

Linking Proactive Environmental Strategy to Green Supply Chain Management: Commentary and Future Directions

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Abstract. Proactive Environmental Strategy (PES) and Green Supply Chain Management (GSCM) are popular subjects in the areas of environmental strategies and operations management respectively. Although scholars in each of these areas are advancing the roles of PES and GSCM in promoting sustainable development, there is a lack of integration between these two contemporary subjects. Actually, they have some certain similarities, and thus, the aims of this paper are to propose a research agenda for this integration. Through the literature review, this paper explores the coupling between PES and GSCM and builds a theoretical framework so that it can provide useful reference for scholars, managers, and practitioners in the areas of organizational sustainability and truly sustainable supply chains.

Introduction

With the rapid development of economy, environmental pollution has become increasingly severe. Resources and environmental issues have become the main factors that restrict our country's sustainable development at the present stage. Under the "new normal", the original extensive development mode of enterprises is subject to the dual pressures of resources and environment. In addition, the "ecological economy" of ecological civilization is becoming more and more tightly related, and "green development" has become the "weathervane" of corporate transformation. Among them, the driving force of "green" development comes from innovation, and innovation is the best combination of coordinating green and rising. Green supply chain management (GSCM), as a kind of green innovation management (Zhu et al., 2012)[1], is connected with "high quality" of the development of the enterprise as well as the "high level" appearance of the ecological development, which is conducive to cultivating new green development kinetic energy and breeding new profit growth points for enterprises.

Zhu(2009)[2], through questionnaires and empirical analysis, found that Chinese enterprises have already had pressure and motivation to carry out GSCM, but they have not really translated into practice. The core issue of corporate strategy is the value mission. Only adding social issues to the value proposition can achieve sustainable development. If companies can examine environmental issues from a strategic perspective, actively integrate them into the strategic level, and regard environmental issues as opportunities rather than threats, they can contribute to the implementation of GSCM practices and realize the seamless docking between macro management and micro operations. Sharma(2000)[3] found that managers' interpretation of environmental issues has an important impact on companies adopting green environmental strategies. When managers view environmental issues as opportunities for business development, they are more likely to adopt proactive environmental strategy (PES). Hart(1995)[4] proposed the natural-resource-based-view (NRBV), which also emphasizes that companies can obtain key resources and achieve sustainable development through the implementation of the active environmental strategy.

This article reviews the related literature on GSCM and PES, and it is found that they have certain coupling. For example, they both emphasize the whole life cycle theory and the importance attached to environmental issues; GSCM practices and the core content of PES is exactly the same.

In view of the above analysis, this paper further demonstrates how these two fields of knowledge are related and argues in favor of integrating them based on the literature research. Simultaneously, it proposes future research of directions in order to inject fresh blood into related research in the field of GSCM.

Proactive Environmental Strategy

In recent years, the problem of environmental pollution has become more and more serious. Facing the situation of the increasingly perfect environmental regulations and the continuous improvement of consumer's environmental awareness, enterprises which are the major producers of environmental pollution have tried to change the previous practices. For example, enterprises regard environmental management as an "umbrella" that is exempt from environmental pollution penalties or a "buffer" that reduces consumers' dissatisfaction. Nowadays, enterprises gradually incorporate environmental management as an opportunity for them to build competitive advantages into strategic decisions. Both Shrivastava(1994) and Hart(1995)[4] argued that the traditional strategic management theory only emphasizes the impact of political, economic, social, and technological environments on companies, and the understanding of the "environment" in which companies are located is narrow, ignoring the natural environment as an important part of the company's external environment. However, the company's business activities are bound to be constrained by the natural ecological environment. The company's competitive advantage which is built up by the omission of natural environmental factors is lack of durability. The Resource-Based-View(RBV) theory holds that both internal and external factors of a company can create competitive advantages, while the Natural-Resource-Based-View (NRBV) theory proposed by Hart (1995)[4] pointed out that the integration of strategic environmental management into the RBV theory will enable enterprises to create lasting competitive advantages. Subsequently, Russo and Fouts (1997)[5], Sharma and Verdenburg (1998)[6] further extended NRBV, emphasizing that environmental issues and corporate environmental responses should be incorporated into strategic management, and companies need to consider environmental strategies (Jennings and Zandbergen,1995)[7].

