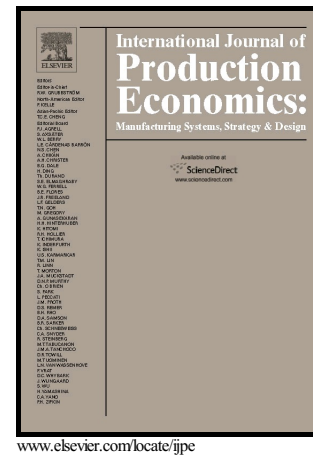


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A Comprehensive Survey of Guaranteed-Service Models for Multi-Echelon Inventory Optimization

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Many real-world supply chains are multi-echelon systems consisting of several stages of procurement, manufacturing, and transportation. In such systems, it is not obvious how to allocate safety stocks to meet the target service levels at the lowest cost. The guaranteed-service model (GSM) is among the existing approaches that allow this problem to be addressed. Although the GSM has been present for more than 50 years, the last decade has witnessed a growing interest. The model extensions and the solution methods developed have expanded the applicability of the GSM. In this paper, we conduct a comprehensive review of the GSM literature. We classify the literature along three axes: (1) extensions of the original GSM through the relaxation of certain modeling assumptions, (2) solution methods developed for different supply chain structures, and (3) industrial applications and the results obtained on real-world problems. Finally, we discuss unsolved issues and suggest future research directions.

Keywords: Guaranteed-service model; Multi-echelon inventory system; Literature review.

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