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Dynamic Strategies for Supply Disruptions in Production-inventory Systems

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Abstract

Supply chain disruptions can occur at any node if there is a vast array of triggers. A common trigger for manufacturing disruptions is supply interruptions. This paper considers a single-stage supply chain with single manufacturer sourcing from a single supplier, where supply disruptions lead to a production pause and the demand is deterministic. In view of different hitting times and durations of disruptions, this paper compares and selects proactive and reactive strategies for supply disruption management via a cost minimization model. Based on the comparison, two types of dynamic strategies are proposed to guide the mitigation approaches as the disruptions continue. One is a dynamic reactive strategy for a non-prevention system and is called passive-backup, and the other is a dynamic combination strategy that contains reactive and proactive strategies for the prevention system and is called recovery-backup. How the lead time of backup sources, disruption starting time, cost of lost sales, backup costs and backorder rate impact the dynamic strategies is also explored in this paper.

Keywords

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