The Connotation of Corporate Proactive Environmental Strategy

Environmental strategy is a corporate strategy that aims to reduce the negative impact on the natural environment and develop around the natural environment. Sharma (2000)[3] had a broader definition of environmental strategy. He believed that the environmental strategy was the mode of the enterprise management of the interface between business and the natural environment. It is a series of action results produced by enterprises to abate the negative impact on the environment and comply with environmental regulation and take voluntary measures.

Sharma and Verdenburg (1998)[6] first divided environmental strategy into reactive environmental strategy and proactive environmental strategy. The proactive environmental strategy refers to a voluntary form of environmental protection strategy that can meet future environmental regulatory requirements and social development trends, promote the company's production and management processes, improve the quality of products and services, and reduce adverse effects on the environment through continuous learning, environmental quality management, and risk-taking[4][8]. At the specific implementation level, the proactive environmental strategy emphasizes that environmental management should be carried out in every activity of the enterprise, including products development, raw material procurement, supply chain management, products production process and products distribution, energy use, products use, and waste products disposal. These activities are implemented throughout the entire process of products from birth to death.

Research on Corporate Proactive Environmental Strategy

Scholars' research on the corporate proactive environmental strategy mainly focuses on two aspects. One is the driving force for companies to implement proactive environmental strategies, and the other is the organizational impact of proactive environmental strategies.

The driving force of proactive environmental strategies mainly includes external stakeholders

pressure, internal manager's cognition and entrepreneurial orientation. According to the research of Henriques and Sadorsky (1999)[9], the most influential stakeholders in the implementation of proactive environmental strategies were customers, shareholders and local communities; the impact of government regulations and media on the implementation of proactive environmental strategies was less important. Buysse and Verbeke (2003)[10] believed that the main internal stakeholders and some of the secondary stakeholders had important influence on the proactive environmental strategy, while the media among the secondary stakeholders had a weaker impact on the proactive environmental strategy. He et al. (2016)[11] took manager's environmental cognition as internal factors of the company, the uncertainty of business environment as the external factor, and studied the influence of internal and external factors on proactive environmental strategy. He et al. (2017)[12] discussed the relationship among entrepreneurial orientation, proactive environmental strategy and corporate performance. The study found that entrepreneurial orientation had a significantly positive impact on the proactive environmental strategy; the proactive environmental strategy had a significantly positive impact on finance performance, environmental performance; the proactive environmental strategy had partial mediating effect on the relationship between entrepreneurial orientation and finance performance, environmental performance.

The organizational impact of proactive environmental strategies is mainly reflected in the improvement of corporate performance and the acquisition of competitive advantages. Xue and Yi (2014)[13] analyzed the relevance of corporate environmental strategy and business strategy, and found that the matching of proactive environmental strategy and operation strategy will have a positive impact on corporate environmental performance and business performance. Jing Dai et al. (2017)[14] examined the process of the enterprise's proactive environmental strategy affecting operational performance from the perspective of strategy-structure-capacity-performance theory. The study found that the company's active environmental strategy helps to improve operational performance. Pan(2017)[15] took 600 enterprises in manufacturing industries such as automobile and medicine as research objects. Through questionnaire survey and multiple regression analysis, it was found that the implementation of the proactive environmental strategy would help enterprises to accumulate green intellectual capital and promote green innovation, and then establish a sustainable competitive advantage.

