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<http://openjournal.unpam.ac.id/index.php/JIIM>

DOI : 10.32493/jiim.v3i3.54416

ISSN (*online*) : 2830-0548

ISSN (*print*) : 2829-6648

GREEN LEADERSHIP AS A DRIVING FACTOR FOR PRODUCTION EFFICIENCY AND SUSTAINABLE ENVIRONMENTAL PERFORMANCE

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ABSTRACT

The global environmental crisis and increasing demands for profitability have compelled companies, particularly in the Fast-Moving Consumer Goods (FMCG) sector, to adopt more efficient and sustainable operational approaches. This study aims to examine the role of green leadership in enhancing production efficiency and environmental performance. Using a Systematic Literature Review (SLR) approach, this research synthesizes findings from open-access academic literature published between 2020 and 2025. The results indicate that green leadership, especially in the form of transformational leadership, significantly contributes to the development of green organizational culture, sustainable innovation, and the implementation of efficient lean management practices. The integration of green leadership with environmentally friendly production strategies has proven to improve profitability while reducing negative environmental impacts. This study offers theoretical implications for developing sustainable leadership models and practical recommendations for FMCG companies to align their business strategies with green economy principles.

Keyword: Green Leadership, Transformational Leadership, Production Efficiency, Environmental Performance, Lean Management, FMCG, Systematic Literature Review

INTRODUCTION

In recent decades, the industrial world has faced increasing pressure to balance profitability demands with environmental responsibility. The global environmental crisis—such as climate change, industrial pollution, and the overexploitation of natural resources—has compelled companies to shift their operational paradigms toward more sustainable practices. Amid these challenges, Indonesia's Fast-Moving Consumer Goods (FMCG) sector has drawn attention due to its production-intensive characteristics and significant environmental impact. The FMCG industry is known for its high production volumes and fast distribution cycles, which often generate substantial waste and emissions.

To address these challenges, the concept of **Green Leadership** has emerged—an approach to leadership that places sustainability values at the core of business strategy. Green leadership goes beyond mere compliance with environmental regulations; it actively promotes green innovation, resource efficiency, and cultural transformation toward sustainability. A study by Huang et al. (2025) found that sustainable leadership can enhance green product development performance through environmentally oriented work engagement and institutional pressures that support change. In this context, **Transformational Leadership Theory** serves as a relevant theoretical foundation, as it emphasizes the leader's role in inspiring behavioral and organizational value changes toward higher goals, including environmental and social objectives.

However, a strategic dilemma arises when companies must choose between maximizing profits and investing in environmentally friendly practices, which often require additional costs and systemic changes. Research by Azizah & Haron (2025) indicates that integrating **Environmental, Social, and Governance (ESG)** principles can improve operational efficiency and business resilience, though its impact on profitability remains contextual and not always linear. Conversely, Hu & Zhao (2024) reveal that enhanced environmental performance can significantly boost profitability, particularly when achieved through green technological innovation and efficient resource management.

The main problem addressed in this study is: **How can companies sustain optimal profitability amid an environmental crisis that demands the implementation of a green economy?** This question is increasingly relevant in Indonesia, where green industry policies

are being introduced through government standards and incentives, yet challenges persist in terms of technology adoption, financing, and organizational culture change. Therefore, this study aims to explore the **strategic role of green leadership** in improving production efficiency and environmental performance, while identifying the best alternatives for FMCG companies to remain competitive and sustainable.

LITERATURE REVIEW

1. The Concept of Green Leadership

The concept of Green Leadership has evolved rapidly in response to growing global pressure for environmental sustainability and corporate operational efficiency. Green leadership refers to a leadership style that integrates sustainability values into business strategy, focusing on reducing environmental impact and improving resource efficiency. In a systematic review, **Zhong et al. (2023)** identified that green leadership significantly influences employees' green behavior, financial efficiency, and the development of an environmentally oriented organizational culture. The study also highlights the need for a multidisciplinary approach to understanding the dynamics of green leadership.

