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Circular Supply Chain 4.0: A Triangulation Analysis Review

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Abstract

Purpose: Despite the substantial increase in literature on synergies between circular economy, supply chains and Industry 4.0 (I4.0), the research on I4.0 technologies pursuing circular supply chain is still in infancy. The purpose of this study is to fill this gap by critically reviewing the current literature on I4.0 technologies driven circular supply chains known as circular supply chains 4.0 (CSC4.0). The study also identifies the challenges and enablers intertwined in implementing I4.0 in circular supply chains.

Research Approach: A qualitative exploratory research through systematic literature review approach followed by bibliometric and ReSOLVE analysis is deployed. The selected peer-reviewed articles have been analysed by focusing on the unit of analysis, key themes identified, the research method used, and the debate's evolution over the period. The study also carried out the ReSOLVE framework to explore the contribution of I4.0 technologies in circular supply chains.

Findings and Originality: The study reveals that most scholars have focused on the supply chain management and integration of I4.0 technologies in circular economy separately; only a few studies have attempted to explore the synergies of circular supply chain management in Industry 4.0. The outcome of the ReSOLVE framework suggested that most of the reviewed evidence focused on the Internet of Things (IoT) and big data applications in circular supply chain management. There is insufficient literature on different I4.0 technologies that could underpin the circularity in supply chain management. Moreover, this study presents the novel and comprehensive, reviewed based evidence on circular supply chain 4.0.

Research Impact: The study provides valuable insight of I4.0 implications in circular supply chains. It will help academics and researchers for future research directions.

Practical Impact: This research will help practitioners understand currently employed I4.0 technological novelties and better inform circular economy opportunities in their supply chain operations.

Keywords: Industry 4.0 (I4.0), Circular Economy (CE), Supply chain management (SCM), Circular Supply chain (CSC), Digital supply chains (DSC)