Green Supply Chain Management (GSCM)

The emphasis on the ecological protection of environmental management has become the focus of global attention. Sustainability is a key value consideration for the entire supply chain(Zhu et al., 2013)[16], and with increasing attention to environmental issues and regulations, companies are under pressure to integrate GSCM to their operations. GSCM is the process of incorporating environmental standards or concerns into organizational procurement decisions and long-term relationships with suppliers, encouraging supply chain companies to implement green supply chain practices such as cleaner production, green purchasing, eco-design, and investment recovery(Zhu et al., 2008)[17]. Green supply chain practices integrate environmental issues and consider inter-organizational activities. Companies can manage supply chains to meet suppliers' requirements for improving resource efficiency, reducing energy consumption, or reducing emissions(Zhu et al., 2012)[1].

Green Supply Chain Management Practices

GSCM practices range from reactive monitoring of general environmental management programs to more proactive practices. Zhu et al. (2005)[18] investigated five practices in China's textile, automotive, power generation, chemical, electrical, and electronics industries such as internal environmental management, ecological design, green purchasing, cooperation with customers, and investment recovery. Further, Zhu &Cordeiro et al. (2013)[19] divided the five GSCM practices into two types, internal practices that can be managed and implemented by individual manufacturers, and external practices that require the collaboration of external stakeholders. The internal GSCM practices mainly include: (1)Eco-design(ECO): including ecological attributes in products and

processes and the needs of company stakeholders for product design and development; (2) Internal Environmental Management (IEM): refers to the internal organization practices such as senior management support, environmental compliance programs, and inter-sector environmental improvements. External GSCM practices mainly include: (1) Green Purchasing (GP): When purchasing raw materials or parts, the company should evaluate the supplier's environmental management and certification. (2) Customer Collaboration (CC): This cooperation needs to coordinate the design of cleaner production processes to produce more environmentally friendly products and use green packaging. (3) Investment Recovery (IR): The company's capital gains from the sale of excess materials and used materials and the sale of excess capital goods from equipment replacement. In addition, Zhu et al. (2013)[16] used a sample of 396 Chinese manufacturers to study the relationship between GSCM internal and external practices. The results showed that the implementation of internal GSCM in enterprises helped to improve the level of external GSCM practices.

Research on Green Supply Chain Management

Most scholars at home and abroad study the green supply chain management drivers and the performance of green supply chain management practices.

In terms of the drivers of green supply chain management, some scholars have studied the influence of institutional pressure and stakeholders on the GSCM practices from institutional theory, stakeholder theory, ecological modernization theory, innovation diffusion theory, and other multi-perspective theories. Zhu et al. (2012)[1] based on the innovation diffusion theory and ecological modernization theory, investigated GSCM practices in 245 Chinese manufacturers, and pointed out how Chinese manufacturers adopted GSCM practices and the impact of their performance can promote the diffusion of innovation theory to a certain extent. Bruno et al. (2016)[20] used a case study approach to understand and analyze whether different institutional pressures from stakeholders could promote green bullwhip effect through the key review of auto battery company in Brazil so as to adopt GSCM practices in the supply chain. Rosaangla et al. (2017)[21] verified that institutional pressures positively affected suppliers in Brazil's automotive supply chain to pursue GSCM practices through a structural equation model. Chung-Shang Yang (2017)[22] collected data from surveyees employed by 129 container shipping companies and agencies in Taiwan and used the structural equation model to explore the impact of institutional pressures and internal and external green practices on green performance.

Similar to the implementation of the proactive environmental strategy, the implementation of GSCM can also bring various performance improvements to the company. Zhu et al. (2013)[16] used 396 samples of Chinese manufacturers to empirically examine the relationship between institutional pressures, GSCM practices, and performance. The study found that GSCM practices have no significant impact on economic performance, but improvements in environmental and operational performance can achieve economic performance in the longer term. Zhu et al. (2017) [23] explored moderation and mediation effects of CRG (customer relational governance) on the relationships between two GSCM practices (green innovation and green purchasing) and environmental/economic performance through a questionnaire survey on typical export-oriented cities in China. Rosaangla et al. (2017)[21] demonstrated the economic performance and environmental performance of the supply chain are positively related to the implementation of GSCM practices through an empirical study on the Brazilian automotive supply chain. Geng et al. (2017)[24] discussed the relationship between GSCM and the performance of manufacturing companies in Asia's emerging economics (AEE) through meta-analysis. The survey results revealed that GSCM practices lead to better performance in four aspects: economic, environmental, operational, and social performance.

