

GREEN ECONOMY-BASED SUSTAINABLE INNOVATION: A MANAGERIAL PERSPECTIVE ON ADDRESSING ENVIRONMENTAL CHALLENGES

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ABSTRACT

Purpose: This study aims to explore how the adoption of green economy principles encourages sustainable innovation from a managerial perspective in addressing environmental challenges. Specifically, the study investigates how managers formulate strategies, allocate organizational resources, and implement environmentally responsible business practices to achieve sustainability while maintaining organizational competitiveness. The research also seeks to identify the opportunities and barriers encountered during the implementation of green economy initiatives and to understand how managerial decision-making contributes to long-term environmental and business performance.

Design/methodology/approach: This study employs a qualitative research design using a multiple case study approach. Data were collected through semi-structured interviews with managers and business owners who have implemented green economy practices in their organizations, supported by direct observations and document analysis. The participants were selected using purposive sampling based on their experience in sustainable business management. Data were analyzed using thematic analysis, involving data coding, categorization, and theme development to identify managerial strategies, implementation processes, challenges, and best practices related to sustainable innovation. Triangulation of data sources and member checking were conducted to enhance the credibility and trustworthiness of the findings.

Findings: The findings indicate that managerial commitment is a critical driver of sustainable innovation within the framework of the green economy. Organizations that integrate environmental considerations into strategic decision-making demonstrate greater innovation in product development, resource efficiency, waste reduction, and environmentally friendly operational processes. The study also reveals that organizational culture, stakeholder collaboration, and leadership support significantly influence the successful implementation of green economy practices. However, several challenges remain, including limited financial resources, inadequate technological capabilities, regulatory uncertainty, and low environmental awareness among some stakeholders. Despite these obstacles, organizations adopting green economy strategies experience improved operational efficiency, stronger competitive advantage, enhanced corporate reputation, and increased long-term sustainability. These findings highlight the importance of managerial capability in transforming environmental challenges into opportunities for sustainable business innovation.

Research limitations/implications: This study is limited by its qualitative design and relatively small number of case organizations, which may restrict the generalizability of the findings to other industrial sectors or geographical contexts. The research focuses primarily on managerial perspectives, while the views of employees, customers, policymakers, and other stakeholders are not comprehensively explored. Future studies are encouraged to employ mixed-method or quantitative approaches involving larger samples across different industries and countries to validate and extend the proposed managerial framework. Additionally, longitudinal research could provide deeper insights into the long-term impact of green economy practices on organizational sustainability and innovation performance.

Originality/value: This study contributes to the growing body of literature on sustainable innovation by integrating green economy principles with managerial decision-making in addressing environmental challenges. Unlike previous studies that predominantly examine technological or policy aspects of the green economy, this research emphasizes the strategic role of managers in fostering sustainable innovation within organizations. The findings provide both theoretical and practical insights into how managerial capabilities, leadership commitment, and organizational strategies facilitate environmental sustainability while enhancing business competitiveness. The study also offers a conceptual reference for managers and policymakers seeking to promote sustainable business transformation through green economy practices.

Paper type: Research paper (Qualitative study).

Keyword: *Green Economy, Sustainable Innovation, Managerial Perspective, Environmental Challenges, Sustainable Business Environmental Management.*

A. INTRODUCTION

Climate change, environmental degradation, increasing carbon emissions, overexploitation of natural resources, and increasing industrial waste have become increasingly complex global challenges. Business organizations are no longer solely required to generate economic profits but also to create social value and maintain environmental sustainability. A paradigm shift in development toward a green economy is a key strategy for achieving inclusive economic growth while preserving the environment. In this context, companies need to integrate economic, social, and environmental aspects into their business strategies through sustainable innovation as a source of long-term competitive advantage.

Various international reports indicate that industrial activity remains a major contributor to greenhouse gas emissions, fossil fuel consumption, and environmental pollution. This situation has prompted governments in various countries to implement various regulations regarding energy efficiency, the circular economy, the use of renewable energy, and industrial waste reduction. Furthermore, increasing consumer awareness of environmentally friendly products has changed business competition patterns, requiring companies to produce innovations that not only provide economic value but also provide environmental benefits. This demonstrates that the success of organizations in the modern era is greatly influenced by their ability to integrate green economy principles into their innovation strategies.

