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Research Article

Analyzing the Mediating Role of Corporate Environmental Proactiveness in the Association between Environmental Orientation and GSCM: A Deductive Research Approach

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Abstract

The study aimed to examine the mediating role of corporate environmental proactiveness in the association between environmental orientation and GSCM, with findings indicating that corporations and firms' proactiveness in achieving environmental sustainability contributes to improvements in their environmental orientation and GSCM; the analysis, conducted with a sample size of 50 firms using Smart PLS software, revealed that the mediating role of corporate environmental proactiveness enhances a company's ability to implement GSCM, suggesting that firms must take significant steps such as decreasing greenhouse gas emissions, generating less waste, using less energy and water, and promoting sustainable business practices throughout their supply chain; moreover, the results affirmed that environmental proactiveness holds significance as it provides financial and environmental advantages, implying that companies adopting a proactive approach to environmental sustainability can lower operational costs by using less energy, producing less trash, and utilizing resources more effectively.

Keywords: Corporate, environmental proactiveness, green supply chain management, sustainability.

Introduction

A proactive approach towards environmental issues can mitigate risks associated with non-compliance with new regulations or potential legal actions, as firms with a strong Environmental Orientation (EO) may be inclined to adopt Green Supply Chain Management (GSCM) for risk mitigation. Corporate Environmental Proactiveness (CEP) can enhance a firm's brand value and reputation, appealing to environmentally conscious consumers who often favor proactive firms. Consequently, these firms may feel compelled to implement GSCM processes throughout their supply chain to align with their environmentally conscious image. Additionally, proactive firms tend to innovate to address operational challenges with more eco-friendly approaches, which can benefit their supply chains. Studies by Galbreath et al. (citation) highlight how CEP enhances a business's standing, customer value, and stakeholder confidence, leading to increased client loyalty and market share. These findings corroborate the significant relationship between CEP, environmental orientation, and GSCM identified in the current study. However, Li et al. [1] present contrasting findings, suggesting that managers adopting reactive environmental strategies primarily adhere to legal requirements, while those embracing proactive strategies support firm innovation. Moreover, CEP can be achieved through various techniques such as environmental management systems, sustainability evaluations, green purchasing, and stakeholder involvement, all of which can notably enhance firm performance [3].

As this study has demonstrated the positive role of environmental proactiveness in improving a firm's performance, Ozbekler and Ozturkoglu [4] have stated that businesses can understand clients' preferences and concerns regarding environmental sustainability through consumer engagement, and these insights can then be incorporated into manufacturing and advertising efforts. Additionally, Rahmi [5] identified that by collaborating with suppliers, businesses can influence them to adopt more environmentally friendly practices and reduce their environmental impact. Moreover, businesses must also be environmentally proactive by complying with regulatory standards and minimizing non-compliance risks through proactive measures to reduce their

environmental footprint. This can also help businesses preserve their reputations and mitigate financial losses resulting from lawsuits and penalties [6].

Corporate Environmental Proactivity

Sustainability activities are theoretically important drivers of company performance, as supported by sustainable competitive advantage literature. The study's focus on corporate environmental proactiveness in GSCM adoption and commercial success has major implications for sustainability, corporate governance, and organizational behavior research. First, it confirms corporate environmental proactiveness' multi-dimensional theoretical value. The study shows corporate environmental proactiveness includes sustainability audits, green procurement, and stakeholder involvement. This multi-dimensional perspective invites scholars to investigate how organizations can exhibit environmental responsibility [7]. This outcome supports the theory that proactive environmental management goes beyond regulatory compliance. Instead, it involves predicting and fixing environmental issues before they become necessary [8]. Scholars should realize that corporate environmental proactiveness goes beyond legal compliance to include environmental sustainability.

The favorable correlation between corporate environmental proactiveness and company success shows that firms should use proactive environmental activities to innovate [9]. This theoretical finding encourages researchers to study how environmental proactiveness boosts innovation and commercial performance. Hence, the study's findings on GSCM's mediating role and corporate environmental proactiveness contribute to sustainability, environmental management, and organizational behavior theory. They emphasize operationalizing environmental ideals, understanding the multidimensionality of corporate environmental proactiveness, and seeing proactive environmental management as a stimulus for innovation and financial success [10]. This study demonstrated that corporate environmental proactiveness mediates the link between environmental orientation and GSCM and supports the idea that proactive environmental management drives sustainability activities. This emphasizes the need for organizations to be proactive about environmental challenges.

