

A Minimax Distribution Free Procedure for a Multi-constraint Inventory Model with Deterministic Variable Lead Time

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Abstract

Nowadays, considering real environment limitations, the effect of some constraints such as storage space and budget in determining optimal policies of inventory/production systems is a momentous concern of inventory managers. Hence, here, a budget constraint on total inventory investment and a maximum permissible storage space constraint are added simultaneously to a stochastic continuous review inventory system. The piece-wise linear crashing cost function which is widely used in project management is considered in this paper. The study relaxes the assumption about the form of distribution function of lead time demand by only assuming the mean and standard deviation of lead time demand are known. A minimax distribution free procedure is developed for the constrained problem. This study also shows that the respective budget and storage space constrained inventory model to be minimized is jointly convex in the decision variables. A numerical example is given to illustrate the discussed model.

Keywords: Stochastic inventory system, inventory constraints, lead time, chance-constrained programming technique, minimax distribution free procedure.