEs largely depends on effective knowledge dissemination strategies and the ability of community service actors to build trust and motivation.

Previous studies consistently show that the application of green economy principles in MSMEs has significant positive impacts on operational efficiency and business competitiveness. Various empirical studies reveal that the use of environmentally friendly raw materials, energy efficiency, and improved waste management can reduce production costs in the long term, although initial investments may be required (Bello & Maladzhi, 2025; Hariyani et al., 2025). In addition, products produced through sustainable processes tend to have higher added value, as they meet the preferences of modern consumers who are increasingly concerned about environmental and sustainability issues. This reflects a shift in market paradigms from price-oriented to value-based consumption. Furthermore,

environmentally friendly practices can enhance business image and reputation, ultimately expanding market access, including entry into global markets that require sustainability standards (Rastogi et al., 2024). Thus, green economy implementation becomes a competitive strategy that sustainably improves MSME economic performance.

Other studies also indicate that systematically designed, structured, and sustainable community service programs have a significant impact on enhancing MSME capacity (Irawan et al., 2026). Participatory approaches allow MSME actors to actively engage in all stages of the program, from problem identification to evaluation. This involvement fosters a sense of ownership, ensuring the sustainability of intervention outcomes. Continuous and intensive mentoring facilitates deeper knowledge transfer compared to conventional one-way, short-term training approaches. In this context, community service functions as a process of social transformation that changes mindsets, builds confidence, and encourages innovation among MSME actors. The success of such programs is determined by program design quality, mentoring intensity, and alignment with the needs and characteristics of the target community.

Empirical case studies further demonstrate that integrating community service with a green economy approach can produce tangible and measurable impacts on MSME strengthening. The first case involves an eco-friendly batik MSME empowerment program in Yogyakarta, emphasizing the use of natural dyes as a substitute for synthetic chemicals (Baik, 2024). From a theoretical perspective, this practice aligns with ecological modernization theory, which posits that technological innovation and production practices can reduce environmental impacts without hindering economic growth (Huber, 2008). The use of natural dyes enhances product differentiation, creating a sustainability-based competitive advantage. Additionally, mentoring processes strengthen technical capacity and knowledge, enabling MSMEs to adopt more efficient and sustainable production techniques. This demonstrates that knowledge-based interventions can lead to structural transformation in business practices.

The second case is the development of plastic waste processing MSMEs in Cirebon, which convert plastic waste into economically valuable products such as bags and handicrafts (Qorib, 2025). This case can be analyzed using the circular economy approach, which emphasizes resource reuse to minimize waste and create new economic value. The program reflects a multi-stakeholder collaboration model consistent with the triple helix framework involving government, academia, and society. Economically, the initiative generates alternative income sources and creates employment opportunities, particularly for low-income communities. Environmentally, it significantly contributes to sustainable urban waste management. This case demonstrates that the green economy approach is practical in addressing complex environmental and social challenges simultaneously.

The third case involves renewable energy-based MSME empowerment in East Nusa Tenggara, promoting the use of solar energy in production processes (Setnis, 2025). From a resource-based view perspective, renewable energy can be considered a strategic resource that provides competitive advantage by reducing dependence on fluctuating fossil fuel

prices (Barney, 1991). This program enhances business resilience amid energy price uncertainty. Furthermore, the adoption of solar technology reflects the diffusion of innovation supported by community service activities, where MSME actors acquire new knowledge and technical skills. Socially, the program increases collective awareness of clean energy, fostering a more sustainable local economic ecosystem. This highlights the importance of integrating technological and social empowerment aspects.

Despite these achievements, the implementation of green economy-based MSME strengthening still faces complex structural and cultural challenges. One major constraint is the low level of environmental literacy among MSME actors, limiting their understanding of the long-term benefits of sustainable practices. From the theory of planned behavior perspective, this is related to attitudes, subjective norms, and perceived behavioral control that do not yet support sustainable behavior adoption (Ajzen, 1991). In addition, limited access to green technology and financing remains a significant barrier, particularly for MSMEs with limited capital. This creates a gap between the potential benefits of the green economy and the actual capacity of MSMEs to implement it. Transitioning toward a green economy requires comprehensive and sustained interventions covering education, technology, and policy support.

