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### [Optimising a fuzzy multi-objective inventory model under different solution method](#)

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**Abstract:** A multi-objective, multi-item fuzzy inventory model is constructed for deteriorating items under limited storage space as well as a budget constraint. The demand function is considered to be an increasing exponential time function. This study integrates fuzzy nonlinear programming (FNLP) and intuitionistic fuzzy optimisation (IFO) techniques. The objective of this work is to use FNLP and IFO techniques for multi-item, multi-objective fuzzy inventory model and to compare these techniques through numerical analysis. This work is also intended to find the optimal quantity to be replenished and identify the time point when shortages occurred. Another objective is to determine which method either FNLP or IFO gives efficient compromise solutions. In the case of IFO profit is observed more in the case with the membership function represented by linear than membership function represented by an exponential membership function. FNLP method with linear membership gives better results for maximising profit as compared to exponential membership function. FNLP works better than IFO in case of minimising shortage cost. The results along with the relation of profit and shortage cost with budget, warehouse space are studied through sensitivity analysis.

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