

Chapter 5

Identifying Green Supply Chain Management Enablers in South African Mining Industry using Ecological Modernization Theory Approach

Surajit Bag

Tega Industries South Africa Pty Ltd, South Africa

ABSTRACT

Green supply chain management is a popular practice in any world class organization. The traditional supply chain was managed with the objectives to reduce cost without focusing on environmental and social dimensions. However with passage of time institutional pressures has directed firms to design supply chain network which takes care of environmental and social dimensions as well. Green supply chain management concept has evolved gradually over a period of time. The main reason behind evolution of green supply chain management is conservation of natural resources which human beings ignored for long. Published reports show that major portion of the energy is supplied by fossil fuels and thereby depletion of natural resources is occurring at an accelerating rate with time. Industrial manufacturing report also suggest that demand for manufacturing products is likely to double by the year 2050. This will result in high generation of pollutants and gases. If the greenhouse gases emissions remain unchecked, then it will create a catastrophic effect by 2050. Globally manufacturers and industry associations are now acting proactively to conserve the natural resources and curb greenhouse gases emissions. The level of popularity of green supply chain management can be estimated from the high research output in leading operations journals such as IJPE, IJPR, Resources, Conservation and Recycling Journals.

Green supply chain management is a concept that is also gaining popularity in the South African region. For many organizations in this region it is a process to exhibit their sincere commitment to sustainability. However, if green supply chain management practices are to be fully adopted by all mining and minerals industry in South Africa, a demonstrable link between such measures and understanding the role of associated variables is necessary. This paper endeavors to develop a green supply chain management

DOI: 10.4018/978-1-5225-0350-7.ch005

model for mining and minerals industry in the South African region. The approach extends the domain of green supply chain research and produce theories that have greater explanatory power than the current practices.

For this purpose a conceptual model was developed from literature review and data collected using a structured questionnaire mailed to a sample of 174 firms which are leading edge ISO14001 certified mining companies in South Africa. Data analysis is further performed through exploratory factor analysis and regression analysis. This paper presents the first empirical evaluation of the link between green supply chain management practices amongst a sample of mining and minerals companies in South Africa.

1. INTRODUCTION

“We are living as if we have an extra planet at our disposal. We are using 50 per cent more resources than the Earth can sustainably produce and unless we change course, the number will grow fast by 2030. Even two planets will not be enough.” The statement was given by Dr. Morne Du Plessis, CEO of World Wildlife Fund South Africa.

South Africa has an ecological footprint of 2.59 per hectare. Ecological footprint refers to a measure of how much biologically productive land, water and individual population or activity requires producing all the resources it consumes, and to absorb the waste generates using prevailing technology and resource management practices (WWF 2012).

Supply chain practitioners in mining industry confront with various social and environmental issues which do not directly impact daily operation but ultimately has a profound impact on organization performance. These issues are threat to the organizational sustainability and must be understood and managed in a proactive manner. South Africa is fast becoming savvy at demanding social and environmental friendly business practices, ensuring that the mineral resources are exploited in a sustainable and eco-friendly manner.

In recent years green supply chain management (GSCM) has gained popularity in mining companies in South Africa. There has been a strong move towards mining companies “being green” and focusing on sustainability. To accelerate GSCM movement the Chartered Institute of Logistics and Transport: South Africa, the Consumer Goods Council of South Africa and Supply Chain Today launched the GSCM awards program in 2009. The objective of such an award is to recognize and reward companies making true efforts to reduce environmental impact of their supply chain activities.

The continued academic growth of GSCM and its development requires further exploration and more insights be generated. Here author present ecological modernization theory for explanatory purpose with a strong focus on GSCM practices and performance outcome.

The study starts with a brief overview defining the ecological modernization theory which is used as a theoretical foundation for further analysis. The identification of GSCM key dimensions is done based on systematic literature review approach. The final section presents the conclusions drawn from data analysis, recommendations, managerial implications and future research directions.

1.1 Background

Ecological modernization theory (EMT) has its root in the sociological theory which was further developed and applied in the field of management science. The key objective is to achieve industrial development

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