

# Chapter 15

## ‘Green’ Supply Chain Management: Resource Allocation Strategies for Sustainable Operations

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### ABSTRACT

*Operational practices of ‘green’ supply chain processes within as well as across the firm boundaries are strongly linked with the firm performance. However, the desire for such practices is governed by external and/or internal factors. The challenge, therefore, for supply chain and operations managers is to design and develop an operations strategy that ensures the firms investments in such ‘green’ initiatives. We develop a theoretical framework for resource allocation strategies for sustainable manufacturing operations that can be characterized as speculative, responsible, efficient, and sustainable resource allocation. This can aid managers in characterizing and controlling the firm’s underlying operational processes and guide resource allocation decisions at strategic level.*

### 1. INTRODUCTION

Increased awareness about ‘green’ products and processes among customers as well as firms challenges supply chain and operations managers to examine such activities and its impact on firm performance. There are several studies that examine the impact of ‘green’ supply chain practices on firm performance. For more details refer Porter and Linde, 1995; Hart, 1997; Srivastava, 2007; Unruh, 2010; Sarkis et al., 2011; Eccles et al., 2012; Zhu et al., 2013; Souza, 2013; Dubey et al., 2015a; Dubey et al., 2015b.

Kleindorfer et al. (2005) provides the review of sustainable operations management and challenges that poses to the managers to integrate environment, health, and safety issues with the objective of achieving

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triple bottom line (TBL) results. According to Srivastava (2007), ‘green’ supply chain management is defined as “integrating environmental thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of final product to the consumers as well as end-of-life management of product after its useful life.”

Linton et al. (2007) found that there is a strong linkage between supply chains and sustainability in order to design and manage sustainable supply chains that to make use of current available resources without affecting the future generations needs. Carter and Rogers (2008) developed a framework for sustainable supply chain, and further identified its relationship with environmental, social, and economic related firm performance measures. Gupta and Pasule-Desai (2011) developed a framework for sustainable supply chain management based on four categories, namely, strategic considerations, decision at functional interfaces, regulation and government policies, and integrative models and decision support tools.

Liu et al. (2012) integrated the concepts ‘Green’ marketing and sustainable supply chain management through six dimensions, namely, product, promotion, planning, process, people, and project, to improve the firm’s overall business performance. Kang et al. (2012) developed a framework for implementing sustainable supply chain management, and further identified factors and strategies for successful implementation. Hassini et al. (2012) developed a framework for sustainable supply chain management and identified the related performance measures. Gunasekaran and Spalanzani (2012) developed a research framework for sustainable business development in manufacturing and services, and further provide future research directions. Ageron et al. (2012) developed a theoretical framework on sustainable supply management in the context of French firms and found that greening the supply chains is one of the most critical success factors for achieving sustainable supply management. Baskaran et al. (2012) studied the Indian textile industry suppliers to evaluate and categorize by adopting grey approach on sustainability criteria such as discrimination, abuse of human right, child labor, long working hours, unfair competition, and pollution.

Sustainability plays an important role in achieving competitive advantage for any business firms (Berns et al., 2009). Further, there is a growing interest of government agencies in institutionalizing the corporate social responsibility towards sustainable resource development (Musa et al., 2013). Vimal and Vinodh (2013) developed a framework that consists of checklists to assess the sustainability from manufacturing processes perspective in terms of ecology, equity and economy. Reefke and Trocchi (2013) developed a comprehensive performance measurement system for the sustainable supply chains by integrating sustainable supply chains performance measures and balanced scorecard (BSC) performance management system (Table 1).

This chapter aims to address the following questions:

- What is ‘green’ supply chain management?
- What are the drivers of ‘green’ initiatives across the supply chain?
- What are the prevailing ‘green’ practices in the firms?
- What are the performance measures for firm’s sustainability development?
- How does ‘green’ practices are linked to firm performance?
- How does firm allocate resources for sustainable operations?

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