

Chapter 6

Green Supply Chain Management Model for Sustainable Manufacturing Practices

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ABSTRACT

The purpose of this chapter is to identify the dimensions of green supply chain and their impact on manufacturing practices. In this study, the authors used two extended strategies. First thorough review of literature was done considering articles from reputed journals. Second the factors identified from literature review was further refined through experts by forming a problem solving group consisting of seven experts from the manufacturing sector. These factors were used to develop the green supply chain management model using Interpretive structural modeling. Further MICMAC analysis was used to identify the driving and dependence power of the factors. The results of the analysis are very encouraging. Finally, the authors have presented the relationship management strategy for sustainable manufacturing practices.

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INTRODUCTION

The paradigm shift of policies towards green economy is forcing manufacturers worldwide to consider the green initiatives seriously. There is need for the companies especially manufacturing companies to take a proactive approach rather than reactive approach. According to UNEP (2011) report, global manufacturing sector accounts for 35% of the total electricity consumed worldwide and responsible for 20% of the world's carbon dioxide emissions, which is detrimental to lives on the earth. While the above arguments indicate, that this is the high time for research on green supply chain management and implementation of GSCM practices, especially for developing countries like India which is becoming one of the global manufacturing hubs next to China.

The term “green” is now widely used interchangeably on the more established “sustainability” concept, which points to a more holistic view of environmental, social and economic dimensions. World leading firms including IBM, Dell, HP, Sony, Toyota, Nokia have adopted GSCM as a strategic initiative. A framework is developed which portray the various complex relationships involved in a green supply chain with the aid of interpretive structural modeling (ISM). Before we funnel down to the framework, let us understand the basics of sustainability and green supply chain management, how firms exploit it for gaining competitive advantage, and how to build a contextual framework using ISM methodology.

LITERATURE REVIEW

We have adopted “*Systematic Literature Review (SLR)*” in our paper as suggested by Tranfield et al. (2003). The present section is divided into two stages and its phases.

Stage 1: Planning the Review

Phase 0: Identification for the Need for a Review

The field of Manufacturing and Operations has seen radical changes through the years. It started with the “*The Industrial Revolution*” in the late 1700s, has been through several phases but real challenge emerged in front of manufacturing was its sustainability. The issues that have forced developed economies to shift their manufacturing base to India were cost and other was to put check on greenhouse gas emissions. However the approach of these developed economies was question-

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