

## Chapter 13

# Identification of Green Procurement Drivers and Their Interrelationship Using Fuzzy TISM and MICMAC Analysis

**Surajit Bag**

*Tega Industries South Africa Pty Ltd., South Africa*

### **ABSTRACT**

*The objective of the chapter is to identify the leading green procurement drivers and identify the interrelationships using fuzzy total interpretive structural modeling and MICMAC approach. For the purpose of this study, 25 drivers were identified from existing literature that influence green procurement practices. These are finally refined through experts' opinions. The final fuzzy model consists of fuzzy relationships between one-to-one criteria. The key drivers which emerged from fuzzy TISM and MICMAC analyses are government policy and regulations, total quality environmental management, management support, management review, continuous education of employees, cross-functional team building, organization culture, and green process and technology. The green procurement model may assist supply chain practitioners in better decision making and successful implementation of green procurement programs.*

### **INTRODUCTION**

Green procurement is sourcing products and services that cause minimal adverse environmental impacts. It incorporates human health, social and environmental concerns into the search for high quality products and services at competitive prices. Green procurement is generally considered a mammoth task by the procurement managers. Recently focus has been given by regulatory bodies to apply pressure on firms for implementing green programs. Environment protection bodies are regularly organizing seminars and conferences to educate and train managers in such greening initiatives. In some countries the government has developed green specifications for items and mandatory part of tender requirement for public procurement. However, the green procurement programs are still under nascent phase in most developing countries.

DOI: 10.4018/978-1-5225-7359-3.ch013

The present research is motivated based on the study of Azevedo et al., (2011) where they have pointed potential future research area in exploring the enablers and barriers influencing companies in taking green procurement decisions. Secondly, Appolloni et al., (2014) conducted a review on green procurement considering the time frame between 1996 and 2013 but does not highlight the inter-relationships between the drivers of green procurement practices and they have also kept it under one of future research directions. They have also mentioned the need for strong qualitative and quantitative research to support the progress of green procurement.

The objective of the current study is to identify the leading drivers that influence green procurement programs and determine the interactions among the identified drivers. This chapter is structured into four additional sections. The next section presents the background of the study which helps to identify the green procurement drivers. The third section introduces Fuzzy TISM. Finally, conclusions, limitations and directions of future research are presented.

## **BACKGROUND**

In this section an attempt has been taken to briefly explain the key drivers of green procurement.

### **Government Policy and Regulations**

Governments are among the largest consumers in an economy. The public sector on average spends 45%-65% of their budgets on procurement. Given this substantial purchasing power, governments have enormous leverage to stimulate and drive markets for sustainable production and consumption when they make a determined effort to purchase 'green' products and services. Adopting such an approach is a smart form of procuring goods and service – it not only improves the efficiency of public procurement but also uses the public market power to bring about significant environmental and socioeconomic benefits. Supply chain management operates within a regulatory framework set by National Government and extended by provinces and local governments to specific policies, legislation and regulations. In South Africa for instance important legislation influencing this function includes the Public Finance Management Act (1999), Preferential Procurement Policy Framework Act (2000), Preferential Procurement Framework Regulations (2001) and National Treasury Regulations (2005). The Municipal Finance Management Act (MFMA) of 2003 governs the financial and supply chain management functions of Local Government. In developing green procurement policies, local government would need to ensure that these policies: are aligned with their existing Supply chain management regulatory frameworks; avoid a clash between the Preferential Procurement regulations and environmental principles or criteria in the policy; incorporate green procurement in all dimensions of the supply chain management cycle; and institutionalize green procurement within the existing structures set out by the regulatory framework. Government policy and regulations positively influences green procurement (Min & Galle 1997; Diabat & Govindan 2011; Hassini et al., 2012; Bag., 2014; Appolloni et al., 2014)

### **Total Quality Environmental Management**

Firms with successful TQEM programs will have more formal mechanisms for interacting with suppliers. Business units with successful TQEM programs exhibit a greater degree of competitive focus and strategic

18 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:  
[www.igi-global.com/chapter/identification-of-green-procurement-drivers-and-their-interrelationship-using-fuzzy-tism-and-micmac-analysis/211871](http://www.igi-global.com/chapter/identification-of-green-procurement-drivers-and-their-interrelationship-using-fuzzy-tism-and-micmac-analysis/211871)

## Related Content

---

### Climate Change and Agriculture: Time for a Responsive and Responsible System of Water Management

Eshwar Anand Ventrapragada and Neela Rayavarapu (2017). *Reconsidering the Impact of Climate Change on Global Water Supply, Use, and Management* (pp. 326-363).  
[www.irma-international.org/chapter/climate-change-and-agriculture/171264](http://www.irma-international.org/chapter/climate-change-and-agriculture/171264)

### Heavy Metal Pollution of Soils and Their Ecological Risk in Suburban Areas: A Case Study From Eastern Africa

(2023). *Global Industrial Impacts of Heavy Metal Pollution in Sub-Saharan Africa* (pp. 141-160).  
[www.irma-international.org/chapter/heavy-metal-pollution-of-soils-and-their-ecological-risk-in-suburban-areas/328146](http://www.irma-international.org/chapter/heavy-metal-pollution-of-soils-and-their-ecological-risk-in-suburban-areas/328146)

### A New Robust H Control Power

Samir Abdelmalek and Hocine Belmili (2017). *Renewable and Alternative Energy: Concepts, Methodologies, Tools, and Applications* (pp. 1695-1718).  
[www.irma-international.org/chapter/a-new-robust-h-control-power/169655](http://www.irma-international.org/chapter/a-new-robust-h-control-power/169655)

### Marine Plants as a Sustainable Source of Agri-Fertilizers for Small Island Developing States (SIDS)

Antoine De Ramon N'Yeurt and Viliamu Iese (2015). *Impacts of Climate Change on Food Security in Small Island Developing States* (pp. 280-311).  
[www.irma-international.org/chapter/marine-plants-as-a-sustainable-source-of-agri-fertilizers-for-small-island-developing-states-sids/118029](http://www.irma-international.org/chapter/marine-plants-as-a-sustainable-source-of-agri-fertilizers-for-small-island-developing-states-sids/118029)

### Reduction of Carbon Intensity: Rhetoric or Reality?

Md. Mahfuzar Rahman Chowdhury (2019). *Intellectual, Scientific, and Educational Influences on Sustainability Research* (pp. 70-86).  
[www.irma-international.org/chapter/reduction-of-carbon-intensity/230817](http://www.irma-international.org/chapter/reduction-of-carbon-intensity/230817)