

Environmental Friendliness in Low Carbon Supply Chain and Operations

Muhammad Shabir Shaharudin
Universiti Malaysia Pahang, Malaysia

Yudi Fernando
Universiti Malaysia Pahang, Malaysia

ABSTRACT

Managing operations in manufacturing industry has progressed significantly over the years due to customer requirements. Globalization and environmental awareness have force firm's operations to align with the direction of environmental management. The importance of carbon emission reduction for environmental management has led firms to adopt low carbon operations practices such as energy management. The emergence of energy management and environmental friendliness principle in business operations have changed the landscape of business competition in the manufacturing industry. Nevertheless, the outcomes and concept remain unclear and availability of limited studies on the specific scope of environmental friendliness have not extensively discussed. As such, the purpose of this chapter is to discuss the environmental friendliness approach in operations from the perspective of manufacturing industry.

Keywords: Environmental friendliness, low carbon supply chain, low carbon operations, manufacturing, content analysis

Introduction

Increasing environmental concerns has compelled manufacturing firms to reconsider their operation strategy. Rethinking of manufacturing firm's operations to meet customer requirements and to achieve performance in operations, economy, social and environment are necessary (Fernando, Jasmi, & Shaharudin, 2019). Nowadays, environmental issue such as climate change due to carbon emissions from manufacturing industry has become a popular topic among firms, customers and society. Evolution of shifting customer requirements from cost reduction to include more product features to product that not harmful to the environment have demand firms to change its operation management. For instance, manufacturing firms have evolved from mass production to mass customization and now towards energy management and environmental principle (Fernando, Shaharudin, Ismail, Yew, & Ganesan, 2018; Fernando, Shaharudin, Haron, Karim, & Ganesan, 2018). These shifting in strategies have seen manufacturing firms practicing just-in-time (JIT) strategy, total quality management (TQM), flexible manufacturing system (FMS), agile manufacturing (AM) strategy, lean production (LP) and supply chain management (SCM) (Gunasekaran & Ngai, 2012). These strategies are practiced by firms to achieve performances such as economic (Schandl et al., 2016), social (Beitzen-Heineke, Balta-Ozkan, & Reefke, 2017), operations (Mirkouei, Mirzaie, Haapala, Sessions, & Murthy, 2016) and environment (Nouira, Frein, & Hadj-Alouane, 2014).

Nowadays, manufacturing firms are expected to reduce environmental impacts in its supply chain and operations (Willersinn, Möbius, Mouron, Lansche, & Mack, 2017). The importance of reducing environmental impacts and threats has been studied across

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Key Terms and Definitions

Environmental Friendliness: defined as operational performance without harming the environment using less energy consumption, clean energy, has green value and use life cycle assessment to support environmental friendliness principles.

Environmental Management: firm's management practices reducing environmental degradation

Low Carbon Performance: performance of firm in reducing carbon emissions through reducing per output carbon emission, substitute or minimization of carbon-intensive materials and reduction of energy use.

Manufacturing Performance: performance of manufacturing or operations through cost reduction and efficiency of operations such as flexible production, responsive to customer demand and quality improvements.

Supply Chain Management: firm's management of product or service, information and financial flow throughout the process of supply chain starting from procurement, product design, production process, distribution channel and network and logistics.