A Study of Cost Minimization: Replenishment Decision for Items with Stock Dependent Demand Using Combined Payment Modes

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Abstract. Studies of real life market practices reveal that, large pile of consumer products are showcased in a retail outlet to promote sales and profits. This paper intends to develop an EOQ model incorporating different payment schemes for items withessing stock dependent demand. While procuring an item, the procurer might follow any of these payment methods: paying advance while booking the order or cash on delivery or paying at the end of an interest free credit period. As per the perspective of a supply chain member, each of these methods have pros and cons associated with it. In a real life scenario, one usually uses a payment scheme which is an amalgamation of the above mentioned methods. The proposed model presents a replenishment scheme for trader/retailer who has items with stock dependent demand and wants to observe a combination of different payment schemes. The trader/retailer implements an advance-cash-credit payment stratagem to procure items and practices cash-credit payment scheme while selling. The model is validated using numerical examples with pertinent values of inventory parameters; additionally, sensitivity analysis is done to yield managerial insights on the proposed model.

Keywords: Lot sizing · Replenishment · Advance-Cash-Credit · Stock Dependent Demand · Trade Credit

1 Introduction

Traders implement a modus operandi in market to showcase their goods which are to be sold in retail. Further, it is recognized by the researchers that when the items are displayed, the showcased stock works as an advertising tool for the

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