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Application of DEMATEL approach to identify the influential indicators towards sustainable supply chain adoption in the auto components manufacturing sector

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Abstract:
The problem of industrial pollution has increased globally at presently. Countries across the globe are aware of the concept of sustainable implementation in industries from a local to the global level to reduce pollution. Recent research supported this by focusing on Small and Medium Enterprises (SMEs) rather than Multinational Corporations (MNC). Sustainability development is a key to ensure control of the hazards and pollution in traditional activities. In India, many SMEs are involved in manufacturing varied products and services for customers. The auto component manufacturing sector is playing an important role in the Indian economy by creating numerous job opportunities. Based on this, researchers gave special attention to auto components SMEs in sustainable development (SD) because of pollution which harms the environment. Analysis of SD is an essential activity for industries to ensure environmental improvement. Analyzing the indicators for SD helps confirm the development of sustainability in industries. However, analyzing the indicators for SD is a challenge for managers and needs detailed analysis and significant effort. Indicator analysis is a vague concept for managers who lack alternatives to evaluate SD in their industry. The aim of this present paper is to develop a set of measurement indicators for SD from literature. This paper, with the help of discussions with experts and Decision-making Trial and Evaluation Laboratory (DEMATEL) methodology analyzes sustainable development indicators in the auto components sectors. Fifteen SD indicators were considered for this study from a relevant literature background. These SD indicators indicate the industries’ sustainable development. Based on their interest, a questionnaire for this study was circulated among 35 leading auto components manufacturing SMEs in North India. This study will identify the influential indicator for SD based on experts’ judgments through a pairwise comparison matrix. The results from the study clearly states that Indian auto component manufacturing industries believe that among the fifteen listed indicators, carbon management indicator helps in measuring sustainable development. Due to this reason, embedded or embodied carbon (SI2) indicator plays an influential role. Finally, the study concludes with insights about the future path of sustainability performance in a developing country like India.

Keywords: Sustainable Development; Sustainable indicator; Auto components manufacturing industry; DEMATEL

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