International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

Green Operations in Increasing the Competitive Advantage of MSMEs in Gorontalo City

Yulinda L. Ismail[1]
[1]Universitas Negeri Gorontalo, Indonesia
Asriani[2]
[2]ITBA Algazali Barru, Indonesia
Mahfud Nurjanamuddin[3]
[3]Universitas Muslim Indonesia, Indonesia

Corresponding Author: yulinda.ismail@ung.ac.id[1], aniryani123@gmail.com[2], mahfud.nurnamuddin@umi.ac.id

Abstract

This study aims to analyze the role of Green Operations in increasing the competitive advantage of Micro, Small, and Medium Enterprises (MSMEs) in Gorontalo City. Global climate change and increasing pressure on sustainability encourage business actors to integrate environmentally friendly practices into operational activities. Green Operations include energy efficiency, waste management, the use of environmentally friendly materials, and the application of clean technology that contributes to improving business performance. This study uses a qualitative approach with the literature review method, which examines various scientific sources, policy reports, and publications related to Green Operations and MSMEs. The results of the study show that the implementation of Green Operations is able to increase competitive advantage through cost efficiency, product differentiation, improved business image, and access to a wider market. In addition, the success of the implementation is influenced by Green Intellectual Capital, regulatory support, and collaboration between stakeholders.

Keywords: Green Operations, Competitive Advantage, MSMEs

INTRODUCTION

Global climate change and environmental degradation have become strategic issues that significantly affect the direction of business development. Global pressure to reduce carbon

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

emissions and increase sustainability is driving companies to transform from conventional business models to more environmentally friendly models (NITI Aayog, 2026; Bappenas, 2025). In this context, the concept of *Green Operations* emerges as an approach that integrates environmental aspects into all of the company's operational activities, from the procurement of raw materials to product distribution (Snic Solutions, 2024; Institute of Sustainability Studies, 2023).

In Indonesia, the commitment to sustainable development is further strengthened through various strategic policies, including the target of achieving *net zero emissions* by 2060. In this effort, Micro, Small, and Medium Enterprises (MSMEs) have an important role as the backbone of the national economy as well as contributors to resource-based economic activities (Bappenas, 2025). However, the rapid growth of MSMEs also has the potential to increase pressure on the environment if it is not balanced with sustainable operational practices.

Gorontalo City as one of the centers of economic growth in eastern Indonesia shows significant dynamics of MSME development. Data shows that the number of MSMEs in this region will increase by up to 28% by 2024, which reflects the high economic activity of the community (Gopos, 2024). On the other hand, the increase in the number of business units also has implications for increasing waste volume and resource use that has the potential to cause environmental problems, especially in urban waste management (Aritonang, 2023).

In facing these challenges, the implementation of *Green Operations* is a relevant strategy to improve the efficiency of resource use while reducing environmental impact. This practice includes energy efficiency, waste reduction, the use of environmentally friendly materials, and the application of clean technology that can increase business productivity (SCORE, 2023). In addition to providing environmental benefits, the implementation of Green Operations also has the potential to create a competitive advantage through cost efficiency, product innovation, and improving the business image in the eyes of consumers (Snic Solutions, 2024).

The competitive advantage resulting from sustainable practices is not only short-term, but also provides long-term strategic value. Companies that are able to integrate environmental aspects in their operations tend to be more adaptive to regulatory changes and global market demands that increasingly emphasize sustainability aspects (Bappenas, 2025). In addition, *the concept of Green Intellectual Capital* also plays an important role in supporting the implementation of Green Operations through increasing the capacity of human resources, organizational systems, and relationships with stakeholders (Catholic University of Saint Thomas, 2023).

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

However, the implementation of Green Operations in MSMEs still faces various obstacles, such as limited capital, low environmental literacy, and lack of supporting infrastructure (SCORE, 2023; Gorontalo City Government, 2018). Many MSME actors are still oriented towards short-term business sustainability so they have not prioritized sustainability aspects in their business operations (Neliti, 2022). This condition shows that there is a gap between the potential and implementation of Green Operations at the MSME level.

Based on this background, this study aims to analyze the role of Green Operations in increasing the competitive advantage of MSMEs in Gorontalo City through a literature review approach. This research is expected to make a theoretical contribution to the development of the concept of Green Operations and provide practical recommendations for MSME actors and policy makers in encouraging transformation towards a sustainable green economy.

