

A Literature Survey on Green Supplier Selection

Bahar OZYORUK
Gazi University

Abstract: In today's supply chain, we have to deal with many complex decision problems. Under appropriate circumstances, appropriate decision problems must be solved. In recent years, as in many fields of work, the increase in environmental awareness in the manufacturing sector and the legal obligations imposed have influenced decisions made by many manufacturers. The green strategies dealt with have become a new competitive tool for companies. Firms have been aiming to increase their productivity and profitability with green applications. In this study, the criterias to be considered in choosing the green supplier, which is the most important group of the green supply chain, have been examined and classified. It has been explained how suppliers should improve their working conditions for these criteria that are sensitive to the environment. In which sectors, which green criteria are mentioned in the foreground. It is explained that the obligations of the law regulatory authorities bring to what sectors.

Keywords: Green supplier, Green supply chain

Introduction

The supply chain, starting with goods movement and ending up to the point of consumption, is a network of interconnected and collaborative organizations (Handfield and Ernest, 1999) that controls, manages and develops the flow of materials and information to meet customer expectations. Figure 1 shows this structure.



Figure 1. Structure of the Supply Chain

Supply chain management has been influential in expanding and expanding businesses into new markets. Organizations have come to a stronger position in the market they owned over time. As a result, production and consumption showed a rapid increase. The increase of education and consumption brought many problems together. With the increase in consumption, the wastes generated after use have seriously threatened human health and the ecological balance of the world.

Green Supply Chain

Businesses have developed the concept of "Green Supply Chain Management" by incorporating environmental elements and social responsibility into the classical supply chain management. The organization, procurement,

- This is an Open Access article distributed under the terms of the Creative Commons Attribution-Noncommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

- Selection and peer-review under responsibility of the Organizing Committee of the Conference

production and logistics functions are also designed to include environmental awareness (Simpson and Power, 2005). Green supply chain;

- ▶ Addresses the environmentally sensitive approach to products throughout their lifecycle.
- ▶ the product; is the production of the waste by minimizing the harm to the environment after it has been consumed until it is consumed as raw material.
- ▶ Enables production to be achieved by having environmental and quality certificates.

Green supply chain management systems; declining sources of raw materials, waste of landfills, increased environmental pollution such as pollution has become an important competitive factor. (Shang, Lu and Li, 2010). Firms are aiming to increase their productivity and profitability with green applications and they want to minimize the negative effects on the environment and create awareness.

Green Supplier

Businesses are faced with many suppliers that they provide various raw materials and services. Choosing the best suppliers for businesses and the evaluation of these suppliers is as complex as it is important.

Companies have to pay more attention to environmental management because of environmental issues such as global warming. Therefore, in choosing suppliers, they prefer the firm that best matches the environmental goals of the operator, not the supplier that gives the most reasonable price. From this point of view, the evaluation and selection of suppliers in the green supply chain will be differentiated and important. We will try to develop long-term relationships with suppliers. Suppliers, who are the first people in the green supply chain, have quite a big deal.

Green supplier choice approach; monitoring of suppliers based on environmental performance, and cooperation with green suppliers that meet only environmental standards (Arimura et al., 2011).

In the selection of green suppliers, they are detailed with sub criteria based on the main criteria of green design, green production, green image, green storage and environment management system. For example, under the main criteria of green supplier selection, recycled products, reduced use of hazardous materials, and cooperation with customers for economic design can be defined. Sub criteria can be defined within other main criteria.

Green Supplier Selection Literature Survey

In studies of the green supply chain and the green supply chain components, it is clear that the interest in the concept of 'green' is increasing and the environmental elements are added to each of the traditional supply chain components. As a result of the research, the literature on the green supply chain is presented in Table 1.

Table 1. Literature on green supplier selection

| RESEARCHERS | YEAR | NAME | DISCUSSED CRITERIA |
|--|------|--|---|
| Joseph Fiksel | 1996 | Environmental Design: Creating Efficient Products and Processes | Pollution prevention, environmental management, total quality management, design |
| C.R. Carter ve J.R. Carter | 1998 | Organizational Determinants of Environmental Procurement: The First Evidence from the Consumer Products Industry | Distribution channels, environmental procurement, structural equality models and supply chain management |
| Benita M. Beamon | 1999 | Green Supply Chain Design | Supply chain, logistics, environment, environmental management strategy |
| F. Boons | 2002 | Green Products: Framework for Product Chain Management | Material reduction, product substitution, recycling |
| Devashish Pujari, Gillian Wright, Ken Peattie | 2003 | Green and Competitive Impact on Environmental New Product Development Performance | Customer satisfaction, product life cycle, post-use application design, senior management support, environmental product policy |
| Samir K. Srivastava | 2007 | Green Supply Chain Management: A Literature Review | Design, green production, reverse logistics, energy management, recycling |
| Sinem Büyüksaatçi | 2009 | Green Supply Chain Management and an Application | Air pollutant rate, photochemical smoke incident frequency, change in surface water level, algae growth |
| Jamal Fortes | 2009 | Green Supply Chain Management: A Literature Review | Green design, recycling, green production, reverse logistics |
| Deniz Peker | 2010 | Green Supply Chain Management in Enhancing Environmental Performance | Green procurement, green design, recycling, green distribution, business association |
| Joseph Sarkis, Qinghua Zhu, Kee-Hung Lai | 2010 | Organizational Theoretical Review of Green Supply Chain Management Literature | Environmental performance, economic performance, operational performance |
| Anil S. Dube, Dr.R.R. Gawande | 2011 | Green Supply Chain Management: A Literature Review | Product life cycle, green design, reverse logistics, green production |
| Nevzat Korkankorkmaz | 2012 | A Research on Lean and Green Supply Chain Management | Senior management support, relations with suppliers, relations with customers, lean practices, environmental management system |
| Esen Andiç, Öznur Yurt, Tunçdan Baltacıoğlu | 2012 | Green Supply Chains: Potential Applications and Markets Efforts to Turkey | Green supply chains environmental issues, focus groups waste management reverse logistics |
| Nadine Kafa, Yasmina Hanı, Abederrahman El Mhamedı | 2013 | Sustainability Performance Measurement for Green Supply Chain Management | Green procurement, green design, green production, green distribution, reverse logistics |
| Wenge Zhu, Yuanjie Hekristina | 2017 | Green Product Design in Competitive Supply Chains | Yeşil ürün marjinal maliyeti, yoğun yeşil ürün, yeşil ürün geliştirme, yeşil tedarik zinciri tasarımları |
| Sarkis, J. | 2018 | Sustainable green supply chain | Grene product |
| Nasrollahi | 2018 | The impact of social media applications on the green supply chain | Structural equation model (206 firms) |

