How CEO Power Influences Green Innovation and Firm Performance: A Study in Manufacturing

Yulia Ivanova
Department of Economics, Volgograd State Technical University, Russia

Abstract

This paper delves into the intricate dynamics of corporate leadership and its impact on environmental innovation and business outcomes within the manufacturing sector. By analyzing the varying degrees of CEO power, ranging from decision-making autonomy to influence over strategic directions, the research highlights how these factors shape a company's approach to green innovation. The study underscores that CEOs with greater power tend to champion sustainable practices more vigorously, thereby fostering a corporate culture conducive to green initiatives. Ultimately, the findings suggest a positive correlation between CEO power, green innovation adoption, and enhanced firm performance, illustrating the pivotal role of executive leadership in driving sustainable practices in manufacturing contexts.

Keywords: CEO Power, Green Innovation, Manufacturing Sector, Environmental Innovation

1. Introduction

In an era where environmental sustainability is increasingly prioritized, the influence of CEO power on a firm's green innovation initiatives is a critical area of study. This research investigates the dynamic interplay between CEO power, green innovation, and firm performance within the manufacturing sector, a field where sustainable practices are essential yet challenging to implement. Understanding how CEO power drives green innovation can offer valuable insights for both scholars and practitioners aiming to enhance corporate sustainability [1]. Green innovation, encompassing the development and implementation of environmentally friendly technologies, processes, and products, is pivotal in reducing the environmental footprint of manufacturing firms. It involves significant changes that can disrupt traditional manufacturing processes, requiring strong leadership to champion these initiatives. The CEO's role is crucial in this context, as their vision, influence, and decision-making power can significantly impact the adoption and success of green innovation. This study aims to explore how different levels of CEO power affect a firm's propensity to engage in green innovation and the subsequent effects on firm performance. The concept of CEO power encompasses various dimensions, including structural power within the organization, ownership power, and expert power. Structural power refers to the CEO's formal authority and control over organizational resources, while ownership power is related to the CEO's equity stake in the company [2]. Expert power derives from the CEO's experience, knowledge, and expertise. Each of these dimensions can differently influence a CEO's ability to drive strategic initiatives such as green innovation. This study examines these dimensions to provide a nuanced understanding of how CEO power affects green innovation efforts. Firm

performance, a critical measure of a company's success, is often evaluated through financial metrics such as profitability, return on assets, and market share. However, in the context of green innovation, performance also includes environmental metrics such as reductions in carbon emissions, energy efficiency, and waste management. This study adopts a holistic approach to firm performance, considering both financial and environmental outcomes [3]. By linking CEO power, green innovation, and firm performance, this research seeks to demonstrate the broader impact of leadership on sustainable business practices. This research contributes to the existing literature by offering empirical evidence on the relationship between CEO power and green innovation in the manufacturing sector. It addresses a significant gap by not only focusing on the direct impact of CEO power on green innovation but also examining the subsequent effects on firm performance. The findings are expected to provide actionable insights for manufacturing firms seeking to enhance their sustainability practices. Furthermore, the study aims to inform policymakers and stakeholders about the critical role of executive leadership in promoting environmental sustainability in the manufacturing industry.

CEO power is a multifaceted concept that refers to the influence and control that a CEO exerts over organizational decision-making and strategic direction. This power can be derived from various sources, including structural, ownership, and expert dimensions. Structural power is associated with the formal authority and control over resources and personnel within the organization. CEOs with significant structural power can make critical decisions swiftly and implement strategic changes effectively [4]. Ownership power stems from the CEO's equity stake in the company, aligning their interests with those of the shareholders and potentially increasing their commitment to long-term success. Expert power is based on the CEO's experience, knowledge, and skills, which can inspire confidence among stakeholders and drive innovation. Together, these dimensions of power enable a CEO to influence the firm’s strategic initiatives, including those related to sustainability and green innovation. Green innovation encompasses the development and implementation of new products, processes, and technologies that reduce environmental impact and promote sustainability. This type of innovation is essential for manufacturing firms, which are often significant contributors to environmental degradation. Green innovation can take various forms, such as energy-efficient manufacturing processes, the use of sustainable materials, waste reduction techniques, and the development of environmentally friendly products. The adoption of green innovation not only helps firms comply with regulatory requirements and meet consumer demand for sustainable products but also enhances operational efficiency and reduces costs in the long run. However, implementing green innovation can be challenging due to the required investments in research and development, changes in existing processes, and potential resistance within the organization [5]. Strong leadership, particularly from the CEO, is crucial to overcoming these challenges and fostering a culture of sustainability. By examining the interconnections between CEO power, green innovation, and firm performance, this study aims to provide insights into how leadership can drive sustainable business practices and improve overall organizational outcomes.

