An integrated inventory model with ordering cost and setup cost reductions under just-in-time purchasing

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Abstract

As the industrial environment becomes more and more competitive, supply chain management has emerged as a popular production and logistics strategy for many contemporary firms, and the just-in-time (JIT) purchasing plays a crucial role in such supply chain environments. The benefits of JIT purchasing include small lot sixes, frequent deliveries, reduction in lead times, decrease in inventory levels, lower setup cost and ordering cost, and close supplier ties. The purpose of this paper is to develop an integrated inventory model for minimizing the total joint annual costs incurred by the vendor and the purchaser. An algorithmic procedure is developed to find the optimal order quantity, lead time, ordering cost, setup cost and the number of deliveries simultaneously for the ease of normally distributed lead time demand. An illustrative example shows that the proposed model achieves a substantial saving over the traditional integrated model.

Keywords and phrases : *Integrated inventory model, JIT purchasing; lead time reduction, setup cost reduction, ordering cost reduction.*

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