

An Inventory Model with Inventory Level-Dependent Demand Rate, Deterioration, Partial Backlogging and Decrease in Demand

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Abstract—A deterministic inventory model for infinite time-horizon incorporating inventory level-dependent demand rate, deterioration begins after a certain time, partial backlogging and decrease in demand is developed. The salient feature of the developed model is the introduction of the concept of fractional decrease in demand due to ageing of inventory. Demand at any instant depends linearly on the on-hand inventory level at that instant. Deterioration of items begins after a certain time from the instant of their arrival in stock. A numerical example is presented to illustrate the application of developed model.

Keywords—EOQ, Deterioration, Partial backlogging, Fractional decrease in demand

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