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Chapter 3

Inventory Control Policies for Time-Dependent Deteriorating Item with Variable Demand and Two-Level Order Linked Trade Credit



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Abstract In today's business world to boost the demand, vendor gives a trade credit to buyer. Moreover, most of the products lose quality over time due to environmental effects. This chapter studies an inventory policy for the item which has expiry date with two levels of trade credit depending on the quantity of order. It is considered that a supplier is ready to give a mutually agreed credit period to retailer only if the order quantity purchased by retailer is more than the predetermined quantity of order. Additionally, a retailer deals a credit limit to the end consumers. Here, time- and price-sensitive demand is debated with inflation. A retailer's main objective is to earn maximum total profit with respect to the number of replenishments throughout the finite planning horizon. Results are supported by numerical examples. Finally, a sensitivity analysis is done to develop visions for decision-makers.

Keywords Order link trade credit · Inflation · Time value of money · Maximum fixed lifetime · Price- and time-dependent demand

3.1 Introduction

In today's competitive business world, credit limit is an essential strategy for management system of supply chain. Therefore, a supplier deals with a credit limit to a retailer on purchasing cost of predetermined amount only if the stock purchased by retailer is larger than the preset order size. Trade credit attracts new retailers and

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