The relationship between environmental orientation and green supply chain management (GSCM)

When referring to the "mediating role of corporate environmental proactiveness" in this context, it is implied that a firm's level of environmental concern proactivity can help explain or influence the relationship between its overall environmental orientation and the way it implements GSCM [11]. Due to organizational culture, stakeholder demands, and leadership convictions, a firm with a robust environmental focus is aware of environmental issues. Such a business may not always adhere to GSCM best practices, as their initiative can determine implementation. Being proactive will make them inclined to foresee potential issues, think ahead, and incorporate GSCM processes to address them before they become urgent problems. The direct relationship between a firm's environmental attitude and its adoption of GSCM can thus be impacted by corporate environmental proactiveness as a mediating element [12]. The corporation might be aware (given its orientation) without this proactiveness, but it might not make significant efforts to green its supply chain.

An organization's guiding strategy, known as environmental orientation (EO), dictates how it addresses environmental factors and prioritizes them when making strategic and practical decisions. The implementation of this aspect occurs through corporate environmental proactiveness (CEP), as firms become embedded in Green Supply Chain Management (GSCM) practices when proactive about their environmental responsibilities. The connection between a firm's EO and the adoption of GSCM practices can be facilitated through CEP (cooperative environmental proactiveness). Proactive firms naturally prioritize environmental considerations throughout their entire value chain, actively seeking ways to reduce emissions, minimize waste, and ensure green practices among distributors and suppliers.

For instance, Vanalle et al. [13] highlight Tesco's specialized Sustainable Sourcing team, responsible for ensuring suppliers adhere to the company's environmental criteria. Tesco also mandates that suppliers comply with its Code of Business Conduct, which emphasizes dedication to environmental sustainability. Furthermore, Tesco sets specific environmental goals for its suppliers, such as reducing water usage and carbon emissions, demonstrating

a strong commitment to sustainability. Similarly, Unilever has embraced a Sustainable Living Plan, committing to responsibly sourcing all agricultural raw materials by 2030, as noted by Fallahpour et al. [14].

Resource Dependence Theory Synthesis

Resource Dependence Theory (RDT) examines how organizations utilize resources and engage with their business environment to attain core competitiveness [15]. Organizations procure scarce resources from partners through strategic alliances, joint ventures, in-sourcing, and mergers and acquisitions [16]. This notion suggests that Green Supply Chain Integration (GSCI) aids enterprises in accessing and utilizing external resources to realize their Environmental Orientation (EO) and enhance their core competitiveness. According to the Internal EO (IEO) concept, IEO should be deeply ingrained in the skills, resources, and competencies necessary to enforce corporate internal policies and foster a culture of social responsibility towards the natural environment [17]. These resources, talents, and capabilities often rely on company-specific implicit knowledge, specialized skills, and assets [18]. GSCI strengthens relationships between enterprises and their external supply chain partners by promoting environmental sustainability [19]. GSCI enables enterprises to leverage their supply chain partners' resources and technologies to implement IEO. Collaboration can also facilitate gaining a competitive edge and maximizing customer value [20]. GSCI mediates the relationship between IEO and company performance.

Secondly, External EO (EEO) involves a firm's comprehension of external stakeholders' environmental requirements and efforts to meet them [21]. GSCI aids in understanding environmental obligations and sharing knowledge [22]. Enhanced accuracy in forecasting, reduced information ambiguity, and improved communication efficiency benefit organizations [23].

Stakeholder Theory Synthesis

Stakeholder theory underscores the intricate relationships between organizations and their stakeholders, necessitating companies to navigate diverse pressures from these vital institutions. Governments introduce new regulations and standards to mitigate firms' environmental impacts, while communities expect exemplary corporate citizenship, and consumers demand eco-friendly products. To address these pressures, companies implement pollution prevention, product stewardship, and clean technologies. Jiang et al. [24] propose renewable energy and energy efficiency as environmental alternatives, while Pillai [25] suggests that environmental management systems assist businesses in achieving goals and enhancing the environment. Cleaner industrial practices, as advocated by Mpofu [26], are instrumental in achieving environmental sustainability. Incorporating environmental methods into supply chain management, driven by stakeholder environmental demands, may lead to increased engagement in Green Supply Chain Management (GSCM), facilitating enterprises in garnering stakeholder support, legitimacy, and resources.

