

Inventory Decisions for Perishable Products with Age and Stock Dependent Demand Rate

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Abstract : This paper presents a deterministic model for optimized control of the inventory of a perishable product subject to both physical deterioration and degradation of its freshness condition. The demand for the product depends on its current inventory level and freshness condition. Our model allows for any positive amount of end of cycle inventory. Some useful conditions that characterize the optimal solution of the model are derived and an algorithm is presented for finding the optimal values of the price, the inventory cycle, the end of cycle inventory level and the order quantity. Numerical examples are then given. Our work shows how the product freshness in conjunction with the inventory deterioration affects the inventory management decisions.

Keywords : inventory management, lot sizing, perishable products, deteriorating inventory, age-dependent demand, stock-dependent demand

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