2. Green Leadership in the Context of Transformational Leadership

Within the framework of transformational leadership, **Sanusi et al. (2023)** demonstrated that environmentally oriented transformational leadership can foster employees' pro-environmental behaviors through value alignment and green identity formation. This finding strengthens the argument that visionary and inspirational leaders can act as catalysts for change toward improved production efficiency and environmental performance. Similarly, **Ren et al. (2024)** affirmed that environmentally specific transformational leadership positively affects employees' environmental awareness and pro-environmental performance, particularly when emotional exhaustion levels are low.

3. Application in the Manufacturing and FMCG Sectors

In the manufacturing sector, particularly in the FMCG industry, the implementation of green leadership is closely linked to **green innovation** and **lean management**. **Ren and Mia (2025)** identified that green innovation in manufacturing industries is influenced by various factors such as government policy, industry collaboration, and corporate social responsibility (CSR)—all of which can be facilitated by sustainability-oriented leadership. Meanwhile, **Duarte and McDermott (2025)** emphasized the importance of **Lean-Green**

4.0 readiness in supporting digital transformation and environmentally friendly operational efficiency, with leadership serving as a key dimension in the successful implementation of such strategies.

4. **The Role of Sustainable Leadership in Organizational Culture and Performance**

According to **Kareem and Kummitha (2025)**, sustainable leadership practices contribute to the formation of a green organizational culture, which significantly enhances product innovation and production process efficiency. This aligns with the findings of **Potter and Gracias (2025)**, who reported that companies led by environmentally focused leaders demonstrate improved ESG (Environmental, Social, and Governance) performance and long-term profitability.

5. **The Indonesian Context**

In Indonesia, **Imam Sanusi and Ida Farida (2023)** emphasized that green transformational leadership holds strong potential in promoting green behavior in the workplace—an approach highly relevant to FMCG companies facing increasing pressure to reduce carbon footprints and improve production efficiency. Furthermore, the **lean-green approach** in production management has proven effective in minimizing waste and enhancing operational efficiency, as demonstrated by **Kosasih et al. (2023)** in their systematic review of lean-green practices within Indonesia's manufacturing sector.

RESEARCH METHODS

This study adopts a **Systematic Literature Review (SLR)** approach as the primary strategy to explore and synthesize scientific findings related to the role of **green leadership** in improving production efficiency and environmental performance, particularly within **FMCG companies in Indonesia**. The SLR method was chosen for its ability to present **structured, transparent, and replicable** scientific evidence while providing an in-depth understanding of existing research trends, findings, and gaps.

The SLR process in this study follows the **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)** protocol and employs the **SPAR-4-SLR** framework, which emphasizes systematic procedures of search, selection, quality evaluation, data extraction, and synthesis of findings. Relevant literature was collected from reputable academic databases, including **Scopus, Web of Science, DOAJ, and SINTA (levels 1–2)**.

The inclusion criteria focused on **open-access journal articles** published between **2020 and 2025**, that were directly related to **green leadership, production efficiency, lean management, and environmental performance**.

The literature search strategy utilized a combination of keywords such as “*green leadership*”, “*production efficiency*”, “*environmental performance*”, “*lean management*”, “*FMCG Indonesia*”, and “*transformational leadership*.” Boolean operators (**AND, OR, NOT**) were applied to refine and expand search results as needed. The article selection process was conducted in multiple stages, considering the **relevance, methodological quality, and contribution** of each study to the research questions.

Data extracted from the selected studies were analyzed using a **thematic analysis** approach, allowing the identification of recurring patterns, emerging themes, and conceptual relationships across studies. The analysis was conducted manually and supported by qualitative data analysis software such as **NVivo**, which enhanced both the accuracy and efficiency of the coding and categorization process.

The theoretical framework underpinning this study is the **Transformational Leadership Theory** developed by **Bass (1985)**, encompassing four core dimensions: *idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration*. This theory is relevant in explaining how leaders can inspire behavioral and cultural change toward **greener and more efficient production practices**.