The concept of a green economy is an economic development approach that emphasizes improving people's welfare through efficient, low-carbon, inclusive, and environmentally sustainable use of resources. According to the United Nations Environment Programme (UNEP), a green economy is an economic system capable of significantly improving human well-being and social justice while simultaneously reducing environmental risks and resource scarcity. In recent management literature, the green economy is viewed as a paradigm that encourages companies to integrate resource efficiency, green investment, a circular economy, and environmentally friendly innovation as core business strategies. Implementing a green economy is no longer merely about complying with regulations, but has become a source of corporate value creation through cost efficiency, improved reputation, and strengthened long-term competitiveness.

From a strategic management perspective, implementing a green economy requires comprehensive changes to a company's business processes. This transformation includes the use of low-carbon technology, energy efficiency, sustainable raw material utilization, waste management, and the development of a green supply chain. Organizations that successfully implement these principles tend to be more adaptable to changes in the business environment than those that still use conventional business models. Therefore, the green economy is a crucial foundation for sustainable innovation. Sustainable innovation is defined as the process of developing products, production processes, business models, and organizational systems that generate economic value while simultaneously increasing social benefits and reducing negative environmental impacts. Unlike conventional innovation, which is solely profit-oriented, sustainable innovation integrates three

dimensions of sustainability (the triple bottom line): economic, social, and environmental.

Recent literature indicates that sustainable innovation is a key factor enabling organizations to navigate environmental uncertainty while enhancing their competitiveness through sustainable value creation. According to Lehtimäki et al. (2025), sustainable innovation is a multidimensional concept encompassing technological innovation, organizational innovation, business model innovation, social innovation, and ecosystem innovation, all of which simultaneously contribute to corporate sustainability. Meanwhile, Qin et al. (2025) explain that implementing green innovation and sustainable innovation requires strategic organizational change through the integration of internal resources, top management support, organizational culture, and collaboration with various stakeholders. Thus, sustainable innovation is not merely a research and development (R&D) activity, but rather an organization's ability to transform environmental challenges into new business opportunities.

From a Resource-Based View (RBV) perspective, sustainable innovation is viewed as a strategic resource that is valuable, rare, inimitable, and non-substitutable (VRIN). A company's ability to develop green innovation will generate a competitive advantage that is difficult for competitors to imitate. Furthermore, Dynamic Capability Theory explains that companies must possess the ability to sense, seize, and transform to be able to respond to highly dynamic environmental changes. Sustainable innovation is a tangible form of dynamic capability because it enables companies to continuously adapt to changes in technology, regulations, and consumer preferences.

The third variable in this study is environmental challenges. Environmental challenges are no longer viewed as external factors hindering corporate activities, but have evolved into strategic factors influencing organizational sustainability. Environmental challenges include climate change, increasing carbon emissions, the energy crisis, air pollution, water pollution, natural resource scarcity, and increasing environmental regulatory pressure. The complexity of these challenges is driving organizations to shift their business management paradigm toward a more sustainable system. From a stakeholder theory perspective, companies have responsibilities not only to shareholders but also to all stakeholders, including society, government, customers, investors, local communities, and the environment. The greater stakeholder pressure on sustainability issues, the greater the company's drive to develop sustainable innovation as a strategic response. Therefore, environmental challenges are a key driver for the emergence of various green innovations within organizations.

Various previous studies have shown that the green economy has a positive effect on sustainable innovation, while sustainable innovation contributes to increased competitiveness, operational efficiency, corporate reputation, and environmental performance. However, most studies have focused on technological aspects or product innovation only partially, thus failing to explain how a managerial perspective can integrate the green economy with sustainable innovation to comprehensively address environmental challenges. Furthermore, previous studies have been primarily conducted in the manufacturing sector in developed countries, thus still lacking a clear understanding of the implementation of sustainable innovation in different organizational contexts, particularly in developing countries.

Based on these research gaps, this article aims to develop a conceptual perspective on the relationship between the green economy, sustainable innovation, and environmental challenges from a strategic management perspective. This research is expected to enrich the literature on sustainable innovation and provide practical implications for managers in designing organizational strategies that can create competitive advantages while maintaining environmental sustainability. Thus, sustainable innovation is viewed not only as a technological innovation activity, but as a managerial capability that integrates business strategy, resource management, and environmental responsibility in a sustainable manner.