Another critical issue is the lack of synergy among stakeholders in supporting green economy-based MSME development. In many cases, programs implemented by government, academia, and the private sector remain fragmented and unintegrated, reducing their effectiveness and sustainability. From governance and collaborative development theory perspectives, this reflects weak coordination within innovation systems that should involve multiple actors synergistically (van Gestel & Grotenbreg, 2021; Zadeqan & Ghazinoory, 2026). Additionally, existing policies have not provided sufficient incentives for MSMEs to adopt environmentally friendly practices, such as subsidies, financing access, or supportive regulations. As a result, green economy adoption remains slow and uneven across sectors. Therefore, a more integrated and systematic approach is needed, such as the quadruple helix model involving government, academia, the private sector, and society.

To address these challenges, comprehensive and sustainable strategic interventions are required. First, education and training programs based on the green economy must be designed to be practical, contextual, and aligned with MSME needs. From the andragogy perspective, training effectiveness depends on its relevance to participants' experiences, making experiential learning (learning by doing) essential. Second, financial support and incentives are key drivers for adopting environmentally friendly practices, as limited capital is a major constraint. From an institutional economics perspective, policy interventions such as green technology subsidies, fiscal incentives, and easier credit access can reduce transaction costs and risks (Fan & Shi, 2025). Third, strengthening stakeholder collaboration through a quadruple helix approach is crucial to building an inclusive innovation ecosystem. Synergy among government, academia, the private sector, and society enables integration of resources, knowledge, and networks to accelerate MSME transformation.

This discussion highlights that community service plays a strategic role as a socio-economic transformation instrument in strengthening green economy-based MSMEs as part of sustainable poverty alleviation efforts. The integration of theoretical frameworks such as sustainable development, empowerment, and innovation diffusion with empirical findings and case studies demonstrates both conceptual and practical validity. Theoretically, this approach enriches the literature on environmentally based inclusive development, while practically, it enhances MSME capacity, competitiveness, and sustainability. Community service acts as a bridge connecting academic knowledge with real community needs, producing adaptive and contextual solutions. Therefore, successful implementation depends on the collective commitment of stakeholders to continuously develop, evaluate, and replicate best practices.

Overall, strengthening MSMEs through a green economy approach supported by community service activities represents a strategy capable of addressing the multidimensional challenges of modern economic development. This approach integrates environmental sustainability and social equity into a more inclusive development paradigm. From a contemporary development economics perspective, sustainability-oriented MSMEs have strong potential to act as agents of change in driving local economic transformation. With proper management, adequate policy support, and capacity building through community service, MSMEs can evolve into resilient, innovative, and highly competitive sectors. Ultimately, their strategic role in job creation, income generation, and environmental preservation makes MSMEs a key pillar in achieving sustainable poverty alleviation in Indonesia.

Table 1. Key Findings on Green Economy-Based MSME Strengthening through Community Service

No	Aspect	Key Findings	Implications
1	Sustainable Development Framework	Poverty is multidimensional; development must integrate economic, social, and environmental aspects (triple bottom line).	MSME strengthening must balance profit, social welfare, and environmental sustainability.
2	Role of Community Service	Acts as a bridge between academic knowledge and practical application; enhances MSME capacity through empowerment.	Essential for transforming knowledge into sustainable business practices.
3	Empowerment Approach	Improves managerial skills, financial literacy, and sustainability awareness through participatory methods.	Builds independence, confidence, and long-term MSME resilience.
4	Innovation Diffusion	Adoption of green practices influenced by communication, social systems, and mentoring.	Training and mentoring accelerate innovation adoption among MSMEs.
5	Green Economy Impact	Improves efficiency, reduces costs (long-term), increases product value, and enhances competitiveness.	Green practices create competitive advantage and market expansion opportunities.
6	Market Transformation	Shift from price-based to value-based consumption (sustainability-oriented consumers).	MSMEs adopting green practices gain stronger market positioning.

