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Sole sourcing versus dual sourcing under stochastic demands and lead times. (English)

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Summary: The use of a single vendor for each inventoried item is usually assumed in most of the inventory models. However, there are situations where the use of more than one vendor should be considered, especially when lead times are stochastic. This research presents a theoretical investigation of the effect of cost structures on the relative performance of sole-sourcing versus dual-sourcing inventory control policies. We show that except for cases where the ordering cost is high, the lead-time variability is low, or the customer service level is low, dual sourcing performs better than solve sourcing under the normally distributed demand and shifted-exponential lead times. Moreover, the computational results indicate the dual sourcing provides a better service level than sole sourcing at the optimal solutions, and that dual sourcing results in larger order quantities than sole sourcing, which suggests that attractive quantity discounts may not be in jeopardy when dual sourcing is employed. Finally, because it is generally known that multiple sourcing can enhance the competition among suppliers, material managers should consider splitting purchase orders when two equally qualified suppliers are available.

MSC:

90B05 Inventory, storage, reservoirs

Cited in 16 Documents

Keywords:

stochastic demands; stochastic lead times; sole-sourcing versus dual-sourcing inventory control policies

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