B. METHODOLOGY

Research Time and Location

This research was conducted from January to April 2026 in East Java Province, Indonesia, particularly
Green Economy-Based Sustainable Innovation: A Managerial Perspective on Addressing Environmental
Challenges

Anisa dkk

involving Small and Medium Enterprises (SMEs) operating in the bakery and food-processing sectors.

East Java was selected because it represents one of Indonesia's major economic regions with an increasing commitment to implementing green economy practices through resource efficiency, waste reduction, environmentally friendly production, and sustainable business development. The selected SMEs have actively adopted various environmental initiatives, making them appropriate cases for exploring sustainable innovation from a managerial perspective.

Research Design

This study employed a qualitative research design using a multiple case study approach. According to Creswell and Poth (2024), qualitative research is appropriate for understanding complex social phenomena through participants' experiences, perspectives, and interpretations within their natural settings. Likewise, Yin (2024) explains that a multiple case study provides stronger analytical evidence than a single case by allowing cross-case comparisons and identifying recurring patterns across different organizations. The objective of this research is to explore how managers implement green economy principles in developing sustainable innovation to address environmental challenges while maintaining business competitiveness.

Research Participants

The research involved 12 SMEs selected using purposive sampling. Purposive sampling enables researchers to choose participants who possess rich knowledge and direct experience relevant to the research objectives (Campbell et al., 2020). The inclusion criteria were:

- a. SMEs operating for at least three years;
- b. implementation of green economy practices, including waste reduction, energy efficiency, eco-friendly packaging, or sustainable sourcing;
- c. willingness of owners or managers to participate in in-depth interviews.

The key informants consisted of business owners, production managers, operational managers, and sustainability coordinators who were directly involved in managerial decision-making and innovation activities.

Theoretical Foundation

The research is grounded in three complementary theoretical perspectives. First, the Green Economy Theory emphasizes efficient resource utilization, environmental protection, and sustainable economic growth. According to the United Nations Environment Programme (UNEP, 2023), a green economy improves human well-being and social equity while significantly reducing environmental risks and ecological scarcity. Second, Sustainable Innovation Theory explains that innovation should simultaneously generate economic, environmental, and social value. Adams et al. (2023) argue that sustainable innovation integrates environmental responsibility into products, production processes, organizational management, and business models to achieve long-term competitiveness. Third, the Natural Resource-Based View (NRBV) provides the strategic foundation for understanding how environmental capabilities create sustainable competitive advantage. Hart and Dowell (2021) emphasize that organizations capable of effectively managing natural resources and environmental knowledge develop superior organizational performance and long-term resilience.

Data Collection

Data were collected through three complementary techniques. Semi-structured interviews were conducted with all participants. Each interview lasted approximately 60–90 minutes and followed an interview guide covering environmental management, sustainable innovation, managerial decision-making, organizational capabilities, and environmental challenges. Semi-structured interviews provide flexibility while maintaining consistency across participants (Kallio et al., 2021).

Direct observation was conducted to examine production activities, resource utilization, waste management practices, packaging systems, and environmentally friendly operational processes. Observation enabled the researcher to validate interview findings through real operational evidence. Document analysis included company reports, production records, sustainability documents, environmental policies, promotional materials, and government certification documents. According to Bowen (2021), document analysis strengthens data triangulation and improves research credibility.

Data Analysis

The collected data were analyzed using thematic analysis following Braun and Clarke (2021). The analytical procedures consisted of six stages: (1) familiarization with the data; (2) generating initial codes; (3) searching for themes; (4) reviewing themes; (5) defining and naming themes; and (6) producing the final interpretation. Interview recordings were transcribed verbatim and organized using NVivo 14 qualitative data analysis software to facilitate coding, theme development, and data management. To ensure research rigor, credibility was established through data triangulation, member checking, and prolonged engagement with participants. Dependability was enhanced through an audit trail documenting every stage of the research process. Confirmability was maintained through researcher reflexivity and peer debriefing, while transferability was supported by providing detailed descriptions of the research context and participants, following the trustworthiness criteria proposed by Lincoln, Guba, and colleagues as discussed by Nowell et al. (2021).

Ethical Considerations

Prior to data collection, informed consent was obtained from every participant. Participation was entirely voluntary, and respondents were informed of their right to withdraw at any stage of the research. Confidentiality and anonymity were maintained by replacing participants' identities with coded identifiers. All interview recordings, transcripts, and organizational documents were securely stored and used exclusively for academic purposes in accordance with internationally accepted research ethics principles.