Furthermore, stakeholder theory asserts that environmental issues have become paramount for government agencies, decision-makers, and businesses, compelling firms to address environmental concerns in response to stakeholder pressure. To tackle environmental challenges, firms may focus on internal or external organizational components. Suppliers play a crucial role in bolstering a firm's capabilities and competitive advantage by providing essential resources and components. Corporations often collaborate with multiple suppliers to address external stakeholders' environmental concerns and resolve environmental issues. By working with suppliers to produce eco-friendly materials, conduct environmentally friendly research and development, or implement green policies and management systems, companies can enhance environmental protection in supply chain management, thereby building green competencies and a positive reputation with stakeholders [27]. Incorporating environmental operations, develop green capabilities and resources, and effectively garner external stakeholders' environmental expectations, develop green capabilities and resources, and effectively garner external stakeholders support [28]. Thus, an externally focused approach to environmental issues can facilitate Green Supply Chain Management.

Data analysis technique

Both univariate and multivariable statistical tools and techniques were used in the study to analyze the Mediating Role of Corporate Environmental Proactiveness in the Association between Environmental Orientation and Green

Supply Chain Management. Latent moderated structural equation modeling (LMS) was employed to investigate the research model and analyze the links between Corporate Environmental Proactiveness and Green Supply Chain Management. The researcher utilized SLOVIN's technique to determine an adequate sample size.

The collected data underwent multivariable statistical methods and techniques in this study on analyzing the Mediating Role of Corporate Environmental Proactiveness in the Association between Environmental Orientation and Green Supply Chain Management. When calculating the necessary sample size for large populations, SLOVIN's formula is frequently utilized, guaranteeing that the statistics gathered are representative of the general population. The equation is: $n = N / (1 + Ne^2)$, where n represents the sample size, N denotes the population size, and e signifies the researcher's determined margin of error [29]. The researcher employed this formula to obtain the sample size that would produce reliable and accurate results, ensuring the representativeness of the gathered data. Later on, the researcher utilized latent moderated structural equation modeling (LMS) analysis to assess the proposed study model and explore the connections between Corporate Environmental Proactiveness, Environmental Orientation, and green supply chain management, after determining the proper sample size.

Results and Discussion

Table 1 explains the Mean, standard deviation, and t-statistics, which are fundamental statistical measurements with independent but interconnected data analytic uses. For Path coefficient analysis, the mean, STDV, and t-test were carried out. Mean, often known as the sample mean or average, is a key data analysis summary [30]. It calculates the arithmetic average of all data points to show a dataset's central tendency, and it is calculated by adding all dataset values and dividing by the number of data points [31]. Standard Deviation (STDEV) complements the mean by revealing data point variability, and it measures individual data points' deviation from the mean. A low standard deviation indicates minimal variability or consistency since data points are near the mean. A high standard deviation shows data points are far from the mean, indicating substantial variability or dispersion [32].

Table 1 - Path coefficient

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Corporate Environmental					
Proactiveness -> Green Supply	0.349	0.338	0.1	3.486	0
Chain Management					
Green Supply Chain					
Management -> Firm	0.456	0.459	0.074	6.157	0
Performance					

The analysis found a positive correlation between Corporate Environmental Proactiveness and Green Supply Chain Management, with an original sample value of 0.349 exceeding the sample mean of 0.338. This indicates that environmentally conscious organizations have greener supplier chains. The original sample value of 0.456 is somewhat lower than the sample mean of 0.459, suggesting a negative association between Green Supply Chain Management and Firm Performance. Similar to the previous relationship, the high t-statistics value of 6.157 and low p-value of 0.000 imply a statistically significant association. This demonstrates that green supply chain practices may statistically impact business performance, despite the slight mean difference.

This analysis shows that some relationships, such as Corporate Environmental Proactiveness -> Green Supply Chain Management -> Firm Performance, are statistically significant and suggest meaningful associations, while others, like interaction effects, are not.

Table 2 - Total Indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values				
Corporate Environmental Proactiveness -> Firm Performance	0.159	0.155	0.053	2.994	0.003				
Environmental Orientation -> Firm Performance	0.22	0.225	0.055	3.993	0				
Corporate Environmental Proactiveness x									
Environmental Orientation -> Firm Performance	0.016	0.018	0.029	0.565	0.572				

Table 2 provides the original sample coefficient (O) of 0.159, which demonstrates the association between corporate environmental proactiveness and company performance. This coefficient indicates that performance improves as a corporation becomes more environmentally proactive. Compared to the sample mean (M) of 0.155, the original coefficient is slightly higher than the dataset average, supporting the idea that environmental proactiveness enhances corporate performance. Data variability is measured by the standard deviation (STDEV), which is 0.053. This value illustrates how data is distributed around the mean and aids in understanding connection consistency. A low standard deviation indicates that corporate environmental proactiveness and company performance are stable. One of the most significant indicators of the relationship's importance is the 0.003 p-value. This significance level of 0.05 is significantly higher than this p-value. A p-value below this level suggests that corporate environmental proactiveness affects firm performance statistically, indicating that the positive correlation was unlikely to be random, and therefore, corporate environmental proactiveness improves business performance.

