An Alternative Method for Finding Initial Basic Feasible Solution of Fuzzy Transportation Problem

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ABSTRACT

Optimization covers a wide range of linear programming problems, transportation problem being one of them. Cost minimizing problems, multi objective optimization problems, mixed constraints problems are few of the various forms of transportation problems. Individual requirements and external factors lead to fluctuation in the values of the parameters in transportation problem, which introduces uncertainties in the parameters. These uncertainties can be taken care of by incorporating fuzzy variables in the transportation problem. Multiple algorithms like fuzzy Vogel's approximation method, fuzzy north-west corner method, fuzzy least cost method, etc. have been proposed in literature which identify initial solution to fuzzy transportation problems. This paper proposes a productive algorithm to find initial basic feasible solution of fully fuzzy transportation problem. By employing fuzzy sets, the algorithm maintains the uncertainty involved in the parameters. The algorithm is straightforward and can be applied on fully fuzzy transportation problems with representation of parameters in the form of trapezoidal or triangular fuzzy numbers. It is time efficient algorithm which uses the concepts of fuzzy arithmetic and rank of fuzzy numbers. A comparative study of the results with already existing approaches is done through examples and a case study.

Keywords: Fuzzy Set, Fuzzy Transportation Problem, Initial Basic Feasible Solution

How to Cite

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