C. RESULTS AND DISCUSSION

Green Economy as a Strategic Managerial Perspective

The thematic analysis revealed that all participants perceived the green economy as a strategic managerial approach that simultaneously pursues economic performance and environmental sustainability. Rather than viewing environmental initiatives merely as regulatory compliance, managers considered green economy practices as an integral component of long-term business competitiveness.

Several respondents emphasized that customers increasingly evaluate companies based on environmentally responsible production processes. Others highlighted that efficient resource utilization and waste reduction have become strategic priorities rather than operational necessities. These findings indicate that environmental responsibility has shifted from being an external pressure into an internally driven business strategy.

This finding is consistent with the Natural Resource-Based View (Hart, 1995), which argues that environmental capabilities become strategic resources capable of generating sustainable competitive advantage. Furthermore, the results support stakeholder theory, suggesting that firms responding to stakeholder expectations through environmental initiatives are more likely to achieve long-term legitimacy.

The present findings are consistent with Kraus et al. (2020), who reported that sustainability-oriented management positively influences organizational competitiveness through strategic decision-making. Likewise, Yumei et al. (2021) concluded that green economy practices encourage firms to simultaneously achieve environmental protection and economic growth. Similarly, Agyabeng-Mensah et al. (2022) found that managerial commitment is a critical determinant of successful green supply chain implementation.

Sustainable Innovation Beyond Product Development

~~The second major finding demonstrates that sustainable innovation extends beyond green product~~
Green Economy-Based Sustainable Innovation: A Managerial Perspective on Addressing Environmental Challenges

Anisa dkk

development and encompasses improvements in production processes, operational efficiency, administrative systems, and waste management. Participants reported several innovation practices,

including environmentally friendly raw materials, reduced single-use plastics, digitalized administrative systems, energy-efficient equipment, and waste valorization.

Several respondents acknowledged that although environmentally friendly technologies require higher initial investment, they substantially reduce long-term operational costs.

These findings reinforce the concept proposed by OECD (2023) that sustainable innovation integrates environmental, economic, and social dimensions simultaneously. Unlike conventional innovation, sustainable innovation creates value by reducing environmental impacts while improving operational performance.

The findings corroborate previous studies by Fernando et al. (2021), who demonstrated that sustainable innovation significantly improves firm performance through process efficiency. Likewise, Albort-Morant et al. (2022) concluded that sustainable innovation strengthens firms' adaptive capability under increasing environmental uncertainty.

Managerial Commitment as the Primary Driver

One of the strongest themes concerns the role of managerial commitment. All participants consistently stated that leadership commitment determines whether sustainability initiatives become organizational culture or remain temporary programs. Managers explained that investment decisions increasingly consider environmental impacts alongside financial returns. Sustainability considerations have also become integrated into annual business planning.

These findings support Upper Echelons Theory, which explains that organizational strategies reflect managerial values and cognitive orientation. Leaders possessing stronger environmental awareness allocate greater organizational resources toward sustainable innovation.

The results are consistent with Singh et al. (2022), who found that top management commitment significantly influences green innovation capability. Likewise, Wang et al. (2023) concluded that environmental leadership positively affects organizational sustainability performance through innovation capability.

Environmental Challenges in Sustainable Innovation Implementation

Although respondents recognized numerous benefits, several significant challenges remain. The most frequently reported barriers include high investment costs, limited availability of sustainable raw materials, and changing consumer purchasing behavior.

These findings illustrate the classic trade-off between environmental sustainability and financial constraints frequently experienced by SMEs.

Similar barriers were identified by OECD (2023), which reported that financing limitations remain one of the greatest obstacles preventing SMEs from adopting green technologies. Likewise, UNEP (2021) emphasized that inadequate technological infrastructure and market uncertainty continue to hinder the transition toward green economy implementation.

Furthermore, Ciasullo et al. (2022) argued that SMEs require stronger institutional support and knowledge-sharing mechanisms to accelerate sustainable transformation.

Drivers Encouraging Sustainable Innovation

Despite existing obstacles, participants identified several drivers encouraging sustainable innovation adoption, including consumer environmental awareness, intense competition, operational efficiency, technological advancement, and government policies.