7	Effectiveness of Programs	Structured, participatory, and continuous community service programs yield better outcomes.	Program design and mentoring intensity determine success.
8	Case Study 1 (Batik – Yogyakarta)	Use of natural dyes improves sustainability and product differentiation.	Creates eco-friendly competitive advantage and production efficiency.
9	Case Study 2 (Plastic Waste – Cirebon)	Circular economy transforms waste into valuable products and creates jobs.	Supports environmental sustainability and income generation.
10	Case Study 3 (Renewable Energy – NTT)	Solar energy adoption increases resilience and reduces dependency on fossil fuels.	Strengthens business sustainability and promotes clean energy awareness.
11	Main Challenges	Low environmental literacy, limited technology access, and financial constraints.	Requires education, funding support, and technology accessibility.
12	Stakeholder Issues	Lack of synergy among government, academia, and private sector.	Integrated collaboration (quadruple helix) is necessary.
13	Policy Gaps	Limited incentives and regulatory support for green MSMEs.	Need for subsidies, fiscal incentives, and easier financing access.
14	Strategic Solutions	Education, financial support, and stakeholder collaboration are key drivers.	Holistic and integrated interventions are required.
15	Overall Impact	Green economy + community service enhances MSME capacity, competitiveness, and sustainability.	MSMEs become agents of change in sustainable economic development.

CONCLUSION

Based on the discussion, it can be concluded that community service plays a strategic role in strengthening green economy-based MSMEs as an effort to support sustainable poverty alleviation. The integration of community empowerment approaches, green economy principles, and MSME capacity building has proven to create economic added value while maintaining environmental sustainability. The implementation of environmentally friendly practices, such as resource efficiency, waste management, and renewable energy utilization, contributes significantly to improving community welfare. In addition, the results of the literature review indicate that the success of green economy implementation in MSMEs is highly influenced by the effectiveness of community service programs that are conducted in a participatory and sustainable manner. The analyzed case studies further confirm that collaboration among various stakeholders can accelerate the transformation of MSMEs toward more inclusive and environmentally oriented business practices. Therefore, an integrated approach combining community service and the green economy represents a relevant and practical solution to address the challenges of modern economic development.

From a theoretical perspective, this study contributes to enriching the literature on the integration of community service concepts with the green economy in the context of MSME strengthening. It also reinforces the relevance of empowerment theory, diffusion of innovation, and sustainable development in explaining the transformation dynamics of

MSMEs toward sustainable business practices. Thus, this research can serve as a reference for developing more comprehensive conceptual models related to environmentally based economic empowerment. From a practical perspective, the findings provide implications for governments, academics, and business actors in designing more effective and sustainable MSME empowerment programs. Community service programs should focus on strengthening environmental awareness and promoting the adoption of green technologies. In addition, supportive policies are required, such as incentives for green MSMEs and improved access to financing and environmentally friendly technologies.

This study has several limitations that should be acknowledged. First, it employs a literature review method and does not involve primary data directly from MSME actors. As a result, the findings are more conceptual and descriptive, and may not fully capture specific empirical conditions in the field. Second, the data sources are limited to publications available on Google Scholar and selected credible websites within the 1991–2026 period, which may exclude other relevant literature. Third, although the article selection process followed rigorous screening procedures, there remains potential subjectivity in determining relevance and quality. Additionally, the limited number of analyzed articles (36 articles) may affect the breadth of the discussion. Therefore, the findings of this study should be understood as a general overview that requires further validation through more in-depth and empirically based research.

Based on these limitations, future research is recommended to adopt empirical approaches, such as quantitative or mixed methods, to directly examine the impact of green economy-based community service on MSME performance and poverty alleviation. Further studies may also expand the scope of regions and MSME sectors to obtain more representative and comprehensive results. Moreover, for practitioners and policymakers, it is recommended to enhance the quality and sustainability of community service programs through collaborative approaches involving multiple stakeholders. Strengthening education, providing incentives, and developing affordable green technologies for MSMEs should become top priorities. In this way, efforts to strengthen green economy-based MSMEs can be optimized to support inclusive and sustainable economic development.

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