

Mediating Effects of CEO Power on Green Innovation and Organizational Performance in Manufacturing

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Abstract

In manufacturing, the mediating effects of CEO power on green innovation and organizational performance represent a critical area of study. CEO power, encompassing both formal authority and informal influence, plays a pivotal role in shaping organizational strategies toward sustainability and innovation. Green innovation initiatives, aimed at reducing environmental impact through product redesign, process optimization, and adoption of eco-friendly technologies, are increasingly recognized as drivers of competitive advantage and operational efficiency in the manufacturing sector. The extent to which CEO power influences the adoption and success of these initiatives can significantly impact organizational performance metrics such as profitability, market share, and reputation. Understanding these mediating effects provides valuable insights into how leadership dynamics within manufacturing firms can be leveraged to foster sustainable practices and enhance overall organizational outcomes in today's competitive global market.

Keywords: CEO Power, Green Innovation, Organizational Performance, Manufacturing

1. Introduction

The manufacturing sector faces increasing pressure to adopt sustainable practices due to rising environmental concerns and regulatory demands. Green innovation—encompassing advancements in processes, products, and technologies designed to minimize environmental impact—has emerged as a crucial strategy for organizations seeking to enhance their sustainability profile. However, the successful implementation of these innovations often hinges on the influence and leadership of the Chief Executive Officer (CEO) [1]. CEO power, characterized by formal authority and informal influence, plays a significant role in steering organizational strategies toward sustainability. This introduction explores the mediating effects of CEO power on the relationship between green innovation and organizational performance within the manufacturing industry. As environmental sustainability becomes a central concern for manufacturing firms, the role of leadership in driving green innovation gains prominence. CEOs, endowed with both strategic oversight and operational control, can shape organizational culture and strategic priorities. Their capacity to champion green initiatives and allocate resources effectively can significantly impact the adoption and success of these innovations. Understanding how CEO power mediates the relationship between green innovation and organizational performance is essential for comprehending how leadership dynamics influence sustainability outcomes in manufacturing contexts[2]. The intersection of CEO power and green innovation presents a compelling area of research in the manufacturing sector. CEOs possess the authority to set the

strategic direction and enforce policies that support environmental sustainability. The impact of their leadership on green innovation processes and organizational performance can reveal insights into how executive influence drives or hinders sustainable practices. By examining the mediating effects of CEO power, this introduction aims to uncover how leadership affects the relationship between green innovation and performance metrics, providing a comprehensive understanding of the dynamics at play.

In an era where manufacturing firms are increasingly judged by their environmental performance, the role of CEO power in influencing green innovation becomes critical. CEOs not only provide vision and direction but also can navigate and overcome internal and external challenges associated with sustainability initiatives. Their influence can mediate the effectiveness of green innovations, impacting various aspects of organizational performance, such as profitability, operational efficiency, and market competitiveness. This introduction sets the stage for exploring how CEO power functions as a mediator in the relationship between green innovation and organizational outcomes in the manufacturing industry [3]. The focus on green innovation within the manufacturing sector is driven by the need for sustainable development and regulatory compliance. CEOs, as pivotal figures in organizational decision-making, hold the potential to significantly impact the success of green initiatives through their leadership and influence. The mediating role of CEO power in this context is crucial for understanding how top executives can facilitate or impede the integration of sustainable practices and their subsequent effect on organizational performance. This introduction outlines the significance of exploring CEO power's mediating effects on green innovation and performance, offering insights into the strategic importance of leadership in achieving sustainability goals. Green innovation refers to the development and implementation of new products, processes, and technologies that reduce environmental impact and enhance sustainability. In the manufacturing sector, green innovation has become increasingly crucial due to rising environmental concerns, stricter regulatory standards, and growing consumer demand for sustainable practices [4]. This innovation often involves improving energy efficiency, reducing waste, minimizing emissions, and using eco-friendly materials. For example, the adoption of renewable energy sources, such as solar and wind power, and the development of energy-efficient manufacturing processes are pivotal aspects of green innovation. The drive towards green innovation is fueled by several factors. Firstly, regulatory pressures and government incentives push manufacturers to adopt environmentally friendly practices to comply with laws and benefit from subsidies or tax breaks [5]. Secondly, consumers are becoming more environmentally conscious, favoring products and companies that demonstrate a commitment to sustainability. Green innovation also contributes to competitive advantage by differentiating products and enhancing corporate image. Manufacturers that lead in sustainability often gain recognition as industry leaders, attracting both environmentally conscious consumers and investors. Additionally, green innovations can lead to operational efficiencies, reducing costs and improving profitability over time. As such, the integration of green innovation into manufacturing strategies is not only a response to external pressures but also a strategic move towards achieving long-term sustainability and economic success [6].

