

Chapter 8

Modeling Barriers in Green Procurement using ISM: A Comparison for Canadian and Iranian Automotive Industry

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ABSTRACT

Green procurement, a significant part of green supply chain management, plays a key role in implementing the green concept by considering the environmental issues. Due to increase in public awareness about environmental criteria, industries have been forced to consider environmental issues in their current production flows. Further, since the automotive industry has a direct impact on the environment, it is very beneficial to study the barriers that prevent this industry from implementing the green concept. Iran has had a considerable growth in the automotive industry in the last few decades and today owns and operates the largest automotive factory in the Middle East. In contrast, Canada as a leader in environmental issues does not have a large automotive industry, but is a country where some localized international companies have located small factories. The differences between these two countries make their comparison more valuable and noteworthy. This study investigates this comparison based on a structural modeling methodology known as interpretive structural modeling (ISM).

DOI: 10.4018/978-1-5225-9570-0.ch008

INTRODUCTION

“Supply chain is a system of organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer”. Supply chain activities transform natural resources, raw materials, and components into a finished product that is delivered to the end customer (Awasthi & Grybowska, 2014). In sophisticated supply chain systems, used products may re-enter the supply chain at any point where residual value is recyclable. Supply chains link value chains (Nagurney & Anna, 2006).

The flow of material in supply chain management is one-way if the green approach is not considered. Without the green concept, the supply chain flow is from the material supplier to the end customer, however focusing on environmental issues causes a strategic change. This is achieved by recycling some of the used parts into the supply chain (Beamon, 1999). It is what can be assumed as the impact of a changing paradigm in supply chain management because of the green supply chain management concept. Furthermore, applying the green concept to the supply chain causes additional activities. For instance, in traditional supply chain management, transportation is recognized simply as forward distribution, while the green supply chain concept has the potential to include reverse logistics as one crucial step to achieving green results (Rodrigue et al., 2001).

Recently, intention and information about environmental issues have been raised in public and professional areas. Last century’s industrial and manufacturing activities have had a negative impact; as a direct result of these industrial achievements the ecosystem has been substantially damaged, and both the environment and ecosystem have been sacrificed (Hussain et al., 2016).

On the other hand, consumption of natural resources must be carefully considered because it contributes to damage to the environment and climate change as well as global warming. Moreover, natural resources are recognized as mostly non-renewable, where high consumption puts future generations at a high risk of lack of energy resources. Today, people are more aware of the environmental situation and it makes supply chain management easier than before. Furthermore, in managing society’s expectations, a new concern regarding the environment and climate has been raised (Strandberg, 2002) and the responsibility to minimize impacts on the environment as well as climate (Hart, 1995; Henriques & Sadorsky, 1999; Walker et al., 2008). This concern is not equal in all countries and societies. Based on different levels of industrial development, economic growth, social beliefs about the environment and the notion of nature, and finally public awareness, using the green approach will be different for each country.

It is noted that strict regulations, especially in developed countries, raise the need for new technologies that respect the environmental and green criteria. Therefore, supply chain management and procurement in particular has become more strategic and critical (Zhu et al., 2008). Although lowest price and highest quality are the main goals of procurement, including the green approach along with the other activities should surely be considered.

In purchasing, to achieve a better result in green supply chain management, it is necessary to consider efficiency along with technological demands, which are mostly equal everywhere and only the severity or significance of some issues makes a difference.

As Van Hoek and Erasmus (2000) and Rao and Holt, (2010) pointed out, “green supply chain management is an important organizational philosophy, (which) plays a significant role in promoting efficiency and synergy between partners, facilitating environmental performance, minimal waste, cost savings to achieve corporate profit and market-share objectives, through environmental risks and impacts reduction, while it improves the ecological efficiency of organizations and their partners”. While performing any green supply chain management projects and specifically procurement, all barriers must be defined

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