LITERATURE REVIEW

Green Operations Concept

Green Operations is an operational approach that integrates sustainability principles into all business activities, from raw material procurement, production processes, to waste distribution and management (Snic Solutions, 2024; Institute of Sustainability Studies, 2023). This concept developed in response to increasing global pressures on climate change and environmental degradation that require companies to be more responsible for their ecological impacts (NITI Aayog, 2026).

In its implementation, Green Operations includes energy efficiency, waste reduction, the use of environmentally friendly materials, and the application of clean technology in the production process (SCORE, 2023). The application of this concept not only focuses on environmental aspects, but also provides economic impacts in the form of increasing operational efficiency and reducing production costs (Snic Solutions, 2024).

Green Operations and Competitive Advantage

Competitive advantage can be achieved when a company is able to create higher value than its competitors, both through differentiation and cost efficiency (Snic Solutions, 2024). In the context of Green Operations, this advantage arises through the company's ability to produce environmentally friendly products and optimize the use of resources (SCORE, 2023).

The *Natural Resource-Based View approach* explains that a company's ability to manage natural resources in a sustainable manner can be a source of long-term competitive advantage

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

that is difficult for competitors to imitate (Bappenas, 2025). In addition, the implementation of green practices also increases the company's chances of being included in the global supply chain which increasingly demands sustainability standards and ESG transparency (Bappenas, 2025).

Implementation of Green Operations in MSMEs

MSMEs have an important role in the regional economy, but they still face limitations in the application of environmentally friendly technology (Gopos, 2024). The implementation of Green Operations in MSMEs is generally carried out through simple steps such as waste reduction, energy efficiency, and the use of more sustainable local raw materials (SCORE, 2023).

In Gorontalo City, the growth of MSMEs reaching 28% shows a significant contribution to the regional economy, but it also increases pressure on the environment, especially in terms of waste production (Gopos, 2024; Aritonang, 2023). Therefore, the implementation of Green Operations is an important strategy to maintain a balance between economic growth and environmental sustainability (Aritonang, 2023).

Challenges of Implementing Green Operations

The implementation of Green Operations in MSMEs faces various obstacles, including limited capital for green technology investment, low environmental literacy, and limited waste management infrastructure (SCORE, 2023; Gorontalo City Government, 2018). This condition has caused many MSME actors to not be able to adopt environmentally friendly practices optimally (Neliti, 2022).

In addition, some business actors still view sustainability practices as an additional burden rather than a strategic opportunity to increase competitiveness (Neliti, 2022). The lack of coordination between central and regional policies is also an obstacle to the overall implementation of the green economy (Bappenas, 2025).

Policy and Regulatory Support

The Indonesian government has established various policies to support the green economy, including a *net zero emission* target by 2060 (Bappenas, 2025). This policy is the foundation for business actors to start adopting sustainable practices in their business operations (Bappenas, 2025).

At the regional level, the Gorontalo City Government has issued PERDA Number 12 of 2017 concerning waste management which aims to reduce the environmental impact of economic

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

activities (Gorontalo City Government, 2017). This regulation encourages MSME actors to be more responsible in waste management and increase awareness of the importance of sustainability (RRI, 2024).

The Role of Collaboration and Innovation

Collaboration between the government, academia, and the private sector is an important factor in encouraging the implementation of Green Operations in MSMEs (Bappenas, 2025). Training programs, mentoring, and access to financing are key in increasing the capacity of business actors to adapt to environmentally friendly practices (SCORE, 2023).

In addition, innovations based on local wisdom, such as the development of cultural-based eco-friendly products, such as Karawo embroidery, can be a strong differentiation strategy in increasing the competitiveness of MSMEs in national and global markets (ISI Yogyakarta, 2022). The integration of local innovation with the concept of sustainability also strengthens product identity while increasing economic added value (Republika, 2023).

RESULTS AND DISCUSSION

Implementation of Green Operations in MSMEs in Gorontalo City

The results of the literature review show that the implementation of *Green Operations* in MSMEs in Gorontalo City is still in the early stages and tends to be partial. Most MSME actors have implemented simple practices such as reducing the use of plastics, using local raw materials, and managing small-scale waste (SCORE, 2023). However, the application of clean technology and an integrated environmental management system is still very limited due to capital constraints and limited technical knowledge (Neliti, 2022).

