Integrated Inventory Model With Amelioration And Deterioration Under Shortages And Inflation By S.R.Singh

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Abstract

In this paper, the two-warehouse integrated problem for ameliorating and deteriorating items with price dependent demand rate and shortages under inflationary environment is considered. This study develops an integrated production-inventory model from the perspectives of both the manufacturer and the retailer. The model considered both ameliorating and deteriorating effects taking account of multiple deliveries, partial backordering and time discounting. In this model, manufacturer’s has two storage facilities in which one is the own warehouse (OW) and another is a rented warehouse (RW) and assume that the holding cost in RW is higher than that in OW. The manufacturer’s stores goods in OW before RW, but clears the stocks in RW before OW. This study takes into account of inflation and applies the discounted cash flow (DCF) approach for problem analysis. The discounted cash flow and optimization framework are presented to derive the optimal replenishment policy that minimizes the total present value cost. In addition we allow for Shortages and backlogged partially and the backlogging rate is taken as variable. A numerical example and sensitivity analysis are given to illustrate the theory of the integrated production-inventory system. This model is particularly useful for items that ameliorate and deteriorate at the same time.

Keywords: Price dependent demand, Variable Partial backlogging, Variable amelioration, deterioration and Inflation

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