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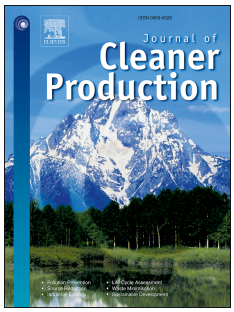

Supplier selection among SMEs on the basis of their green innovation ability using BWM and fuzzy TOPSIS

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Abstract

Environmental management concerns are gaining considerable attention among organizations all over the world and organizations are under pressure to adopt green practices throughout their supply chain. Supplier selection is strategically important as it can determine the organization's success in achieving goals of adopting green practices. Realizing the importance of supplier selection, this study aims at selecting suppliers among SMEs (Small and Medium Enterprises) on the basis of their green innovation ability. A three phase methodology is used for presenting a framework for supplier selection by large organizations, the first phase involves the selection of criteria of green innovation through literature review and interviews with decision makers, the second phase involves ranking of selection criteria using a novel best worst method, third phase involves ranking of suppliers with respect to selection criteria weights obtained in phase two using fuzzy TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution). Sensitivity analysis is also performed in order to check the robustness of the framework and eliminate the effect of biasness. The outcome of this research is helpful to rank the suppliers consequently organizations can replicate the proposed framework for supplier selection for their new product range. Limitations of the study along with future research directions are also presented.

Key words – Green innovation, Best worst method (BWM), Fuzzy TOPSIS, SMEs, supplier selection.

1. Introduction

Earth’s resources are finite and are continuously depleting due to large scale industrialization and globalization, thus forcing governments and environmental activist all over the world to critically think about the alternate as well as the judicious use of these resources, their other major concern is the waste and effluents being disposed off in the environment due to rapid industrialization, thus causing negative impact on the environment (Roscoe et al., 2016). Today, organizations are under tremendous pressure to incorporate environmental friendly processes and products, due to increased awareness and surmounting concern of various agencies and governments globally (Arimura et al., 2011).