ABSTRACT

Green procurement is the set of procurement policies held, action taken and relationships formed in response to concerns linked with the natural environment. Green procurement has drawn major attention of supply chain practitioners' and has become the theme of most of the seminars and workshops. Green procurement is gaining popularity due to its positive association with the triple bottom line. Firms implement green procurement to achieve sustainability in this dynamic business environment. There are several published papers that have adopted either qualitative or quantitative methodology to build and test theories in the discipline of green procurement. However multiple elements influencing green procurement creates decision making problem among supply chain practitioners. This has motivated to pursue the current study and further extend the theory of green procurement. The main purpose of the current study is to investigate the inter-relationships between elements of green procurement using advanced multi criteria decision making techniques. First systematic review of literature is done to identify the leading drivers. Secondly these drivers were refined through expert interview from manufacturing sector. Thirdly Fuzzy TISM and Fuzzy DEMATEL method were applied to find the intensity of influence of green procurement drivers and make a comparative study of elements. Finally, the conclusions of research are drawn and also present the managerial implications and directions of future research.

KEYWORDS

Decision Making Trail and Evaluation Laboratory (DEMATEL), Drivers, Fuzzy Sets, Green Procurement, Theory Building, Total Interpretive Structural Modeling (TISM)

1. INTRODUCTION

Globally researchers and industry associations are seeking innovative eco-friendly approaches to conserve the natural resources and curb greenhouse gas emissions. The level of popularity of green procurement can be estimated from the high research output in leading journals such as IJPE, IJPR, IJPM, Resources, Conservation and Recycling Journals. Research output on green procurement has increased over the years and reached its peak in 2013 and out of which 43 were survey papers, 14 case studies and only 5 were theoretical and conceptual papers (Appolloni et al., 2014). Environmental aspects have been an important consideration in Europe since the treaty of Rome in 1957. However, more importance was given since the United Nations conference on Environment and Development in the year 1992. In the European Union, the Sustainable Development Strategy was launched by the heads of state and government in 2001. Sustainable development strategy did not clearly refer
to green procurement. However, at the world summit in 2002 which was organized in Johannesburg called for green public procurement.

In June 2003, the policy paper on integrated product policy has triggered to green public procurement in EU member states by 2006. Therefore, the epicenter of green purchasing, and sustainable development is Europe. The Government procurement agreement developed seeks to protect and preserve environment. Environmental criteria awarding for supplier selection and awarding orders, technology selection, methods and production process are all considered under EU government procurement agreement. It is mandatory for all member states to comply with the directives and allow for the integration of environmental considerations in supply and service contracts. Because of the purchasing power of the public sector the potential for green public procurement is enormous. Outside the European Union green public procurement initiatives has been developed in Japan, Philippines, Canada and USA.

European commission is proud to publish their handbook on Green Public Procurement. This handbook aims to encourage public authorities to buy eco-friendly goods. EU commission helps member states in establishing the plans and targets for green public procurement. Major barrier is the lack of environmental knowledge on the right criteria to include in tender documents, budgetary constraints due to up-front prices that are higher than prices of conventional goods and services. The handbook seeks to help overcome these barriers (Day, 2005). The member countries of EU practice green public procurement and has also influenced private sector to convert into green procurement practices. The EU handbook on Green Public Procurement promotes the idea of defining technical specifications in terms of performance or functional requirements. This allows tender participants to come up with innovative solutions.

Legal frameworks such as international legal framework for government procurement (GPA) are important to be implemented in developing countries like India. There is scope in converting to green electricity, renewable energy, use energy efficient computers and home appliances, water saving toilets and taps, buy organic foods and convert kitchen waste to compost for gardening, recycle waste water for gardening. Government should not only ask citizens to be environmentally conscious but demonstrate the eco-friendly buying process and also the process of recycling, reuse waste.

The main objectives of this paper are:

1. To identify the drivers that influence green procurement programs
2. To determine the interactions among the identified drivers
3. To understand the managerial implications of this study

This paper is structured into seven additional sections. The next section presents the systematic literature review which helps to identify the green procurement drivers. The third section introduces research methods. Forth section presents Fuzzy TISM and fifth section presents Fuzzy DEMATEL. Finally, conclusions, managerial implications, limitations and directions of future research are presented.

2. LITERATURE REVIEW

Literature review is an important part of the any research study. Traditional review approach mostly lacks thoroughness, quality and information which ultimately do not make sense to practitioners. Here author attempts to use the process of systematic review for exploring and understanding the links. The systematic literature review (SLR) process creates transparency and assist in developing the research question which will further enhance the knowledge base. Earlier SLR was mainly used by researchers in the area of medical sciences but recently SLR has gained popularity in the area of management sciences. Some of the recent published papers which adopted SLR techniques are
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