

Optimal Control Policy to Production and Inventory System with Price-Dependent Demand in Segmented Market

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Abstract

During the last decade, we have seen that production processes become more flexible and customer's oriented. Specific needs of customers led to the diversification of demand and concept of market segmentation. This paper deals with the inventory-production system in which demand in any segment depends on price. The objective is to determine the optimal production and price policy that maximize the total profit associated with inventory and production rate in segmented market. Accordingly, we formulate optimal control problem incorporating the impact of price on demand for each segment. With assumption, firm produce single product and has single production unit for all segments. The proposed inventory-production model discussed and solved through Maximum-Principle. Applicability of proposed model illustrated using numerical.

Keywords

Market-Segmentation, Inventory-Production, Optimal Control Theory, Maximum-Principle