To ensure **validity and reliability**, all procedures were systematically documented and conducted under established SLR standards. The selection and analysis processes were independently reviewed by **two researchers** to minimize potential bias. As this study is based solely on secondary data and does not involve direct human participants, **ethical clearance was not required**. Nonetheless, all stages of the research were conducted with full respect for **copyright, academic integrity, and scholarly ethics** in the use of all referenced materials.

RESULTS AND DISCUSSION

The results of the systematic literature review indicate that **green leadership**, particularly in the form of **transformational leadership**, has a significant impact on

improving **production efficiency** and **environmental performance**—especially within the **FMCG sector**. **Ledia et al. (2024)** revealed that green transformational leadership directly contributes to enhanced environmental performance through the mediating effects of **green innovation** and **dynamic capability strengthening**. Leaders who embrace sustainability values are able to promote environmentally friendly process and product innovations while simultaneously improving operational efficiency.

In terms of **production efficiency**, the integration of **lean management principles** with green approaches has proven to be highly effective in reducing waste, energy consumption, and production costs. **Kundu (2025)** found that lean strategies in the FMCG industry significantly decrease material and energy waste while enhancing productivity and corporate profitability. These findings are reinforced by **Singh et al. (2025)**, who demonstrated that the **integration of lean and green practices** produces dual benefits—improving operational efficiency and achieving sustainability goals simultaneously.

From the perspective of **environmental performance**, green leadership plays a crucial role in cultivating an **organizational culture** that supports **pro-environmental behavior**. **Nathani et al. (2025)** showed that green transformational leadership fosters **green organizational citizenship behavior (OCB)**, which serves as a mediating factor in enhancing institutional environmental performance. This suggests that green leadership not only influences strategic-level policies but also shapes the individual behaviors that drive environmental commitment within organizations.

Furthermore, **Potter and Gracias (2025)** emphasized that companies led by sustainability-oriented leaders exhibit substantial improvements in their **Environmental, Social, and Governance (ESG)** performance, which in turn contributes to higher profitability and long-term competitiveness. These findings reinforce the argument that **green leadership is not merely an ethical initiative but also a profitable business strategy**, aligning ecological responsibility with economic success.

In the **FMCG sector**, **Misopoulos and Bajiraj (2025)** highlighted the importance of shared accountability between producers and stakeholders in managing environmental impacts—particularly in product packaging. Their concept of **Shared Producer**

Responsibility (SPR) illustrates that cross-sector collaboration can accelerate the adoption of sustainable practices while enhancing transparency in ESG reporting.

Overall, the findings demonstrate that **green leadership acts as a catalyst for organizational transformation** toward production efficiency and environmental sustainability. Visionary leaders committed to sustainability values are capable of creating synergy between economic and environmental objectives, making sustainability an **integral part of FMCG business strategy** in Indonesia.

CONCLUSION AND RECOMMENDATION

Conclusion

Green leadership plays a strategic role in driving production efficiency and enhancing corporate environmental performance, particularly within the FMCG sector. Leaders who integrate sustainability values into business strategies are able to cultivate an organizational culture that fosters green innovation and resource optimization. The integration of **green leadership** with **lean management practices** creates a synergistic effect that enhances operational efficiency and strengthens the company's overall competitiveness.

Recommendations

Based on the findings of this review, **FMCG companies in Indonesia are encouraged to integrate green leadership principles into their business strategies in a more systematic and structured manner.** This can be achieved through **sustainable leadership development programs**, the **strengthening of a green organizational culture**, and the **adoption of efficient and environmentally friendly production technologies.**

In addition, companies should enhance collaboration with **external stakeholders**, including government bodies, industry associations, and local communities, to support the comprehensive implementation of a **green economy.**

For future research, it is recommended to develop an **empirical model** that examines the **causal relationships** between green leadership, production efficiency, and environmental performance. Further studies could also **extend the scope beyond the FMCG sector**, allowing for a comparative understanding of how green leadership operates across different industrial contexts and national settings.

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