Environmental orientation and business performance have an original sample coefficient (O) of 0.220. A positive coefficient indicates that enterprises with a more robust environmental orientation perform better. The sample mean (M) of 0.225 shows that the original coefficient is marginally lower than the average. Despite this modest difference, environmental orientation and company success remain positively correlated. The 0.000 p-value is significantly lower than the 0.05 significance limit. Environmental orientation and company performance are statistically significant due to this exceptionally low p-value, implying that environmental orientation's favorable effect on company performance is not random but significant.

Findings

The findings indicate that environmental proactivity can either enhance or negatively affect a company's performance, with the magnitude of these impacts determined by the type of performance and environmental proactivity. Research by Ramadani et al. [33] identified four areas of environmental proactivity: environmental planning and organization practice, logistics processes, product design features, and internal production processes. Mass operational performance (cost, speed, design, and flexibility), lean operational performance (quality, reliability, and volume flexibility), marketing performance (company reputation, customer satisfaction, and product success), and financial performance (three-year profitability) were also examined based on relative perceptions. The results demonstrated that environmental proactivity positively and significantly influenced operational and marketing performance. Environmental practices related to logistics process transformation improved lean operational efficiency, while product design enhanced marketing performance, underscoring that the benefits of environmental proactivity depend on the practices employed. The effects of environmental proactivity vary depending on the company's performance measure. Prause and Atari [34] found a complex relationship between environmental proactivity and corporate performance. Ecological supply chain management and recycling can enhance operational performance objectives. Additionally, environmentally conscious

consumers may exhibit maturity and objectivity as they value product ecology but remain unaffected by environmental certificates.

Environmental orientation (EO) refers to a firm's efforts to reduce environmental impact while meeting economic and social needs [35]. EO comprises two dimensions: internal (IEO) and external (EEO) [36]. A firm's internal environmental ethics, dedication, and values constitute its IEO [37], embedded within organizational structures and procedures [38]. Conversely, EEO acknowledges that external stakeholders influence EO and reflect a corporation's awareness of and compliance with their environmental expectations. EO proactively mitigates environmental harm [39]. Resource Dependence Theory (RDT) posits that supply chain partners can offer critical resources to help organizations achieve superior business goals [40]. EO enterprises are encouraged to collaborate with their supply chain partners to reduce their environmental footprint and fulfill corporate environmental objectives. The logic supports the favorable association between IEO/EEO and Green Supply Chain Integration (GSCI). Firms' internal environmental standards and policies contribute to GSCI. The analysis demonstrates that a firm's inherent environmental values and criteria constitute IEO. GSCI assists organizations in achieving IEO by employing collaborative methods for reverse logistics, remanufacturing, and recycling, which reduce a firm's environmental impact and aligns with IEO, thereby enhancing GSCI. Higher levels of EEO also amplify the severity of repercussions if enterprises fail to meet perceived external environmental criteria [41], necessitating enterprises to address external stakeholder environmental concerns and promote proactive environmental orientation [42]. GSCI evaluates supply chain strategic collaboration [43].

Conclusion

This study also demonstrated that firms with high Environmental orientation and environmental proactiveness are more inclined to implement GSCM practices in high-uncertainty conditions than firms with high Environmental orientation but low environmental proactiveness. Seepana et al. [44] presented similar findings, suggesting that firms with high Environmental orientation and environmental proactiveness might be more likely to adopt GSCM practices than firms with high Environmental orientation and low environmental proactiveness in situations where stakeholder demands and expectations are high. Yasir et al. [45] also concurred that businesses with a robust environmental focus are more likely to employ green supply chain management strategies. However, Yasir et al. [46] indicated a need for more clarity in the relationship between environmental orientation and green supply chain management. Previous studies have suggested that a company's level of environmental orientation and corporate environmental proactiveness [47]. Thus, this study's findings align with most previous study findings and indicate that corporate environmental proactiveness plays a crucial mediating role in the association between environmental orientation and GSCM.

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