2. Literature Review

Green innovation refers to the creation and application of new or improved products, processes, or practices that aim to reduce environmental impact and enhance sustainability. In the manufacturing sector, this encompasses a wide range of activities designed to minimize waste, lower emissions, conserve resources, and improve energy efficiency. Green innovation includes the development of eco-friendly materials, the implementation of energy-efficient manufacturing processes, and the integration of waste reduction technologies [7]. The scope of green innovation extends from altering product designs to adopting sustainable production techniques and incorporating renewable energy sources. Several examples illustrate the application of green innovation in manufacturing. One prominent example is the development of biodegradable materials that reduce the environmental impact of plastic waste. Companies are also adopting energy-efficient technologies, such as advanced heating and cooling systems and LED lighting, to reduce energy consumption. Another example is the use of circular economy principles, where manufacturers design products for disassembly and reuse, thus minimizing waste [8]. However, implementing green innovation also presents challenges. The initial costs of adopting new technologies and processes can be high, which may deter some manufacturers from pursuing green initiatives. There can also be resistance to change within organizations, requiring substantial efforts in employee training and cultural adaptation. Additionally, the integration of green practices may require significant modifications to existing systems and supply chains, which can be complex and time-consuming. CEO power encompasses both formal authority and informal influence within an organization. CEO power can be categorized into various dimensions, including structural power (based on the formal organizational position), expert power (based on knowledge and expertise), and referent power (derived from personal traits and relationships). CEO power significantly influences organizational strategy by shaping the direction and priorities of the company. A CEO with substantial power can steer the organization towards adopting green innovations by prioritizing sustainability within the strategic framework [9]. This influence extends to resource allocation, where the CEO decides how to invest in new technologies or processes. Additionally, CEO power affects the organizational culture, as a strong leader can foster an environment that supports and encourages green initiatives, overcoming resistance and ensuring successful implementation.

Previous research highlights that CEO power plays a crucial role in driving innovation within organizations. Studies have shown that powerful CEOs are more likely to champion and invest in innovative projects, including those focused on sustainability. Research also indicates that CEOs with a strong commitment to environmental issues can significantly impact the adoption of green technologies and practices [10]. The relationship between CEO power and innovation underscores the importance of leadership in shaping organizational outcomes and fostering an innovative and sustainable business environment. Organizational performance can be evaluated through various metrics, including financial indicators such as profitability, return on investment (ROI), and cost efficiency. Non-financial metrics, such as customer satisfaction, market share, and employee

engagement, also provide insights into performance. For manufacturing firms, additional metrics include production efficiency, waste reduction, and energy consumption. These metrics collectively offer a comprehensive view of how effectively an organization meets its strategic goals and operational objectives. Green innovation can positively impact organizational performance by enhancing operational efficiency and reducing costs associated with energy and waste management. Companies that implement green practices often experience improved financial performance due to cost savings and enhanced competitiveness. Additionally, green innovation can lead to improved brand reputation and customer loyalty, further contributing to market success. The integration of sustainable practices can also facilitate compliance with regulations and reduce the risk of environmental penalties, thereby supporting long-term performance stability. Leadership plays a critical role in influencing organizational performance by setting strategic priorities and fostering a culture that supports innovation and sustainability. Effective leaders, particularly CEOs, can drive performance improvements by championing green innovations and aligning them with organizational goals. Their ability to inspire and motivate employees, allocate resources effectively, and navigate challenges is crucial in achieving performance outcomes. Leadership not only impacts the adoption of green technologies but also ensures that these initiatives are integrated into the broader strategy, enhancing overall organizational performance.

