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Decision Making in Inventory Management

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Chapter 6
Inventory Policies for Non-instantaneous Deteriorating Items with Random Start Time of Deterioration

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Abstract An inventory model for non-instantaneous deteriorating items with random start time of deterioration is investigated in this paper. For many products, the start time of deterioration cannot be predicted due to physical nature of the product. In this paper, products in the inventory system are considered to be deteriorated at a constant rate after a certain random time of inventory received by the retailer. Demand for the product is considered to be price sensitive. Two scenarios viz. with preservation technology investments and without preservation technology investments are compared to obtain retailer's optimal policies which include optimal cycle time, preservation cost, and selling price. The objective is to maximize total profit of retailers with respect to cycle time, selling price, and preservation technology investments. The results indicate that use of preservation technology helps retailers to generate more profit.

6.1 Introduction

Product demand has been always one of the major concerns for inventory managers. Demand for the product gets affected by various parameters such as stock, time, selling price, quality, different promotional offers, etc. It is very essential to select the precise demand pattern to make optimal inventory decisions. There are certain products for which the demand pattern is very sensitive to the product price. In such demand pattern, notable change can be observed in the product demand as the selling

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