

AN EPQ MODEL FOR DETERIORATING ITEMS HAVING WEIBULL DISTRIBUTION DETERIORATION WITH TIME DEPENDENT DEMAND, HOLDING COST AND SHORTAGE COST

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Abstract

A single item economic production model is considered in which holding cost and shortage cost is time dependent. In many real life situations it is not possible to have a single rate of production throughout the production period. Items are produced at different rates during sub-periods so as to meet various constraints that arise due to change in demand pattern, market fluctuations etc. This paper models such a situation by assuming exponential demand rate and varying rates of production. Two models have been developed assuming production rates increases depending on demand rate which itself is time dependent. Attempts have been made to investigate the model under variable rate of deterioration where shortages are permitted and fully backordered. Numerical examples are given to illustrate the solution procedure of the two models and sensitivity analysis of the optimal solution with respect to the parameters of the system is carried out.

Key Words: Time dependent demand, Varying rate of production, Weibull distribution, Shortage.