

An Inventory Model for New Products Under Fuzzy Environment with Deterioration Effect

Alok Kumar

Assistant Professor

FORE School of Management

New Delhi

e- mail: alok@fsm.ac.in

Abstract

The growth pattern of new product development has been well discussed by various authors in the marketing literature. Also, because of technological innovations, globalization and many other related factors there is constant introduction of new products in the market. Therefore, managing and scheduling of inventories of new products becomes an important task for any organization. Here, the inventory manager plays a pivotal role because proper scheduling and managing of inventories is the primary task for an inventory manager of any organization which indirectly leads to profit maximization or cost minimization of the organization. Again, the demand model for new products developed by various authors in the marketing literature consist of parameters which are of uncertain in nature and ultimately it makes the inventory models unrealistic. To address the problems of uncertainty the application of fuzzy set theory is necessary. This paper develops an economic order quantity model under fuzzy sense for new product in which demand of the product follows innovation diffusion process. The effect of deterioration is based on the theory that the items lose part or total value through time because of new technology or the introduction of substitute products has also been incorporated in the model by considering the salvage value in the cost component. The comprehensive sensitivity analysis for the optimal solutions with respect to different parameters of the system has also been performed to illustrate the effectiveness and behaviour of the model.

Keywords: Innovation diffusion, EOQ, Trapezoidal membership function, Fuzzy variable, Function Principle, Salvage value.