A two-warehouse inventory model for deteriorating items with fixed shelf life, stock-dependent demand and partial backlogging with an advanced payment scheme

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Abstract

Inventory management is the most critical issue in maximizing profits in today's expanding global economy. Fixed shelf life is a crucial restriction in inventory management for managing the inventory. For large-scale productions, a second warehouse may be needed to store the inventory due to a lack of room. The warehouse inventory is used for making advance cash payments in installments. Partial backlogging also permits stock shortages. In this study, a two-warehouse inventory model of deteriorating goods with an advance cash payment scheme and partial backlogging was taken into consideration. We also consider that the demand rate is stock-dependent, one warehouse is owned, and another is rented. The backlog rate is thought to be time-dependent. The cost function of this problem which is derived based on the assumption, are highly nonlinear constraint optimization problem. This nonlinear

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optimization problem is solved using Mathematica. Numerical example of this model has been simulated for different parameter and results are interpreted physically.

Keywords: Inventory, Two-warehouse, Partial backlogging, fixed-shelf life, Advance cash payment.

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