Research Commentary and Future Directions

Research Commentary

Through the above review of the proactive environmental strategy and GSCM literature, it is found that both the theoretical and operational aspects have a certain coupling, and the similarities between them are listed below.

From a theoretical perspective, the research on the driving forces of proactive environmental strategy and the drivers of GSCM all rely on institutional theory, stakeholder theory, and sometimes RBV and NRBV. When enterprises are under pressures from external institutions or internal and external stakeholders, companies often respond to environmental issues accordingly, and at this time they tend to adopt certain environmental strategies or implement certain types of environmental management. However, these environmental responses must be based on certain resources and capabilities, such as managers' environmental awareness, internal and external integration capabilities of the supply chain, and the supply chain management skills and knowledge. In addition, companies implementing the proactive environmental strategy and GSCM can have positive organizational impacts, such as the improvement of environmental/economic/operational performance, and the acquisition of competitive advantages. Of course, they also help to establish a good green image for the company (Tian et al., 2015)[25].

From an operational perspective, the proactive environmental strategy and green supply chain management have both permeated the product life cycle theory, emphasizing that the environmental management runs through all activities of the company, from raw materials purchasing, to the use of materials and energy in the production, and then product sales, and ultimately the recycling of waste products, the entire product life cycle from birth to death, from cradle to grave. This means that from the development, design and use of products, to the final recycling process, it must be "green" and use green innovation or ecological innovation to reduce the emission of harmful substances in the product value chain and reduce the negative impact on the environment, and highly consistent with the content of GSCM practices.

Future Directions

Based on the similarities between the proactive environmental strategy and GSCM listed in the previous section, this paper proposes to integrate these areas so that it can enrich the related research in the proactive environmental strategy and GSCM.

Most studies on GSCM follow the paradigm of "driving factors--practice--performance". If a moderator variable is introduced between driving factors and practice, it may be possible to better explain the impact of driving factors on GSCM practices. Based on the institutional theory, this paper proposes that institutional pressures are the driving factors for enterprises to implement GSCM practices. Simultaneously, this paper draws on the relevant research of existing scholars (Jing Dai et al., 2017; Stephanie Graham et al., 2015; Parag Sen et al., 2015)[14][26][27], extracts the "environmental proactivity" variable from the proactive environmental strategy and explores its moderating effect on the relationship between institutional pressures and GSCM practices. The theoretical model is shown in Figure 1. In this model, the institutional pressure is an organizational external factor, environmental proactivity is a firm-level condition and may stem from top management's attitudes, commitment, and awareness of environmental issues. When firms demonstrate strong environmental proactivity, external institutional pressures may better promote enterprises to implement GSCM practices.

The main contributions of this model are as follows. Firstly, we integrate the proactive environmental strategy with GSCM practices, incorporate sustainable thinking into daily operations and management, and organically combine macro and broad environmental strategic connotations with microscopic and concrete operational practices of the company's supply chain. Secondly, we bridge institutional theory and RBV, simultaneously exploring the influence of external institutional pressure and internal environmental proactivity, and their interaction on GSCM practices. This offers an integrating perspective on how corporations can be more innovative in sustainability.

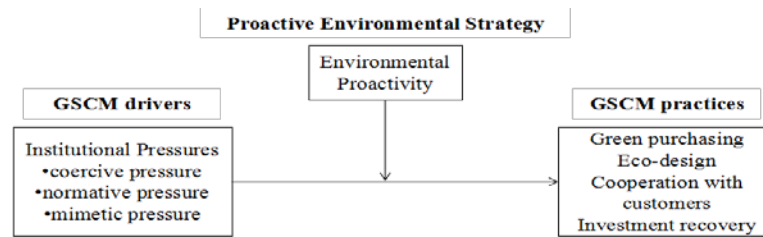


Fig1. Theoretical Model

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