

Management in Era 5.0: Innovation Strategy for Environmental and Social Sustainability

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Abstract. Era 5.0 brings significant changes in management approaches, where advanced technologies such as artificial intelligence, big data and the Internet of Things (IoT) increasingly play a role in driving sustainability. This article explores innovative strategies in management that can be implemented to achieve environmental and social sustainability in Era 5.0. The main focus lies on how this technology can support the implementation of Sustainable Development Goals (SDGs), especially those related to the environment and social welfare. Through a literature review and case study analysis, this research finds that the application of human-centered and collaborative technology is able to optimize managerial processes, increase efficiency, and reduce negative environmental impacts. In addition, this study discusses the challenges organizations face in integrating technological innovation with sustainability goals, such as the need for adaptive human resource development and organizational culture transformation. It is hoped that the results of this research can be a guide for practitioners and academics in designing sustainability-oriented management strategies in Era 5.0. Thus, innovative and human-centered technology-based management will play an important role in achieving long-term sustainability goals.

Keywords: Management, Era 5.0, Sustainability, SDGs, Innovation, Human-Centered Technology

INTRODUCTION

The emergence of Era 5.0 has brought forth a transformative wave in management, where digital technology and human-centered approaches are merged to foster sustainable practices in business and society. This era represents a shift beyond merely technological advancements; it emphasizes balancing digital innovation with the need for environmental preservation and social well-being, responding to growing global challenges. The integration of artificial intelligence (AI), big data, and the Internet of Things (IoT) allows businesses to optimize operations and innovate solutions to sustainability issues, establishing new standards for responsible management (Rother & Schwab, 2023).

Environmental and social sustainability have become key priorities for organizations as global pressures for sustainable practices rise. Managers in Era 5.0 are expected to align innovation strategies with environmental goals, such as reducing carbon footprints and minimizing resource consumption, alongside fostering positive social impacts. Organizations that adopt these strategies can gain a competitive edge, improve public perception, and contribute to achieving the United Nations Sustainable Development Goals (SDGs). Recent studies highlight the need for integrating sustainability into core business functions as a means to address environmental degradation and social inequality effectively (Smith & Lee, 2024; Johnson et al., 2023).

Despite the potential of these advancements, the shift to sustainable innovation in management poses challenges. Many organizations struggle with the rapid pace of technological change, resistance to adapting new sustainable practices, and a shortage of

skills among leaders to implement technology-based sustainability strategies effectively. These obstacles underscore the need for robust frameworks that can guide managers in leveraging technology to meet both economic objectives and sustainability targets (Brown & Davis, 2024; World Economic Forum, 2023).

The concept of "Management in Era 5.0" thus revolves around developing and implementing strategies that enable organizations to enhance their environmental and social impact while staying competitive. Managers must move beyond traditional profit-driven models and cultivate innovation strategies that prioritize long-term sustainability. This involves creating resilient systems that can withstand technological disruptions, regulatory changes, and shifts in consumer behavior. Studies indicate that managers who successfully navigate this landscape can create sustainable business models that are not only profitable but also environmentally responsible and socially inclusive (UNDP, 2022; Garcia & Adams, 2023).

This paper explores how managers can innovate in the context of Era 5.0 by implementing strategies focused on environmental and social sustainability. By examining relevant literature, analyzing case studies, and considering future trends, this research aims to provide actionable insights for organizations seeking to thrive in the digital age while contributing to a more sustainable and equitable world. The findings from this study will help fill knowledge gaps and offer practical solutions for managers striving to achieve sustainable outcomes in an increasingly complex and interconnected world (Lee et al., 2024; Jones, 2024).

METHOD

This study employs a multi-method approach to identify and evaluate innovation strategies in management during Era 5.0, aimed at supporting environmental and social sustainability. First, an in-depth literature review was conducted on various scientific journals, research reports, and relevant articles to understand innovative strategies that support sustainability. This literature review provides a systematic map of managerial solutions developed in prior research while identifying gaps or limitations in the application of technology-based sustainability strategies in Era 5.0 (Liu et al., 2023).

Next, this research collected empirical data through a survey method targeting various organizations that have applied technology to support sustainability. Respondents were selected based on their roles in implementing sustainability projects, offering direct insights into managerial capacity challenges and needs relevant to Era 5.0. The survey data was analyzed descriptively to identify common patterns in managerial capacity development for sustainable innovation, particularly regarding the use of digital technology and artificial intelligence (Smith & Thompson, 2024).

In addition to the survey, a case study method was used to gain an in-depth understanding of successful sustainability strategies. These case studies focused on organizations that have effectively adopted innovative managerial strategies to achieve sustainability goals. This approach is expected to provide practical insights into how organizations can integrate Era 5.0 technology into managerial strategies to support environmental and social sustainability (Jones, 2024).

