

Chapter 6

Sustainable Supply Chain Management: Barriers and Analysis Methods

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ABSTRACT

The integration of sustainable development concepts with the traditional supply chain improves the environmental performance and green image among its stakeholders. During adoption of sustainability concepts in traditional supply chain management, some hurdles can be anticipated. These hurdles are called barriers, and industries must equip themselves to remove them. The difficulties associated with removal of barriers are identification and analysis for selection significant barriers. In this chapter, the significant barriers for incorporating sustainability in supply chain of high volume manufacturing are consolidated from the literature and categorized into seven groups: people, strategic, environmental, economic, societal, regulatory, and functional. The widely used evaluation methods are interpretive structural modeling and DEMATEL for which the procedure and guidance to infer the results are detailed. The chapter is expected to support the practicing engineers involved in implementation of sustainable concepts in supply chain.

INTRODUCTION

The concept of supply chain emerged in the middle of 1980 and since has been widely used by academic experts and industrial practitioners and is still in a developing process. There is increasing consumer and stakeholder expectation for firms to be fully responsible for their business operations, and to dem-

DOI: 10.4018/978-1-5225-5424-0.ch006

onstrate their environmental and ethical behavior. Most organizations are a part of at least one supply chain (Arvindjayant & Mohdazhar, 2014) and in today's global market, competition is increasingly based on 'supply chain vs. supply chain (Momoh, Roy, & Shehab, 2010). Therefore, the expected line of responsibility needs to extend along the full extent of a firm's supply chains into its products, processes and relationships. Globalization and recent economic trends have created highly complex supply chains and the design, organization, interactions, competences, capabilities and management of these supply chains have become key issues (Momoh, Roy, & Shehab, 2010). Supply Chain Management (SCM) is therefore highly relevant both to successfully competing in today's market and in addressing responsible behaviour at all stages of the supply chain. It represents a potentially important discipline for establishing how to integrate environmental and social considerations and practices, to achieve the goal of sustainability. The development of SCM has been largely practitioner-led and represents an evolutionary step beyond logistics (Arvindjayant & Mohdazhar, 2014). It extends logistics thought by integrating the management of co-operations with that of material and information flows. The prime driver for the rapid development of SCM has been economic sustainability, based on the premise that an integrated and efficient supply chain helps to minimize monetary risks and increase profits (Jatinder, Gupta, & Mohan, 2006). The supply chain management (SCM) implementation in a manufacturing organization achieves competitive advantage and strategic fit over other manufacturing organizations (Jatinder, Gupta, & Mohan, 2006). A supply chain (SC) includes all the activities, functions and facilities involved in the flow and transformation of goods and services from the material stage to the customer (Chopra, & Meindl, 2013). Recently, there are many evolutions of SCM such as, green and sustainable supply chain management. These evolutions are driven due to the rising issues in terms of climate change, resource scarcity and increasing responsibility of manufacturing organizations. The green and sustainable SCM help in reduction in the environmental damage, competitive business and care for the people (Lee, Chu, & Tseng, 2011). Yet, despite these important benefits, organizations continue to encounter a barrier which hinders them from effective implementation of sustainable supply chain. These barriers are known as sustainable SCM barriers. They exist between inside and outside of manufacturing organization. Unclear organization objective, Lack of top management commitment and support, Short-term decision-making perspectives, Lack of information technology, Poor ICT structure, Lack of education and training to employee and supplier employee, Lack of necessary tools management skills and lack of motivation and employee involvement are some of barrier exist within manufacturing organization. Resistance to change, lack of measurement system, unwillingness to share information among supply chain partner (Chopra, & Meindl, 2013), lack of inter-organizational cooperation and coordination are barrier outside manufacturing organization. This chapter clearly talks about the hurdles faced in today's world when it comes to implementing sustainable supply chain management and the impact of those barriers (van Donk, 2008). Further, the methods used for analysis the barriers towards eradicating them.

SUSTAINABLE SUPPLY CHAIN MANAGEMENT (SSCM) BARRIERS

The barriers of SSCM are identified from the literature and presented in Table 1. The barriers are classified into seven groups as shown in Table 1. The details of the groups are elaborated below.

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