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Capacitated location allocation problem with stochastic location and fuzzy demand: a hybrid algorithm. (English) [Zbl 1426.90180](#)

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Summary: In this article, a capacitated location allocation problem is considered in which the demands and the locations of the customers are uncertain. The demands are assumed fuzzy, the locations follow a normal probability distribution, and the distances between the locations and the customers are taken Euclidean and squared Euclidean. The fuzzy expected cost programming, the fuzzy β -cost minimization model, and the credibility maximization model are three types of fuzzy programming that are developed to model the problem. Moreover, two closed-form Euclidean and squared Euclidean expressions are used to evaluate the expected distance between customers and facilities. In order to solve the problem at hand, a hybrid intelligent algorithm is applied in which the simplex algorithm, fuzzy simulation, and a modified genetic algorithm are integrated. Finally, in order to illustrate the efficiency of the proposed hybrid algorithm, some numerical examples are presented.

MSC:

90B80 Discrete location and assignment

90C59 Approximation methods and heuristics in mathematical programming

90C70 Fuzzy and other nonstochastic uncertainty mathematical programming

Cited in 3 Documents

Keywords:

location allocation problem; fuzzy programming; fuzzy simulation; hybrid intelligent algorithm; evaluating expected distance

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