GREEN SUPPLY CHAIN MANAGEMENT AS AN ORGANIZATIONAL INNOVATION

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Abstract

Green Supply Chain Management (GSCM) is a relatively new add-on to management science. The companies start to understand that external stakeholders require more focus on sustainability. The growing interest in this field both by practitioners and academics has led to many different approaches to this innovative organizational change. Hence, a lot of research has been carried out resulting in multiple frameworks for integrating environmental issues into organizational strategies. The objective of the paper is to review the recent literature on GSCM. The analysis of adoption and implementation of GSCM practises will be based on secondary data leading to determination of further research directions. Special attention will be given to drivers and barriers of GSCM practices.

Keywords: Green Supply Chain Management, EMS, sustainability
JEL Classification: L90, M10, R40

1. Introduction

The new logistics concepts are based on several important factors which create new conditions of management. They consider the flow of real processes as an integrated system of partial operations subordinated to a corporate strategy. Integral approach to logistics functions along with enterprise business strategy manifests itself in many basic problems, and includes in particular (Ruben, 1994):

- consistent orientation of business operations towards market needs,
- application of the principle of material flow integration process in an enterprise,
- joint consideration of material and information flows which is the essence of enterprise logistics processes,
- top management commitment in implementing the logistics concept,

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- elimination of thinking and acting in a segmental way and adapting comprehensive and constant readiness to implement technical and organizational innovations.

As one can see, thinking about logistics activities in the supply chain is mainly focused on economic aspects and efficiency. However, thinking in terms of organizational innovation, makes you look more broadly at whole supply chains and additionally taking into account other issues, such as environmental ones.

2. Supply Chain Management as a result of integration

All supply chains are to a certain extent integrated. The objective of greater integration is to coordinate resources and needs of the chain members to optimize the results of the entire chain. The integration process requires appropriate management skills, processes and technologies. Integration is a continuous process and should not be treated as the ultimate goal. Factors contributing to integration are (National Research Council Staff, 2000):

- increasing cost competition,
- shorter product life cycles,
- faster product development cycles,
- globalization and mass customization,
- higher quality.

The perception of supply chains as a set of integrated processes rather than separate businesses and functions can help to improve performance. Hence complex activities can be coordinated, and those that do not add value, can be eliminated. The integration of key processes produces the best results.

Trust and commitment are most often mentioned in the literature as a distinguishing strength of the relationship between businesses. Trust is essential when we talk about further cooperation and sharing of information. Without it, it is impossible to adapt supply chain management approach. From an economic point of view, trust seems to be the result of analysis of the perceived cost against the perceived (economic) benefit from the interaction. Trust can limit opportunistic behavior (Williamson, 1979; 1993). The commitment increases the chances of successful implementation of supply chain integration relationships. Such actions cause greater involvement and increase the durability and strength of ties between the companies. Maintaining partnerships and cooperation between companies is not easy. Companies look for the benefits of cooperation, but also appreciate the advantages of freedom of choice. If, therefore, relationships

with other companies are to last, the benefits arising therefrom must be greater than the costs of their maintenance and the potential value of other missed opportunities (Coulson-Thomas, 2005).

It is clear that the scope of a term "supply chain management" has undergone changes over the years. Initially regarded as a kind of an operational technique it gradually started to be regarded as a philosophy of a company covering an increasing number of tasks. Despite the lack of consensus on a uniform definition of SCM, there is no doubt that it is one of the key terms in both the theory and business practice in recent years. Cooper, Lambert and Pagh stated that there is definitely a need to integrate operations in the supply chain that go beyond logistics. SCM understanding evolved from the integration of logistics in the supply chain to integration and management of key processes in the chain (Cooper et al., 1997). At the present time supply chain management is gaining a new dimension. In addition to a logistics aspect in supply chain management (e.g. supply synchronization, integrated production planning) one can talk about quality, design, environmental relationships (greening of supply chains). It should be noted that in contrast to the traditionally understood environmental management, the concept of green supply chain covers all stages of the product life cycle, from the extraction of raw materials, then design, manufacturing and distribution phase, product usage until its final disposal at the end of the product life cycle.

3. Green Supply Chain Management

Goleman notices that the supply chain of such a simple product which is a glass jar, consists of 1,959 links. To finish its production 659 chemical substances are needed, and each has an impact on the environment and humans. 220 of them are emitted to the atmosphere (Goleman, 2009). This example shows the increasing importance of Green Supply Chain Management (GSCM). There are many variations in terminology characterizing the concept of GSCM, some of them are enlisted here (Sarkis et al., 2010):

- sustainable supply network management;
- supply and demand sustainability or corporate social responsibility networks;
- supply chain environmental management;
- green purchasing and procurement;
- environmental purchasing;
- green logistics and environmental logistics;
- sustainable supply chains.

The common thing linking these terms is taking ecological issues into consideration when performing any inter-firm activities. GSCM has become a management approach decreasing environmental risks and increasing ecological efficiency along the supply chain (Van Hock & Erasmus, 2000). Thus GSCM has become an important innovation helping to develop win-win strategies that make organizations achieve profits and other objectives. The major differences between traditional SCM and GSCM are presented in Table 1. Conventional SCM concentrates more on final products. The harmful environmental effects are not always taken into consideration when planning and executing production and distribution. Companies rather focus on economic performance. Ecological requirements should be new criteria for manufacturing and distribution and as a result it can bring benefits of financial character. One of the most often identified practices necessary for successful implementation of GSCM is supplier collaboration and commitment in green purchasing. Green purchasing means buying materials meeting specific environmental criteria. There is a wide range of opportunities in creating innovations in this area as there is not much research on this topic.