Results and Discussion

The ability of the supply chain to demonstrate its expected performance depends on the correct choice of the supplier regarding the supply chain first supplier. It is also valuable to work with environmentalists. In this study, studies carried out in the literature with emphasis on green suppliers are examined. These studies are presented in a table form for review.

Recommendations

In this study, the criteria affecting the selection of green suppliers can be included in the optimization methods so that firms can better manage the decision making process.

Conclusion

In the literature survey, it is observed that in recent years the importance of green procurement selection has increased in the historical development process. Limited resource utilization and environmental practices are expected to be even more dramatic in the coming years

References

- Andiç, E., Yurt, Ö., Baltacıoğlu, T. (2012). Green supply chains: Efforts and potential applications for the Turkish market. *Resources, Conservation and Recycling*, 58, 50– 68.
- Arimura, T. H., Darnall, N. and Katayama, H. (2011). Is ISO14001 a gateway to more advanced voluntary action? The case of green supply chain management. *Journal of Environmental Economics and Management*, 61, 170-182.
- Beamon, B. (1999). Designing the green supply chain. *Logistics Information Management*, 4(12), 332-342.
- Büyüksaatçi, S. (2009). Yeşil Tedarik Zinciri Yönetimi ve Bir Uygulama, Yüksek Lisans Tezi, İstanbul Üniversitesi Fen Bilimleri Enstitüsü Endüstri Mühendisliği Anabilim Dalı, İstanbul.
- Carter, C. R. and Carter, J. R. (1998). Interorganizational determinants of environmental purchasing: Initial evidence from the consumer products industries. *Decision Sciences*, 29(3), 659-684.
- Dube A., Gawande, Dr. R. R. (2011). Green supply chain management – A literature review. *International Journal of Computer Applications*, 0975 – 8887.
- Fiksel, J. (1996). *Design for environment: Creating ecoefficient products and processes*. NewYork: McGraw-Hill.
- Fortes, J. (2009). Green supply chain management: A literature review. *Otago Management Graduate Review*, 7, 51-62.
- Handfield, R., Ernest, L., Nichols, Jr. (1999). *Introduction to supply chain management*. NewJersey: Prentice Hall.
- Kafa, N., Hanı, Y., El Mhamedı A. (2013). Sustainability performance measurement for green supply chain management. 6th IFAC Conference on Management and Control of Production and Logistics The International Federation of Automatic Control. Center for Information Tecnology Renato Archer , Fortaleza, Brazil.
- Korkankorkmaz, N. (2012). Yalın ve Yeşil Tedarik Zinciri Yönetimine İlişkin Bir Araştırma, Yayımlanmamış Yüksek Lisans Tezi, Gebze Yüksek Teknoloji Enstitüsü, Kocaeli.
- Mahdi Nasrollahi (2018)The Impact of Firm's Social Media Applications on Green Supply Chain management
- Peker, D. (2010) Çevresel Performansın Geliştirilmesinde Yeşil Tedarik Zinciri Yönetimi, Yüksek Lisans Tezi, Uludağ Üniversitesi Sosyal Bilimler Enstitüsü İşletme Anabilim Dalı Üretim Yönetimi ve Pazarlama Bilim Dalı, Bursa.
- Pujari, D., Wright, G., Peattie, K. (2003). Green and competitive influences environmental newproduct development performance. *Journal of Business Research*, 56, 657– 671.
- Sarkis, J. (2017). Greener manufacturing and operations: From design to delivery and back, *International Journal of Operations & Production Management* 25 (5), 449-468
- Sarkis, J., Zhu, Q., Lai, K. (2010). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economic* ,130, 1-15
- Shang, K., Lu, C., Li, S. (2010). Ataxonomy of green supply chainmanagement capability among electronics-related manufacturing firms in Taiwan. *Journal of Environmental Management*, 91, 1218-1226.

- Srivastava, S. K. (2007). Green supply-chain management: A state-of-the-art literature review. *International Journal of Management Reviews*, 9(1), 53-80..
- Zhu, Q., Sarkis, J., and Lai, K. (2008). Green supply chain management implications for closingthe loop. *Transportaion Research*, 1-18.
- Zhu, W., He Y. (2017). Green product design in supply chains under competition. *European Journal of operational Research*, 258, 165–180.
- Wu, C., Barnes, D., (2016). An integrated model for green partner selection and supply chain construction. *Journal of Cleaner Production*, 112(3), 2114–218

Author Information

Bahar Özyörük

Gazi University Faculty of Engineering, Eti Mh. Yükseliş
Sk. No: 5, Maltepe / Ankara, Turkey
Contact e-mail: bahar@gazi.edu.tr