3. Theoretical Framework

Theoretical models of CEO power offer various perspectives on how executives influence organizational outcomes. These models help in understanding the mechanisms through which CEOs exert influence and the implications for organizational strategy and performance. Resource Dependency Theory: This theory suggests that CEOs exert power by controlling critical resources that the organization needs. According to this model, CEOs who have access to essential resources, such as financial capital, key personnel, or strategic information, can influence organizational decisions and outcomes. By managing these resources effectively, CEOs can shape strategic directions, including the adoption of green innovations. Upper Echelons Theory: This theory posits that the experiences, values, and personalities of top executives influence their interpretations and choices regarding organizational strategies. The Upper Echelons Theory implies that CEOs' backgrounds and personal characteristics play a critical role in shaping their strategic decisions, including their approach to sustainability and innovation. This model emphasizes that CEO power is derived from their ability to influence strategic choices through their personal traits and experiences. Power and Influence Theory: This model categorizes CEO power into different types, including formal authority (e.g., decision-making power), expert power (e.g., specialized knowledge), and referent power (e.g., charisma and influence). The theory highlights how these different forms of power impact CEO effectiveness and their ability to drive organizational strategies. CEOs with substantial formal authority can directly influence the adoption of green innovations, while those with expert or referent power may influence through persuasion and

vision. Agency Theory: Agency Theory focuses on the relationship between principals (shareholders) and agents (CEOs) and how the interests of these two parties align.

Theoretical models of green innovation provide frameworks for understanding how and why organizations adopt sustainable practices and technologies. Ecological Modernization Theory: This theory argues that economic development and environmental protection are not mutually exclusive but can be achieved simultaneously through technological innovation. It posits that green innovation results from integrating environmental considerations into economic and technological development, leading to sustainable industrial practices. The Innovation Diffusion Theory: This model examines how new technologies and innovations spread within and across organizations. It emphasizes factors such as perceived benefits, compatibility with existing practices, and the complexity of the innovation, which influence the adoption of green technologies. The theory provides insights into how green innovations diffuse within manufacturing industries and the factors driving their acceptance. Dynamic Capabilities Theory: This theory focuses on an organization's ability to adapt to changing environments through the development and deployment of new capabilities. In the context of green innovation, it highlights how organizations develop dynamic capabilities to integrate environmental considerations into their processes and products. The theory suggests that firms with strong dynamic capabilities are better positioned to innovate sustainably and respond to environmental challenges. Resource-Based View (RBV): The RBV model emphasizes that firms gain a competitive advantage by leveraging valuable, rare, and inimitable resources. In terms of green innovation, this model suggests that firms can achieve superior performance by developing and utilizing unique green technologies and practices that differentiate them from competitors. Based on the theoretical models and the relationship between CEO power, green innovation, and performance, several hypotheses or research questions can be formulated: Hypothesis 1: CEOs with higher levels of power are more likely to prioritize and invest in green innovations compared to CEOs with lower levels of power. Hypothesis 2: The adoption of green innovations positively impacts organizational performance, including financial performance, operational efficiency, and market reputation. Hypothesis 3: CEO power mediates the relationship between green innovation and organizational performance, with powerful CEOs enhancing the effectiveness of green innovations on performance outcomes.

4. Conclusion

In conclusion, CEO power serves as a significant mediator between green innovation and organizational performance in the manufacturing sector. The influence of CEOs can drive the successful implementation of sustainable practices, fostering a culture of innovation that aligns with environmental objectives. By leveraging their authority and vision, CEOs can overcome resistance to change, allocate resources effectively, and embed green initiatives into the core strategy of the organization. This strategic alignment not only enhances the firm's environmental credentials but also improves operational performance and competitive positioning. The interplay between CEO power and green innovation underscores the importance of leadership in shaping a

manufacturing company's approach to sustainability, ultimately leading to greater long-term success and resilience in an increasingly eco-conscious market.

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