Data analysis was conducted both qualitatively and quantitatively. Qualitative data from the literature review and interviews were analyzed using thematic methods to identify key themes in sustainable management strategies. Meanwhile, quantitative data from the survey was statistically analyzed to find correlations between innovation strategy

variables and successful sustainability implementation. This analysis supports a comprehensive understanding and evaluates the validity and reliability of the obtained data (Garcia & Adams, 2023).

By using this multi-method approach, this research aims to develop an innovative management framework that meets organizational needs in supporting sustainability in Era 5.0. This framework is also expected to contribute to theoretical advancements in the field of technology-based sustainable management (Brown & Davis, 2024).

RESULTS AND DISCUSSION

The findings of this study indicate that in the Era 5.0, innovation strategies for environmental and social sustainability require an integrated approach that combines advanced technology with value-oriented management. The research found that the implementation of technologies such as artificial intelligence (AI) and big data analytics can enhance the effectiveness of sustainability programs, particularly by providing faster access to real-time data. This allows companies to monitor their operational impact on the environment more accurately and take proactive actions. For instance, AI can be used to optimize energy and resource usage more efficiently in the production process (Li et al., 2024).

The study also identifies that social innovation is a crucial element in the sustainability strategies of Era 5.0, where community involvement and stakeholder engagement are at the heart of sustainability initiatives. With a participatory approach, organizations can better identify the needs and preferences of the community and integrate them into their policies. This is important for building public trust and creating a positive social impact. Cross-sector collaboration between businesses, government, and non-governmental organizations has proven to help accelerate sustainability programs by sharing resources and knowledge (Garcia & Smith, 2023).

Additionally, the results show that innovation in environmentally and socially responsible business models is a key strategy in Era 5.0 sustainability management. Business models such as the circular economy and the use of renewable resources have been adopted by companies to reduce waste and carbon emissions. This approach not only supports environmental conservation but also creates new economic opportunities by reducing dependence on non-renewable resources. For example, many manufacturing companies now use recycled materials and product designs that can be renewed to support the principles of the circular economy (Chen et al., 2023).

Example of Innovation Strategies for Environmental and Social Sustainability :

Pictures 1



Source : TribunSumsel.com

1. Waste Bank as an Innovation Strategy for Environmental Sustainability

Waste Banks in Era 5.0 are an innovative strategy that combines technology and community-based approaches to support environmental and social sustainability. By utilizing technologies such as the Internet of Things (IoT), Big Data, and Artificial Intelligence (AI), waste banks can improve waste management efficiency, recycle waste, and reduce pollution. Additionally, waste banks contribute to local economic empowerment by creating job opportunities and social enterprises, thereby enhancing community welfare. Through digital technology, transparency systems and incentives can encourage community participation in more sustainable waste management practices.

Pictures 2



Source : <https://globallandusechange.com>

2. Circular Economy Implementation: One innovative strategy to achieve environmental sustainability is the adoption of a circular economy model. This approach focuses on reducing waste, reusing resources, and recycling materials throughout the entire lifecycle of a product. For example, a manufacturing company could design products that are easily recyclable, utilize sustainable materials, and implement processes to reclaim waste products for reuse in production. This reduces the consumption of raw materials and lowers environmental impact while promoting a sustainable supply chain (Ellen MacArthur Foundation, 2023).

Pictures 3



Source : <https://globallandusechange.com>

3. **Smart Agriculture Using AI and IoT:** In the agricultural sector, innovation strategies can involve the integration of artificial intelligence (AI) and the Internet of Things (IoT) to optimize farming practices for both environmental and social sustainability. Smart farming techniques can help farmers reduce water usage, minimize pesticide application, and increase crop yields through data-driven insights. For instance, using AI-driven sensors and IoT devices, farmers can monitor soil conditions and weather patterns in real time to make more informed decisions, which enhances food security and supports environmental sustainability (Smith & Lee, 2024).

Pictures 4



Source : <https://globallandusechange.com>

4. **Social Entrepreneurship for Inclusive Growth:** Another innovation strategy is the promotion of social entrepreneurship that addresses societal challenges while creating economic value. This could involve businesses that focus on providing affordable healthcare, education, or clean energy solutions to underserved communities. For instance, a company might develop low-cost solar panels for rural areas to reduce reliance on fossil fuels and provide energy access to marginalized populations. Social enterprises not only contribute to environmental sustainability but also help improve the living standards of disadvantaged communities (Brown & Davis, 2024).

Pictures 5



Source : <https://globallandusechange.com>

5. **Green Technologies in Urban Development:** In urban development, innovation strategies can include the use of green technologies to create eco-friendly cities. This could involve the construction of energy-efficient buildings, the use of renewable energy sources like solar and wind power, and the development of smart grids to optimize energy consumption. Cities could also incorporate green spaces and

sustainable transportation systems, such as electric buses and bike-sharing programs, to reduce pollution and improve urban living conditions. These initiatives promote environmental sustainability while improving the quality of life for residents (Rother & Schwab, 2022).



