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When strategies matter: Adoption of sustainable supply chain management practices in an emerging economy's context

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ABSTRACT

Over the past few years, a growing concern has been noticed among society, government and non-government organisations for conserving the environment and adopting Sustainable Supply Chain management (SSCM) practices. However, it is not simple for industries to develop sustainability in their business operations and activities especially in emerging economies. In this sense, the purpose of present research is to recognise and analyse various strategies to implement SSCM practices in Indian context. Present research has recognized nine key strategies. Due to qualitative nature of research, Interpretive Structural Modelling (ISM) methodology integrated with fuzzy MICMAC analysis to further refine the hidden relationship between strategies has been attempted. The identified SSCM strategies have been categorized based on their dependence and driving power. ISM methodology offers merely binary relationship among strategies, whereas fuzzy MICMAC analysis gives accurate investigation related to dependence and driving power of strategies. Findings reveals that 'Management involvement, support and commitment'; 'Understanding of the sustainability impacts of their supply chain' and 'Establishing a vision and objectives for supply chain sustainability' are the strategies with the topmost independence powers. The developed model will help in uncovering the interaction and dependence among the identified strategies in implementation of SSCM practices from industrial viewpoint. The inputs of experts from academia and Indian automotive manufacturing firms have been used in this research. The present work will facilitate automotive and related firms in prioritisation of strategies and managing resources in a most sustainable way in an emerging economy context.

1. Introduction

Sustainability is gaining importance in business research and practices over the last few years because of rapidly depleting reserves and worries over wealth disparity and business social responsibilities (Teuteberg and Wittstruck, 2010; Mangla et al., 2013; Harangozó and Zilahy, 2015). From the past few years, increasing pressure from different regulatory bodies, customers, suppliers, stakeholders, local and global communities, and non-governmental organizations (NGOs), have forced the industries to incorporate people, process and planet focused concerns into their businesses (Masoumik et al., 2014).

In response to augmented global awareness on the general situation of the environment and natural resources, numerous countries have implemented a variety of rules and regulations (de Sousa Jabbour et al., 2015) for instance the Restriction of Hazardous Substance in Electrical and Electronic Equipment (RoHS), Eco-design Requirement for Energy Using Product (EuP) etc. In addition to this, organisations all across the world are seeking to improve their social responsibility and accountability towards people in value chains (Chen et al., 2012; Mangla et al., 2015; Witjes and Lozano, 2016)). This is well supported by Elkington's triple bottom line model of sustainability. The triple bottom line model draws more managerial attention in current manufacturing scenario, so as ecological, monetary and societal issues have been becoming crucial in managing any business (Carter and Rogers, 2008; Brandenburg et al., 2018; Roy et al., 2018). To deal with these economic, ecological and societal issues, SC managers are required to be capable of identifying and understanding new sustainable challenges in their organizations and business environments (Cetinkaya, 2011; Shan and Wang, 2018).

The literature repetitively argues that to facilitate sustainability, business organization needs actions go beyond technological fixes and embrace new environment and socially friendly principles, attitudes and behaviours (Harris and Crane, 2002; Sarkis, 2018) i.e. acceptance

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of change when implementing Sustainable Supply Chain management (SSCM) strategy (Johannsdottir et al., 2015). SSCM helps in improving process efficiency, reducing waste, etc (Srivastava, 2007; Fahimnia et al., 2015; Bergendahl et al., 2018; de Oliveira et al., 2018).

As far as perspective of this work, the research on sustainability of supply chains is somewhat undeveloped in emerging economies as compared to emerged economies due to exploitation, lack of resources, poor societal considerations etc. (Turker and Altuntas, 2014; Silvestre, 2015; Silvestre, 2016; Gopal and Thakkar, 2016; Kusi-Sarpong and Sarkis, 2017). This is well supported by concerns of limited knowledge, infrastructure and facilities in an emerging economy context like India (Al Zaabi et al., 2013; Luthra and Haleem, 2015; Dubey et al., 2017; Mathivathanan et al., 2018). In addition, the concept of sustainability is still accepted as a highly unorganised and costly process in automotive sector in India (Gupta and Palsule-Desai, 2011; Luthra et al., 2014b; Diabat et al., 2014; Mani et al., 2016; Luthra et al., 2017). Sustainability has several implications of improving resources and energy efficiency in automotive business, for which the industries are not fully aware of its significance in a developing country like India (Luthra et al., 2018b).

In India, automotive sector plays a vital role in its economy. Customer pressure and stakeholder requirements for a competitive environment have enforced the automotive sector to consider their value chain impacts to adopt SSCM practices (Mathivathanan et al., 2018). The automotive sector consumes huge amount of natural resources and produces significant waste, so it is important to accommodate triple bottom line model to accomplish sustainability orientation in an automotive industry value chain (Luthra et al., 2015b).

