

عنوان مقاله:

vibration damping optimization algorithm for solving the single item Capacitated Lot-sizing Problem with Fuzzy Parameters

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خلاصه مقاله:

In this paper, we propose a vibration damping optimization algorithm to solve a fuzzy mathematical model for the single-item capacitated lot-sizing problem. At first, a fuzzy mathematical model for the single-item capacitated lot-sizing problem is presented. The possibility approach is chosen to convert the fuzzy mathematical model to crisp mathematical model. The obtained crisp model is in the form of mixed integer linear programming (MILP) which can be solved by the existing solver in crisp environment to find the optimal solution. Due to the complexity and NP-hardness of the problem, a vibration damping optimization (VDO) is used to solve the model for large-scale problems. To verify the performance of the proposed algorithm, we computationally compared the results obtained by the VDO algorithm with the results of the branch-and-bound method and two other well-known meta-heuristic algorithms namely simulated annealing (SA) and genetic algorithm (GA). Additionally, Taguchi method is used to calibrate the parameters of the meta-heuristic algorithms. Computational results on a set of randomly generated instances show that the VDO algorithm compared with the other algorithms can obtain appropriate solutions

کلمات کلیدی:

Single-item, Lot-sizing problem, Fuzzy mathematical model, Vibration damping optimization, Simulated annealing, Genetic algorithm

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