Source : <https://globallandusechange.com>

6. Inclusive Employment Programs: From a social sustainability perspective, companies can adopt innovation strategies that focus on creating inclusive employment opportunities for vulnerable groups such as women, disabled individuals, and marginalized communities. This might include creating accessible workplaces, offering remote work options, or providing specialized training programs that cater to these groups. For instance, a company could partner with local community organizations to provide training and employment for individuals from low-income backgrounds, contributing to social equity and reducing unemployment (UNDP, 2022).

The study emphasizes that the success of implementing innovation strategies for sustainability is greatly influenced by transformational leadership capable of driving cultural change within the organization. Leaders who have a long-term sustainability vision and can inspire the entire team to adopt environmental and social values play a key role in building an organizational culture that cares about sustainability. By applying an inclusive leadership style and focusing on empowering employees, organizations can increase engagement and commitment across the staff toward sustainability goals (Thompson & Brown, 2022).

Objectives:

The objective of this study is to develop innovation strategies in management within Era 5.0 that support environmental and social sustainability. This research aims to identify new approaches to resource management that integrate advanced technologies, such as artificial intelligence and big data, in efforts to mitigate environmental impacts and enhance social well-being. Additionally, the study aims to analyze how companies and organizations can leverage technology to drive sustainability and social innovation, as well as how to create environmentally friendly and socially inclusive business models (Davis & Jones, 2023; Rother & Schwab, 2022).

Benefits:

The benefits of this research are as follows:

1. For Managerial Practitioners: It provides insights and practical guidelines on applying innovation strategies in management that focus on environmental and social sustainability in Era 5.0. This is expected to help organizational leaders become more adaptive to technological changes and improve the efficient management of sustainable resources (Brown & Davis, 2024).
2. For Policymakers: It provides a scientific basis for formulating policies that support the implementation of innovation strategies in sustainability management within both the public and private sectors, with a holistic approach to social and environmental dimensions. This can lead to regulations that are more environmentally and socially friendly at both global and local levels (Smith & Lee, 2024).
3. For Academics: It adds to the existing literature on managerial strategies and sustainability in Era 5.0, particularly involving technological innovations to create socially and environmentally friendly solutions. This research also opens opportunities for further studies on the application of technology in sustainable management (Jones, 2023).
4. For Society and the Environment: Directly, this research is expected to improve the quality of life for communities through more inclusive social innovation and create a positive impact on environmental sustainability. Organizations adopting these innovative strategies will contribute to more sustainable and equitable economic development (UNDP, 2022).

CONCLUSION

This study concludes that innovation strategies focusing on environmental and social sustainability are key to addressing the challenges emerging in the 5.0 era. This era demands the rapid and effective implementation of technology, alongside innovative approaches that not only aim for economic gains but also create a positive impact on the environment and society. The use of green technologies, artificial intelligence (AI), and the Internet of Things (IoT) presents significant opportunities to reduce negative environmental impacts while driving economic opportunities and improving social well-being.

The adoption of circular economy models and social entrepreneurship has proven to be effective strategies in creating sustainable solutions that optimize resources, reduce waste, and create more inclusive ecosystems. However, the success of these strategies heavily depends on cross-sector collaboration between governments, the private sector, and society, as well as a mindset shift that prioritizes sustainability in every business decision and public policy.

Recommendations

1. Enhanced Cross-Sector Collaboration: Closer collaboration between governments, the private sector, and society is essential to developing policies that support sustainable innovation strategies. Such cooperation will accelerate the adoption of eco-friendly technologies and create more effective solutions for achieving sustainable development goals.

2. Development of Green Technology Infrastructure: Organizations and companies must focus on developing infrastructure that supports green technologies, such as renewable energy, sustainable transportation systems, and efficient waste management. Investing in research and development (R&D) for these technologies is crucial to creating more efficient and affordable solutions in the long run.
3. Social Entrepreneurship Training: Expanding social entrepreneurship training programs is essential for supporting the development of social innovations that can create a positive impact on society and the environment. These programs can help entrepreneurs understand how to integrate social and environmental aspects into their business models and leverage technological opportunities to create broader social value.
4. Increased Community Participation: Actively involving communities in decision-making processes related to sustainability policies and social innovations is critical. This will ensure that the policies and innovations implemented are relevant to the needs and expectations of the community and are accepted by various groups.
5. Continuous Monitoring and Evaluation: A continuous system of monitoring and evaluating the social and environmental impact of each innovation strategy should be established. This will help identify problems early and allow for adjustments in policy or project implementation to ensure effectiveness.

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