MIXTURE INVENTORY MODEL HAVING QUADRATIC TIME-VARYING AND STOCK-DEPENDENT SELLING RATE

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Abstract : Many business practices show that the presence of a larger quantity of goods displayed may attract more customers than that with a smaller quantity of goods. This phenomenon implies that the demand may have a positive correlation with stock level. The aim of the paper is to develop an Economic Order Quantity (EOQ) model for a single-item inventory having a stock and quadratic time dependent demand. Three different cases with complete, partial and no backlogging are considered. The deterioration is assumed to be constant. The present model has been solved analytically to maximize the total profit of the system. The model is exemplified through numerical illustration. Sensitivity analysis is also incorporated to investigate the effect of different system parameters in enhancing the profit.

Key words : Deterioration, EOQ, Stock dependent demand, Partial backlogging.