Table 1. Differences between the Green Supply Chain Management and Conventional Supply Chain Management

	Characteristics	Green Supply Chain Management	Conventional Supply Chain Management
1	Objectives	Ecological and Economic	Economic
2	Ecological Optimization	High Ecological Impacts	Integrated Approach Low ecological impacts
3	Supplier Selection criteria	Ecological Aspects Long term relationship	Price Switching suppliers quickly Short term relationship
4	Cost Pressure	High	Low
5	Flexibility	Low	High
6	Speed	low	High

Source: Luthra, S., Kumar, V., Kumar, S., Haleem, A. (2011). Barriers to implement green supply chain management in automobile industry using interpretive structural modeling technique: An Indian perspective. *Journal of Industrial Engineering and Management*, 4(2), 231-257.

Green Supply Chain Management can offer multiple benefits but it can also be very challenging. Abbasi and Nilsson (2012) proposed major challenges facing GSCM and they were: costs, complexity, operationalisation, mind-set and cultural changes, as well as uncertainties. Most often identified drivers of Green Supply Chain Management are: environmental pressures

(Lamming & Hampson, 1996; Zhu & Geng, 2001; Zhu & Cote, 2004; Zhu et al., 2005; Kushwaha, 2010), government policy (Lamming & Hampson, 1996; Zhu & Cote, 2004; Zhu et al., 2005; Kushwaha, 2010), customer pressures (Lamming & Hampson, 1996; Zhu & Cote, 2004; Zhu et al., 2005; Kushwaha, 2010), competitiveness (Zhu & Cote, 2004; Zhu et al., 2005; Kushwaha, 2010; Carter et al., 2000; Walker et al., 2008) and financial performance (Rao & Holt, 2005).

Seeing all the potential benefits which can be achieved by firms of different size and type one could expect a huge interest in green practices. But different companies expect different results and their approaches to this issue are based not only on advantages but also barriers and relationships between supply chain members. According to Testa & Iraldo (2010) the three most diffused strategic approaches that favour the adoption of GSCM practices by companies are the following:

- "reputation-led": starting co-operative "green" activities with suppliers (i.e. leading to reduction of transport emissions) and making the audience aware of this can significantly contribute to positive corporate image;
- "efficiency-led": reduction in the use of raw materials can lead to cost savings and enables offering a cost-competitive product to the market;
- "innovation-led": GSCM can also be perceived as the result of an innovation leader's strategy. Innovative GSCM-related practices can create an opportunity to strengthen leadership and create a gap with respect to their competitors.

Innovativeness is organisation's willingness or ability to change their processes, products and management systems and is usually a result of future orientation. Supply Chain Management itself can be called an innovation because still many firms find it difficult to accept this collaborative approach. Organizational innovations can be seen at different levels and can also be an adoption of ecological or sustainable issues on an inter-firm level. And more and more firms are aware of it. According to a report from 2013 prepared by Handfield et al. (2013) sustainability pressure has emerged as a very serious trend. More than 55% of studied companies stated that green issues are part of their logistics strategy. And there is a great deal of uncertainty in the implementation of GSCM, especially in terms of measurement systems. There are benefits of environmental management systems (even financial ones) stemming from adoption of systems such as ISO 14000 (Fura, 2013) and companies believe that what brings benefits for a single company can certainly yield more synergy benefits for the whole group of firms (supply chains).

In another report only 10% of surveyed managers say their companies fully tackle GSCM practices and 40% report that their organisations are largely addressing them (MIT Sloan Management Review and The Boston Consulting Group, 2013). Hence one can expect a growing interest in this form of an innovative solution. But apart from advantages there are many difficulties in implementation of GSCM strategies.

Most often identified barriers for Green Supply Chain Management are: initial investments (Yen & Yen, 2012; Mathiyazhagan et al., 2013; Muduli et al., 2013; Giunipero et al., 2012), top management commitment (Muduli et al., 2013; Giunipero et al., 2012), lack of sustainable guidance (Mathiyazhagan et al., 2013; Muduli et al., 2013; Giunipero et al., 2012) and economic uncertainty (Mathiyazhagan et al., 2013; Giunipero et al., 2012).

One can try to sort out the barriers according to their type. These types of barriers are (Khushbu & Shah, 2014): organizational barriers, informational barriers, customer barriers, technology barriers, government barriers, financial barriers, cultural barriers and others. Yet another distinction can be internal and external barriers. Walker et al. proposed five barriers to GSCM implementation (organisational factors, regulation, customers, competitors and society). They were categorized as internal and external ones (Walker et al., 2008). Internal barriers are barriers related to the organization, including: cost of implementation, existing facilities, investment, and information systems, information dissemination and communication, lack of government regulations, and lack of management commitment. External barriers are the ones related to external environment (especially suppliers and customers) including: relationship with suppliers, lack of information, resources, and expertise, lack of trust, and products and customers' perspective (Khiewnavawongsa & Schmidt, 2013).

All these barriers have a negative impact on adoption of Green Supply Chain Management. GSCM as a new idea can be accepted but for many companies the usage of this knowledge might be limited by their organizational culture or lack of learning orientation.

4. Conclusion

Green Supply Chain Management (GSCM) is a relatively new add-on to management science. The companies start to understand that external stakeholders require more focus on sustainability. The growing interest in this field both by practitioners and academics has led to many different approaches to this innovative organizational change. Hence, a lot of research has been carried out. Integrating environmental issues into organizational strategies is of a great

importance but barriers of GSCM practices can be major obstacles limiting the adoption of this approach.

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