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Analysis of Critical Barriers to Sustainability in Packaging Supply Chain using Best Worst Method

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Abstract

After the COVID-19 pandemic, it has been observed that companies should employ sustainability in the packaging supply chain (PSC) to reduce waste and safeguard the environment. Packaging plays a major role in producing municipal waste, so we proactively need some major solutions to overcome this problem. Industrialized nations generate a significant part of packaging waste compared to developing nations. Developed countries are significantly trying to overcome this problem by implementing sustainable packaging in their businesses. By implementing sustainable packaging alternatives, concrete steps can be made to reduce the overall waste and pollution produced by traditional packaging, but in developing nations like India, it remains a challenge to explore this issue. This study attempts to discover the critical barriers to sustainability in PSC in developing economies. A total of 27 critical barriers were identified through the peer-reviewed articles and expert inputs, and these are categorized into six main barriers. The multi-criteria decision-making (MCDM) technique, called Best Worst Method (BWM), is employed to analyze the data obtained from the expert. The BWM method prioritizes the barriers to sustainability in PSC according to their degree of influence. The BWM results show that the most significant barriers were organizational barriers that must be taken as a major challenge towards achieving sustainability in PSC. After that, the significant barriers were the material barriers, financial barriers, logistical barriers, technological barriers, and independent barriers that have considerable impact on the performance of the enterprise. These results will help practitioners, industrial managers, and executives make planning, regulations and policies while implementing sustainability in PSC.

Keywords
Barriers, Sustainability, Packaging Supply Chain, MCDM Methods.

Biography

Gulshan Kumar Gaur is presently a research scholar in the Department of Management Studies, Indian Institute of Technology Delhi (IIT Delhi). He has completed his B.Tech Degree in Mechanical Engineering from Maharishi Dayanand University Rohtak (MDU, Rohtak) and M.Tech Degree in Industrial and Management Engineering from Indian Institute of Technology Kanpur (IIT Kanpur). His area of interest includes Packaging Sustainability, Packaging Supply Chain, Operations Management, Reverse Logistics and Machine Learning. He has started reviewing repute journal papers.

Prof Jitender Madaan received his B.Tech degree in Production and Industrial Engineering from M.B.M Govt. Engg College Jodhpur (JNV University), India, and obtained his M. Tech in Manufacturing System Engg. from Department of Mechanical Engg. MREC (Now MNIT), Jaipur and PhD in Mechanical Engineering from the Indian Institute of Technology (IIT) Delhi, India. Prior joining IIT Delhi, Dr. Madaan has many years of working experience in other universities including IIT Roorkee, GGSIP University Delhi. His current research interests are Reverse Logistics and Supply Chain Management, Sustainable Operations Management, Production Management, Information and Governance Effectiveness, Systems Modeling and Simulation etc. Dr. Madaan has published over 4 book chapters, over 25 refereed international journal papers and 48 peer reviewed international conference papers. He is a reviewer of several international journals of repute.

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