On the other hand, the growth of MSMEs, which reached 28% in 2024, shows a significant increase in economic activity in Gorontalo City (Gopos, 2024). This condition has implications for increasing pressure on the environment, especially in terms of waste production and energy use. Therefore, the implementation of *Green Operations* is a strategic need to ensure business sustainability while maintaining environmental balance (Aritonang, 2023).

Green Operations as a Source of Competitive Advantage

The implementation *of Green Operations* has been proven to contribute to increasing the competitive advantage of MSMEs through several main mechanisms. First, the efficiency of energy and raw material use is able to significantly reduce operational costs, thereby increasing

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

business profit margins (Snic Solutions, 2024).

Second, environmentally friendly practices provide added value to the products produced, so that they are able to attract consumers who are increasingly aware of environmental issues (Republika, 2023). This sustainability-based product differentiation is an important strategy in facing increasingly fierce market competition.

Third, the implementation of Green Operations also improves the image and reputation of the business, which has an impact on increasing consumer confidence and access opportunities to a wider market, including the export market (Bappenas, 2025). Thus, Green Operations not only contributes to internal efficiency, but also strengthens the external position of MSMEs in business competition.

The Role of Green Intellectual Capital in Encouraging MSME Performance

The success of the implementation of Green Operations is greatly influenced by the existence of *Green Intellectual Capital* in the organization. This capital includes the knowledge, skills, and environmental awareness possessed by human resources (Catholic University of Saint Thomas, 2023).

Green Human Capital plays a role in improving employees' ability to manage environmentally friendly production processes, while Green Structural Capital provides systems and procedures that support sustainability (UST, 2023). In addition, Green Relational Capital strengthens relationships with customers and business partners who share a sustainability orientation (Universitas Islam Indonesia, 2020).

With the integration of these three components, MSMEs are able to create sustainable green innovations and significantly increase competitiveness (Islamic University of Indonesia, 2020).

Challenges of Implementing Green Operations

Despite having great potential, the implementation of Green Operations for MSMEs in Gorontalo City still faces various obstacles. One of the main obstacles is limited capital for initial investment in environmentally friendly technology (SCORE, 2023).

In addition, low environmental literacy among MSME actors leads to a lack of understanding of the long-term benefits of sustainability practices (Neliti, 2022). Inadequate waste management infrastructure is also an inhibiting factor in the implementation of an optimal clean production system (Gorontalo City Government, 2018).

This condition is exacerbated by the perception that environmentally friendly practices are

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

an additional burden for businesses, not as a strategic opportunity to increase competitiveness (Neliti, 2022). Therefore, a more comprehensive approach is needed to overcome these obstacles.

The Role of Government Policy and Support

The government has an important role in encouraging the implementation of Green Operations through supportive regulations and policies. National policies related to the green economy and *net zero emission* targets are the foundation for business actors to adopt sustainable practices (Bappenas, 2025).

At the regional level, the Gorontalo City Government has issued regulations related to waste management that aim to reduce the environmental impact of economic activities (Gorontalo City Government, 2017). However, the implementation of these policies still requires strengthening in terms of supervision and coordination between institutions (RRI, 2024). Support in the form of fiscal incentives, access to financing, and training programs are also needed to increase the capacity of MSMEs in implementing Green Operations effectively (Bappenas, 2025).

Strategy to Strengthen Green Operations in MSMEs

Based on the results of the study, there are several strategies that can be carried out to strengthen the implementation of Green Operations for MSMEs in Gorontalo City. First, increasing the capacity of human resources through training and technical assistance related to clean production and energy efficiency (SCORE, 2023).

Second, the development of innovative financing schemes to assist MSMEs in accessing environmentally friendly technology (Bappenas, 2025). Third, the use of digital technology to increase operational efficiency and transparency in the supply chain (Snic Solutions, 2024).

Fourth, strengthening innovations based on local wisdom such as the development of cultural-based eco-friendly products, such as Karawo embroidery, which has high economic added value and market attractiveness (ISI Yogyakarta, 2022). With an integrated strategy, MSMEs in Gorontalo City have a great opportunity to develop into competitive green economy actors.

