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Abstract

This paper develops an integrated production inventory model with an aim to minimize the cost of production per unit of the product and maximization of profit without compromising the quality of the product. In this model we consider two plants, two secondary warehouses (SWs) and two showrooms (SRs) those are adjacent to the respective plants. For the purpose, we assume to be erected by a firm two plants: Plant-I and Plant-II. Plant-I is situated in an urban area with a lower production capacity in comparison to its product demand where the demand meets through SR-I. On the other hand, Plant-II is situated in a rural area with higher production capacity in comparison to its product demand where the demand meets through SR-II. The excess production in Plant-II meets the current market demand in the area of Plant-I. Here, demand is assumed to be stock dependent in both the showrooms (SR-I and

SR-II). Average profit in the integrated model is calculated and global optimum is obtained through a descriptive-cum-analytical review. The inventory parameters are taken as fuzzy numbers. The fuzzy numbers are first transformed into corresponding interval numbers and then follow the interval mathematics, the objective function for average profit is converted into respective multi-objective functions. Furthermore, the objective functions are being maximized and solved for a Pareto-optimum solution by interactive fuzzy decision-making procedure. The model also illustrates graphically and numerically.

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Index Terms

Computer Science

Information Sciences

Keywords

Inventory Two-plants Two-warehouse Stock dependent demand Fuzzy inventory cost parameters

Interactive decision making method.

