

Building Resilient Circular Supply Chains

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Abstract

In the context of an industrial environment evolving towards Circular Economy practices and the adoption of digital technologies, it becomes crucial to analyse the different sustainable business models. As a consequence, it is necessary to align industrial production and distribution with the principles of the Circular Economy, leveraging the massive incorporation of digital technologies that is taking place in Supply Chains. Here, new circular business models determine different supply chain structures or configurations that have hardly been studied and that need to be modelled and analysed to understand their feasibility, requirements, and the roles played by the different actors together with their capacities and material and information flows. In addition, an incurring number of disruptive events such as natural disaster, wars and diseases, are affecting world-wide supply chain networks, underlining the need for gaining supply chain resilience. The main goal of this work is to develop novel best practices, guidelines and operational policies to ensure the operations efficient and long-term business sustainability of circular business models in an industrial environment constantly subject to disruptive events. Results suggests that the implementation of Circular Economy practices such as remanufacturing and by-products synergies has the potential to increase supply chain resilience under market demand spike. These preliminary results also suggest that optimizing circular flows may enhance supply chain ability to recover after disruption occurrence.

Keywords: Circular Economy, Supply Chain Resilience, Circular Business Models

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