CONCLUSION

The implementation *of Green Operations* has proven to be an effective strategy in increasing the competitive advantage of MSMEs in Gorontalo City. This practice not only contributes to reducing environmental impact through energy efficiency, waste management, and the use of environmentally friendly materials, but also provides economic benefits in the form of

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

reducing operational costs and increasing product added value. In addition, Green Operations is able to create business differentiation and improve business image in the eyes of consumers, thereby strengthening the position of MSMEs in increasingly competitive market competition.

However, the implementation of Green Operations still faces various challenges, such as limited capital, low environmental literacy, and lack of infrastructure and technology support. Therefore, synergy is needed between the government, academics, and business actors in encouraging the adoption of sustainable practices through supportive policies, training programs, and access to financing and technology. With the right support, MSMEs in Gorontalo City have great potential to develop into competitive and sustainable green economy actors.

REFERENCES

Aritonang, S. (2023). Partisipasi masyarakat dalam pengelolaan sampah di Kota Gorontalo. *Jurnal Konstruksi Teknik Indonesia*. https://journal.aritekin.or.id/index.php/Konstruksi/article/download/860/1119

Badan Perencanaan Pembangunan Nasional (Bappenas). (2025). Green SMEs and net zero: Strategic framework for Indonesia's climate-aligned economic transformation. https://perpustakaan.bappenas.go.id

Badan Pusat Statistik. (2023). Statistik usaha mikro kecil di Indonesia. https://bps.go.id

Gopos. (2024). Meningkat 28 persen, jumlah UMKM di Gorontalo tembus 105.509 unit usaha. https://gopos.id

Institute of Sustainability Studies. (2023). Green manufacturing: Best practices for reducing impact. https://instituteofsustainabilitystudies.com/insights/guides/green-manufacturing-best-practices-for-reducing-impact/

ISI Yogyakarta. (2022). Penerapan sulam Karawo pada tekstil ecoprint. Jurnal Corak. https://journal.isi.ac.id/index.php/corak/article/view/8790

Kementerian Perencanaan Pembangunan Nasional. (2025). Roadmap ekonomi hijau Indonesia. https://bappenas.go.id

Neliti. (2022). Analisis implementasi kebijakan ekonomi dan implikasinya terhadap UMKM di Kota Gorontalo. https://media.neliti.com/media/publications/524818-none-d4f6c042.pdf

NITI Aayog. (2026). Roadmap for green transition of MSMEs. https://niti.gov.in/sites/default/files/202601/Roadmap_for_Green_Transition_of_MSMEs.pdf

Pemerintah Kota Gorontalo. (2018). Peraturan Walikota Nomor 21 Tahun 2018 tentang kebijakan

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License

dan strategi daerah (Jakstrada).

Republika. (2023). Peluang UMKM hijau buka gerbang ekspor. https://www.republika.id/posts/41915/peluang-umkm-hijau-buka-gerbang-ekspor

RRI. (2024). DLH Kota Gorontalo tegaskan sanksi perda sampah. https://rri.co.id/gorontalo/regional/2108115/about.html

RRI. (2024). DLH Kota Gorontalo tegaskan sanksi perda sampah. https://rri.co.id

SCORE. (2023). Sustainability in manufacturing made simple: Step-by-step guide for SMEs. https://www.score.org/utah/resource/blog-post/sustainability-manufacturing-made-simple-step-step-guide-smes

Snic Solutions. (2024). Green manufacturing: Top strategies for sustainable success. https://snicsolutions.com/blog/green-manufacturing

Universitas Islam Indonesia. (2020). Pengaruh green innovation terhadap kinerja inovasi dan keunggulan kompetitif UMKM. https://dspace.uii.ac.id/123456789/28305

Universitas Katolik Santo Thomas. (2023). Pengaruh green intellectual capital terhadap sustainable performance (Studi kasus UMKM kuliner). https://ejournal.ust.ac.id/index.php/JRAK/article/view/6297/4033

Universitas Katolik Santo Thomas. (2023). Pengaruh green intellectual capital terhadap sustainable performance UMKM. https://ejournal.ust.ac.id

Copyright at authors some right reserved this work is licensed under a Creative Commons Attribution-Share Alike 4.0 International License