India is one of major innovation player in automotive sector as World Bank report says (Luthra et al., 2018b), and automotive industry is playing as an important role in the Indian economy (Li and Mathiyazhagan, 2018). In this sense, this research conducts study on Indian auto component manufacturing firms to developing a sustainable business ecosystem. In order to develop sustainability of supply chains, managers' needs to determine key strategies (Abdala and Barbieri, 2014) to adopt sustainable practices in operational perspectives. Subsequently, management science professionals need to know contextual relationships between the identified SSCM strategies. These strategies may also be evaluated further for determining their dependence and driving power. This work therefore aims to speak following research questions – (i) what are the key strategies to implement SSCM practices? (ii) How the identified strategies are evaluated to know their relationships and behaviour in successful implementation of SSCM practices?

In this sense, the objectives of the present investigation involve:

(i) To recognize strategies to implement SSCM practices;
(ii) To investigate the contextual relationships between identified strategies;
(iii) To categorize identified SSCM strategies based on of strength of dependence and driving power
(iv) To draw significant implications of research

Literature review and expert's opinions has been used for listing relevant strategies for successful implementation of SSCM practices. In this study, Interpretive Structural Modelling (ISM) methodology is integrated with fuzzy MICMAC approach. The integrated approach determines the relationships among the identified strategies. Extension of fuzzy MICMAC to ISM technique allows managers not only to extract any hidden relations between strategies, but also know the strength of relationships among the strategies (Khan and Haleem, 2012; Sindhu et al., 2016).

The structure of the present paper is in the following order. Relevant review of literature and strategies for successful implementation of SSCM practices have been recognized in the Section 2. Methodology adopted in the present work has been elucidated in Section 3. Thereafter, data analysis and related results have been presented in Section 4. Discussions of research findings with managerial implications have been provided in the Section 5. Finally, conclusions have been drawn with the limitations of the present investigation and the suggestions for future studies.

2. Literature review

This section contains the literature on SSCM, strategies to implement SSCM practices and modelling techniques used in SSCM. Research gaps are also extracted.

2.1. SSCM

'Sustainability' has become a buzz word in literature. As a result, the sustainable development topic has brought an extensive conversation across a variety of sectors viz. development and design, purchasing, manufacturing, SCM, etc. (Luthra et al., 2015c). Attempting to balance people, process and planet gains to attain sustainable development is a foremost business goal of organizations because of the challenge of escalating environmental concerns of society, laws and regulations (Shen et al., 2013). Theorising sustainability in three dimensions appears to be commonly accepted because it permits an easy understanding of the integration of ecological, financial, and societal issues (Seuring, 2013; Mangla et al., 2014a). SSCM encompasses the "management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals of all three dimensions of sustainable development, i.e. economic, environmental and social, into account, which are derived from customer and stakeholder requirements" (Seuring and Müller, 2008, p. 1700). Sustainability has turn out to be an imperative subject in every part of life. This will be the case for several years to appear, or at least until we discover as an unidentified theories. SSCM assist companies in dealing with the challenges of environmental and social problems caused by their value chain activities (Barbosa-Póvoa et al., 2017). Presently, there is a lack of practical implications of sustainability from which may be helping in learning and then portraying integrated SSCM models (Gunasekaran and Spalanzani, 2012; Gandhi et al., 2015, 2016). Over the year, only few research papers have been written that examined various aspects of SSCM and related issues. The brief background of SSCM literature (2008–2018) has been provided in Table 1.

Most of the research papers written in the recent years are focusing on literature review. Brandenburg et al. (2014) also suggested in their research that the number of publications in this topical area is not as large as empirical and conceptual work, but it is growing. It can be concluded from the literature review that the studies particularly linked to SSCM are in the initial phases of development, with concerned research papers dealing primarily with hypothetical discussions and subjective evidences.

2.2. Strategies to implement SSCM practices

The strategy or process improvement strategy understood as the vision/goal that will assist an organisation's processes to reduce the wastage and inefficiencies for higher sustainable competitive gains (Shi et al., 2012; Harms et al., 2013). The strategy (strategies to implement SSCM practices) not only have its foundation to the goals of boosting the triple bottom performances (economic, ecological, social etc.) but also involves employees and other stakeholders to continuous process improvement of the operation (Schaltegger and Wagner, 2017). Therefore, this work underpins theory development in terms of recognition and significance of strategies in successful implementation of SSCM practices in value chains. To identify the strategies to implement SSCM practices, literature was explored by searching keywords like strategies to implement SSCM practices, SSCM implementation, Requisites for implementing SSCM practices etc. Google scholar and Google search engines have been used to link various databases like