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SOLVING TRAPEZOIDAL FUZZY TRANSPORTATION PROBLEMS USING GEOMETRIC MEAN

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Optimization techniques are important in tackling real-world problems such as project timelines, assignment challenges, and network traffic analyses. As a result, this work focuses on the concept of fuzzy theory as it relates to transportation optimization. The application of fuzzy transportation problems has proven to be beneficial in the decision-making process. The proposed method utilizing the geometric mean technique to solve the fuzzy transportation problem has all the fuzzy demand and supply represented by trapezoidal fuzzy numbers. As a result, decision-makers will find this technique very simple to comprehend and apply to real-life transportation problems. In this work, instead of standard methods which are prevailing already, the geometric mean approach indices are used to convert the trapezoidal fuzzy transportation problem into a crisp transportation problem. A numerical case is solved to define the suggested method, and the result is compared with other well-known meta-heuristic methods. This approach is an easy and fast method to find solutions close to the optimal solution or near-optimal solution. Other types of issues, such as assignment issues, network flow issues, and project schedules, can also be resolved using this method.

Keywords: Fuzzy number, Fuzzy set, Fuzzy transportation, Multi-objective transportation