Transportation Research Part E 47 (2011) 791–792

Contents lists available at ScienceDirect

Transportation Research Part E

journal homepage: www.elsevier.com/locate/tre

Editorial

Green Supply Chain Management: Trends, Challenges, and Solutions

As the concept of extended producer responsibility (EPR) emerges along with third party (*e.g.*, government and green organizations) strategic intervention, there is a growing consensus that functions of supply and reverse-supply chains should be efficiently integrated, and members be coordinated to form a cooperative green supply chain (GSC). The ultimate goal of sustainability of global environments is then achievable. Companies such as IBM, Hewlett–Packard, Xerox, and Body Shop International have been involved in related functions, *e.g.*, green-manufacturing (production-remanufacturing), green-marketing (remarketing), and green-logistics. Coercive requirements from governmental legislation and regulation are extensively found in Europe, Asia, and North America to promote industry-induced pollution alleviation, *e.g.*, by requiring manufacturers to practice green reverse logistics management in recycling used-products.

Nevertheless, issues of green supply chain management (GSCM) remain challenging, requiring more investigations. Some important subjects are illustrated as follows:

1. GSCM strategic planning and operational models.
2. Green logistics network configurations and resource allocation strategies.
3. GSCM multilateral channel relationship management.
4. Driving and promotional incentives for sustainability of green supply chains.
5. GSCM practical cases, issues and solutions.

Particularly, when the social and political power driven by the third parties (*e.g.*, governments and non-profit green organizations) is involved, the aforementioned issues turn out to be more intricate.

Considering the uniqueness and urgent need for more research in GSCM, we issued a call for papers for the special issue of Transportation Research Part E in March, 2009. The submission deadline was set to March 31st, 2010. Fortunately, we completed the entire review process by April, 2011 (about 1 year) with the aid of our excellent reviewers for their impartial and professional reviews, which significantly improved the quality of the special issue. Our basic policy of inviting referees is that all the referees should be professional in related areas, and conduct their reviews independently. We adopted double-blind peer review in the review process. Therefore, in every case, the authors appeared to greatly appreciate the corresponding referees for their thoughtful and constructive comments.

A total of six papers are collected in this special issue. Despite the existence of a variety of challenging issues in GSCM, issues of GSCM practices under the influence of government intervention and associations with green supply chain performance appear to draw increasing research attention in these collected works. A brief introduction to the accepted papers is summarized in the following.

In Bae et al. (2011), a two-stage game theoretic model is developed to evaluate, from both policy and organizational perspectives, the implications of greening of transportation fleets. Various parameters, a variety of organizational and policy factors such as innovations in green vehicle technology, levels of service differences, cost of fuel, adjusting tax policy, regulatory compliance requirements, and adaptation costs are considered in the proposed model. The evaluation results provide several practical insights into actions that could be considered by regulators and organizations to encourage environmental investments.

Using ecological modernization theory (EMT), Zhu et al. (2011) examine if recent continuous development of ecological regulations and policies in China has motivated a proactive environmental management practice, promoting green supply chain management (GSCM) implementation in the Chinese manufacturing industry. The EMT theoretical lens is further used to evaluate the awareness of Chinese manufacturers on these regulations and policies and determine whether these manufacturers encounter pressures or have incentives to drive their pursuit of GSCM as an organizational response. Their analytical results highlight the varying pace of Chinese manufacturers to ecologically modernize with GSCM practices and the significance of regulatory pressure to diffuse the practices adoption by Chinese manufacturing industry. Additionally, the

1366-5545/$ - see front matter
doi:10.1016/j.tre.2011.05.014

authors posit that EMT, whose origins can be traced to European initiatives, is applicable to a developing economy context such as China, thus expanding our understanding of EMT as an international business phenomenon.

Chiou et al. (2011) aim to investigate the influence of green supply chain management practices in terms of greening the supplier and green innovation on firms' competitive advantage and their environmental performance. A conceptual framework which characterizes the relationships of the aforementioned constructs is constructed using structural equation modeling. Data are collected through a questionnaire-based survey across 124 companies from eight industry sectors in Taiwan. Their analytical results indicate that deployment of the aforementioned practices contributes significant benefits to the environmental performance and competitive advantage of firms. Through the mediating effect of green innovation, greening the supplier does improve the environmental performance and competitive advantage of firms which adopt GSCM measures.

Cheng (2011) presents a conceptual model to examine how relational risk affects the willingness to share knowledge, moderated by two factors: relational benefits and guanxi. The empirical study is conducted using data collected from 436 green manufacturing firms that are among the top 1000 Taiwanese manufacturing firms of 2008 listed by *Business Weekly*. The analytical results indicate that relational risk is negatively associated with willingness to share knowledge, and such a negative effect can be improved through the moderating effect of relational benefits and guanxi between partners. The research findings provide useful insights into how green supply chain members should reinforce their relational benefits and guanxi activities to enhance their value-based supply chain relationships.

In Azevedo et al. (2011), the relationships between green supply chain practices and supply chain performance are investigated. Therein, green supply chain practices considered in this work involve "environmentally friendly purchasing practices", "environmental collaboration with suppliers" and "working with designers and suppliers to reduce and eliminate product environmental impact." Five case studies from companies within the Portuguese automotive supply chain are chosen to investigate the aforementioned relationships. A conceptual model to assess the influence of green practices on supply chain performance is derived from the qualitative data analysis. The analytical results provide evidence as to which green practices have positive effects on quality, customer satisfaction and efficiency and which ones have negative effects on supply chain performance.

Using the resource-based view (RBV) of the firm as the theoretical background, Gavronski et al. (2011) investigate the relationships between green supply management (GSM) practices, green manufacturing capabilities, and plant resources. Specifically, they postulate that plant resources are positively related to green manufacturing capabilities, which in turn are positively related to GSM capabilities. Survey data collected from 94 samples of Canadian manufacturing plants are used to test the proposed conceptual model. Their analytical results indicate that external knowledge exchange directly supports both greener process management and environmental collaboration with suppliers; and however, is indirectly related to supplier selection and monitoring. The managerial implications of these findings are twofold: managers seeking to implement GSM need to view internal investment in green process management as a step toward environmental management of their external supply chains. They also must realize that green process management requires the support of other resources, such as environmental investments and top management commitment.

Overall, this special issue has covered six excellent papers in GSCM, and most of them serve to tackle the related problems in the strategic planning level. Nevertheless, it is expected that this issue can stimulate more future research expanded to address diverse GSCM-related issues and to cover more subjects to enrich the area of GSCM. Finally, we do hope that this special issue will draw the attention of more researchers to bridge the gap between the academic and practical perspectives toward the ultimate goal of maximizing the "green value" added in GSCM and related areas.

Acknowledgements

This special issue was supported by the National Science Council Grants, Taiwan (No. NSC 95–2416-H-009–004). In addition, we are grateful to all the paper contributors to the special issue. Furthermore, we would like to express our special appreciation to all the referees for their valuable time and effort in reviewing the manuscripts.

Guest Editors
Jiuh-Biing Sheu [1]
College of Management, National Chiao Tung University, Taiwan, ROC
E-mail address: jbsheu@mail.nctu.edu.tw

Wayne K. Talley [2]
College of Business and Public Administration, Old Dominion University, Norfolk, VA, USA
E-mail address: wktalley@odu.edu

[1] Tel.: +886 2 3449 4963; fax: +886 2349 4953.
[2] Tel.: +1 757 683 3534; fax: +1 757 683 5639.