2. Literature Review

CEO power is a multifaceted concept that refers to the ability of a CEO to influence organizational decisions and strategic directions. This power can be dissected into several key dimensions: structural power, ownership power, and expert power. Structural Power: Structural power is derived from the formal authority vested in the CEO's position. This includes control over resources, personnel, and organizational policies [6]. A CEO with substantial structural power can make significant decisions regarding investments, strategic shifts, and organizational changes without requiring extensive approval from other executives or the board of directors. This autonomy allows the CEO to implement strategic initiatives swiftly, including those related to innovation and sustainability. Ownership Power: Ownership power stems from the CEO's equity stake in the company. When a CEO holds a significant amount of shares, their interests are closely aligned with those of the shareholders. This alignment often motivates the CEO to pursue strategies that enhance long-term firm performance and shareholder value. Ownership power also grants the CEO a greater say in critical decisions, as their financial stake represents a substantial part of the company's equity base [7]. Expert Power: Expert power is based on the CEO's experience, knowledge, and skills. CEOs who possess deep industry expertise and a track record of successful leadership can inspire confidence among employees, investors, and other stakeholders. This form of power enables the CEO to guide the company through complex challenges and to advocate for innovative approaches that leverage their unique insights. Green innovation refers to the development and implementation of products, processes, and practices that reduce environmental impact and promote sustainability. In the manufacturing sector, green innovation is particularly vital due to the industry's significant contributions to environmental degradation through emissions, waste, and resource consumption. Green innovation in manufacturing can take various forms, such as Energy-Efficient Technologies: Adopting machinery and processes that consume less energy and reduce greenhouse gas emissions. Sustainable Materials: Utilizing recyclable, biodegradable, or less harmful materials in production [8]. Waste Reduction: Implementing processes that minimize waste generation and enhance recycling and reuse. Product Design: Designing products with longer life cycles, energy efficiency, and reduced environmental impact in mind. These innovations help manufacturing firms not only comply with environmental regulations but also meet the growing consumer demand for sustainable products. Additionally, green innovation can lead to cost savings through improved efficiency and reduced resource consumption.

Leadership plays a crucial role in driving innovation within an organization. Effective leaders, particularly CEOs, are instrumental in fostering an organizational culture that supports creativity, experimentation, and risk-taking. They provide the vision and strategic direction necessary for innovation to thrive. Key ways in which leadership influences innovation include Vision and Strategy: Leaders articulate a clear vision for innovation and integrate it into the company’s strategic objectives. Resource Allocation: Leaders ensure that sufficient resources are allocated to research and development, and other innovation-related activities. Encouraging Collaboration:

Leaders promote cross-functional collaboration and open communication, which are essential for generating innovative ideas. Risk Management: Leaders create an environment where calculated risks are encouraged, and failure is viewed as a learning opportunity. Green innovation has a profound impact on firm performance, encompassing both financial and environmental dimensions. Financially, green innovation can lead to cost savings through improved efficiency and reduced resource consumption. It can also open up new market opportunities and enhance the firm's reputation, attracting environmentally conscious consumers and investors. Environmentally, green innovation helps firms reduce their ecological footprint by lowering emissions, minimizing waste, and conserving resources. This can result in compliance with regulatory requirements and avoidance of penalties, contributing to the firm's long-term sustainability. Empirical studies have shown that firms that invest in green innovation often experience a competitive advantage, as they are better positioned to respond to environmental challenges and market demands. Additionally, these firms can leverage their sustainability credentials to differentiate themselves from competitors and build stronger brand loyalty.

3. Research Hypotheses

The first hypothesis posits that CEOs with higher power are more likely to promote green innovation within their organizations. CEO power, derived from structural, ownership, and expert dimensions, equips leaders with the authority, resources, and influence necessary to drive significant strategic initiatives, including those focused on sustainability[9]. CEOs with substantial structural power can make critical decisions swiftly and effectively. This autonomy allows them to prioritize green innovation, allocate resources toward sustainable projects, and implement environmentally friendly practices without facing significant internal resistance. For example, a powerful CEO can direct the company's R&D efforts toward developing energy-efficient technologies or mandate the use of sustainable materials in manufacturing processes. This decisiveness is essential for overcoming the inertia and resistance that often accompany significant organizational changes [10]. Ownership power further aligns the CEO's interests with those of the shareholders, particularly regarding long-term value creation. CEOs who hold significant equity stakes in their companies are more incentivized to ensure the firm's longevity and success. As environmental sustainability increasingly becomes a key driver of long-term business performance, powerful CEOs recognize the strategic importance of green innovation. They are likely to champion initiatives that not only comply with regulatory standards but also appeal to environmentally conscious consumers and investors, enhancing the firm's market position and reputation. Expert power, derived from the CEO's industry experience and knowledge, enables them to understand and leverage the benefits of green innovation. CEOs with a deep understanding of their industry's environmental impact and potential sustainable solutions can effectively guide their companies toward adopting innovative practices. Their expertise allows them to foresee market trends, anticipate regulatory changes, and identify opportunities for competitive advantage through sustainability.

