

Applying interactive fuzzy multi-objective linear programming to transportation planning decisions

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Abstract

In real-world transportation planning decision (TPD) problems, input data or related parameters are frequently imprecise/fuzzy owing to incomplete or unobtainable information. This work presents a novel interactive fuzzy multi-objective linear programming (*i*-FMOLP) model for solving TPD problems with multiple fuzzy objectives. The proposed *i*-FMOLP model attempts to minimize simultaneously the total production and transportation costs and the total delivery time with reference to available capacities at each source and forecast demand at each destination. An industrial case study shows that the proposed *i*-FMOLP model yields an efficient compromise solution and the overall DM levels of satisfaction with determined objective values. In addition, the proposed model provides a systematic framework that facilitates decision-making, enabling a DM to interactively modify the fuzzy data and parameters until obtained a satisfactory solution. Overall, the proposed *i*-FMOLP model is practically applicable for solving TPD problems.

Keywords : *Transportation planning decisions, interactive fuzzy multi-objective linear programming, fuzzy set theory.*

1. Introduction

The transportation planning decision (TPD) problem involves the distribution of goods and services from a set of sources (e.g. factories) to a

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