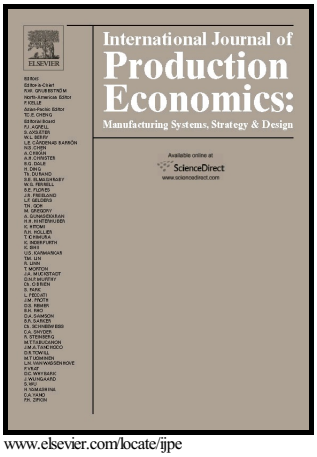

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A hybrid inventory policy with split delivery under regular and surge demand

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Abstract

This paper proposes a hybrid inventory policy with split delivery under regular and surge demand. The combination of regular and surge demand can be observed in many areas, such as healthcare inventory and humanitarian supply chain management. The arrival rate of regular demand is typically higher than the arrival rate of surge demand, whereas the volume of regular demand is typically lower than the volume of surge demand. This paper proposes an inventory management model that considers both emergency and regular replenishments corresponding to both demand patterns. The equilibrium equations developed for this model are based on the level crossing theory. These equations are used to develop a search-based heuristics to identify near optimal inventory management policies. Numerical results show that the proposed hybrid inventory policy with split delivery outperforms similar hybrid inventory policy without split delivery when holding and shortage costs are relatively low.

Keywords

Level crossing theory, split delivery, surge demand, regular demand, Tabu search. Inventory model

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