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An Inventory Model with Linear Demand Rate, Finite Rate of Production with Shortages and Complete Backlogging

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Abstract

This paper deals with in developing inventory model with linear demand rate allowing shortages in the inventory. These shortages are considered to be completely backlogged. We have assumed that the production rate is finite and proportional to the demand rate. The analytical solution of the model has been done to obtain the optimal solution of the problem. Suitable numerical example has been discussed have to understand the problem. Further we have made sensitivity analysis of the optimal solution with respect to the changes in the values of the system parameters. This model is suitable in case of steady increase or decrease in the demand in the market for some product. The advantage of the linear functional form of the demand take care of steady increasing or steady decreasing and constant demand for different ranges of values of it's parameter.

Keywords
Inventory; deterioration; linear demand; complete backlogging; shortage.