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Exploring Sustainable Supply Chain Practices: A Case Study from The German Industry

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Abstract

The selection of the appropriate supply chain design is one of the most critical strategic decisions within firms and plays an important role in the material availability and the firm's profitability. In the last decade, academic research on sustainability has emerged rapidly in the supply chain literature, so there has been insufficient opportunity thus far for the research community to complete a global assessment of sustainable supply chain management designs. This paper seeks to address this need by exploring supply chain management design practices, integrating sustainability and developing a sustainable supply chain design model to help managers select and evaluate the efficiency of their supply chain management designs with regards to customer and product specific needs. A supply chain design decision model based on the ANP (analytic network process) and the TOPSIS methodologies is proposed and validated through a case study in Germany for helping practitioners to put the proposed model into practice. The results suggest that practitioners should implement the model by integrating the proposed framework with a pairwise comparison matrix and a multi-criteria decision analysis based on the TOPSIS methodology to select the supply chain design strategy which most fit their business case.

Keywords: ANP; decision framework; supply chain management; sustainability; TOPSIS