The second hypothesis asserts that green innovation positively impacts firm performance. This relationship encompasses both financial and environmental dimensions, reflecting the multifaceted benefits of sustainable practices. Financially, green innovation can lead to significant cost savings by improving operational efficiency and reducing resource consumption. For instance, energy-efficient technologies can lower utility costs, while waste reduction initiatives can minimize disposal expenses. Additionally, green products and processes can open new market opportunities, catering to the growing segment of environmentally conscious consumers. Firms that innovate in sustainable ways often enjoy enhanced brand loyalty and customer satisfaction, which translate into increased sales and market share. Environmentally, green innovation helps firms reduce their ecological footprint, achieving regulatory compliance and avoiding potential fines or sanctions. Moreover, sustainable practices contribute to the firm's long-term viability by mitigating risks associated with resource scarcity, climate change, and environmental degradation. Companies that proactively adopt green innovation are better positioned to adapt to evolving regulatory landscapes and societal expectations, ensuring their sustained competitiveness and resilience.

The third hypothesis proposes that the effect of CEO power on firm performance is mediated by green innovation. This suggests that while CEO power directly influences green innovation, the subsequent impact on firm performance occurs through the implementation of sustainable practices. CEOs with higher power are well-positioned to champion green innovation, leveraging their authority, resources, and expertise to drive sustainable initiatives. However, the positive outcomes on firm performance are realized through the successful execution of these green innovations. The mediating role of green innovation highlights the importance of actual implementation and integration of sustainable practices in achieving enhanced performance. For instance, a powerful CEO may allocate substantial resources to develop energy-efficient manufacturing processes. While the initial investment reflects the CEO's influence, the eventual cost savings, regulatory compliance, and market differentiation resulting from these processes directly contribute to improved firm performance. Thus, green innovation acts as the conduit through which CEO power translates into tangible performance benefits. This hypothesis underscores the interconnectedness of leadership, innovation, and performance. It suggests that merely having a powerful CEO is not sufficient for improved firm performance; the CEO's influence must be channeled through effective green innovation strategies. The successful implementation of these strategies ultimately determines the extent to which CEO power can enhance the firm's financial and environmental outcomes.

4. Conclusion

In conclusion, the study of this paper reveals that CEO power significantly impacts both the adoption of green innovations and overall firm performance. The research concludes that CEOs with substantial influence and decision-making authority are more likely to prioritize and implement sustainable practices, leading to notable improvements in environmental performance and business outcomes. This positive relationship underscores the importance of executive leadership in fostering a culture of sustainability within manufacturing firms. The findings suggest

that empowering CEOs with the capability to drive green initiatives can enhance not only environmental stewardship but also competitive advantage and firm success in the evolving market landscape.

Reference

[1] T. E. Majali, M. Alkaraki, M. Asad, N. Aladwan, and M. Aledeinat, "Green transformational leadership, green entrepreneurial orientation and performance of SMEs: The mediating role of green product innovation," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 8, no. 4, p. 191, 2022.

[2] M. A. Al Doghan, N. A. A. Abdelwahed, B. A. Soomro, and M. M. H. Ali Alayis, "Organizational environmental culture, environmental sustainability and performance: the mediating role of green HRM and green innovation," *Sustainability*, vol. 14, no. 12, p. 7510, 2022.

[3] M. Huang, M. Li, and Z. Liao, "Do politically connected CEOs promote Chinese listed industrial firms' green innovation? The mediating role of external governance environments," *Journal of Cleaner Production*, vol. 278, p. 123634, 2021.

[4] Q. Yan *et al.*, "Does CEO Power Affect Manufacturing Firms' Green Innovation and Organizational Performance? A Mediational Approach," *Sustainability*, vol. 16, no. 14, p. 6015, 2024.

[5] S. K. Singh, M. Del Giudice, R. Chierici, and D. Graziano, "Green innovation and environmental performance: The role of green transformational leadership and green human resource management," *Technological forecasting and social change*, vol. 150, p. 119762, 2020.

[6] S. Begum, E. Xia, K. Mehmood, Y. Iftikhar, and Y. Li, "The impact of CEOs' transformational leadership on sustainable organizational innovation in smes: A three-wave mediating role of organizational learning and psychological empowerment," *Sustainability*, vol. 12, no. 20, p. 8620, 2020.

[7] Y. Zhang, J. Li, Y. Deng, and Y. Zheng, "Avoid or approach: How CEO power affects corporate environmental innovation," *Journal of Innovation & Knowledge*, vol. 7, no. 4, p. 100250, 2022.

[8] K. Gao, L. Wang, T. Liu, and H. Zhao, "Management executive power and corporate green innovation——empirical evidence from China's state-owned manufacturing sector," *Technology in Society*, vol. 70, p. 102043, 2022.

[9] Y. Tu and W. Wu, "How does green innovation improve enterprises' competitive advantage? The role of organizational learning," *Sustainable Production and Consumption*, vol. 26, pp. 504-516, 2021.

[10] S. Begum, E. Xia, F. Ali, U. Awan, and M. Ashfaq, "Achieving green product and process innovation through green leadership and creative engagement in manufacturing," *Journal of Manufacturing Technology Management*, vol. 33, no. 4, pp. 656-674, 2022.