INVENTORY MODEL WITH FUZZY LEAD-TIME AND DYNAMIC DEMAND OVER FINITE TIME HORIZON USING INTERACTIVE FUZZY METHOD

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ABSTRACT

The real-world inventory control problems are normally imprecisely defined and human interventions are often required in solving these decision-making problems. In this paper, a realistic inventory problem with infinite rate of replenishment over a prescribed finite time horizon is developed considering time dependent demand, which increases with time and imprecise lead time. Shortages are allowed and backlogged partially. The imprecise lead-time is here assumed to be represented by linear membership function. The imprecise parameter is first transformed to corresponding interval numbers and then following the interval mathematics, the objective function for average cost is changed to respective multi objective functions. These functions are minimized and solved for a pareto optimum solution by interactive fuzzy decision making procedure using a logic structure. The impreciseness of lead-time and man-machine interaction lead to a multiple logical decision process. This leads to man-machine interaction for optimum and appropriate decision acceptable to the decision maker's firm / company. The model is illustrated numerically and the results are presented in algorithmic and tabular forms.

KEYWORDS: Fuzzy Lead-Time, Interval Number, Crisp Inventory Model, Interactive Fuzzy Decision Making Method, Pareto Optimal Solution.