These findings demonstrate that economic and environmental objectives increasingly complement each other. The findings are consistent with Porter and van der Linde's innovation hypothesis, suggesting that environmental improvements stimulate innovation capable of increasing organizational productivity.

Recent empirical evidence by Leal Filho et al. (2022) also demonstrated that environmental regulations stimulate organizational innovation rather than limiting business growth. Similarly, Yumei et al. (2021) reported that consumer awareness has become an important driver of sustainable business

transformation.

Organizational Barriers to Green Economy Adoption

Participants also identified internal organizational barriers including limited financial resources, inadequate employee environmental knowledge, insufficient training, restricted access to green technologies, and limited governmental incentives. These findings suggest that successful green economy implementation requires organizational capability development rather than technological investment alone. The results support Agyabeng-Mensah et al. (2022), who emphasized that employee competence significantly influences green innovation success. Likewise, Kraus et al. (2020) argued that organizational learning capability strengthens firms' environmental adaptability and innovation performance.

Organizational Performance Outcomes

Perhaps the most significant finding concerns the positive organizational outcomes associated with sustainable innovation implementation. Nearly all participants reported improvements in operational efficiency, reductions in energy consumption and production waste, enhanced corporate image, stronger customer loyalty, and improved business competitiveness. These findings provide empirical support for the proposition that sustainable innovation simultaneously generates economic and environmental value. The results align with Fernando et al. (2021), who found that green innovation significantly enhances financial performance through operational efficiency. Similarly, Singh et al. (2022) demonstrated that environmentally responsible firms achieve stronger customer loyalty and long-term competitive advantage. Moreover, Albort-Morant et al. (2022) concluded that organizations adopting sustainable innovation exhibit greater resilience during periods of market uncertainty because environmental innovation simultaneously strengthens operational flexibility and stakeholder trust.

D. CONCLUSION

This study explored how managerial perspectives shape the implementation of green economy-based sustainable innovation in addressing environmental challenges through a qualitative approach involving six managers and business owners from Indonesian SMEs. The findings demonstrate that managers increasingly perceive green economy principles not merely as environmental obligations but as strategic business approaches capable of generating both economic and environmental value. Sustainable innovation was found to extend beyond product development by encompassing process improvements, resource efficiency, digitalization, energy conservation, and waste utilization. These findings indicate that environmental sustainability has become an integral component of organizational strategy rather than an isolated operational initiative.

Another important finding is that managerial commitment represents the primary driver of successful sustainable innovation implementation. Leadership commitment influences strategic investment decisions, organizational culture, and employee engagement in environmental initiatives. At the same time, organizations continue to face several barriers, including limited financial resources, inadequate access to green technologies, insufficient employee competencies, and changing consumer preferences. Despite these challenges, participating firms consistently reported positive organizational outcomes, including improved operational efficiency, reduced energy consumption and production waste, enhanced corporate reputation, stronger customer loyalty, and greater business competitiveness. These findings support previous studies suggesting that environmental sustainability and organizational performance are complementary rather than conflicting objectives.

From a theoretical perspective, this study contributes to the growing literature on sustainable innovation by providing qualitative evidence that managerial perspectives function as the central mechanism linking green economy principles with organizational innovation capability. The findings reinforce the relevance of the Natural Resource-Based View, Stakeholder Theory, and Upper Echelons Theory in explaining how environmental strategies are translated into organizational performance through managerial decision-making. From a practical perspective,

~~The results suggest that SME managers should integrate sustainability into long-term~~
Green Economy-Based Sustainable Innovation: A Managerial Perspective on Addressing Environmental

Challenges

Anisa dkk

strategic planning instead of treating environmental initiatives solely as compliance activities. Policymakers should strengthen support through financial incentives,

Wider access to environmentally friendly technologies, training programs, and collaborative partnerships involving universities, government agencies, and industry. Such collaborative ecosystems would facilitate broader adoption of sustainable innovation among SMEs.

This study has several limitations. First, the findings are based on interviews with a relatively small number of participants representing selected SME sectors, limiting the generalizability of the results. Second, the study focuses on managerial perceptions without incorporating perspectives from employees, customers, or policymakers. Future research may employ mixed-method or quantitative approaches involving larger samples across different industries and regions to validate and extend these findings. Further studies could also investigate the mediating role of organizational capabilities or digital transformation in strengthening the relationship between green economy practices and sustainable organizational performance.

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