Yaghin, R. Ghasemy; **Fatemi Ghomi, S. M. T.**; **Torabi, S. A.**

A hybrid credibility-based fuzzy multiple objective optimisation to differential pricing and inventory policies with arbitrage consideration. (English) Zbl 1334.91038

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Summary: In most markets, price differentiation mechanisms enable manufacturers to offer different prices for their products or services in different customer segments; however, the perfect price discrimination is usually impossible for manufacturers. The importance of accounting for uncertainty in such environments spurs an interest to develop appropriate decision-making tools to deal with uncertain and ill-defined parameters in joint pricing and lot-sizing problems. This paper proposes a hybrid bi-objective credibility-based fuzzy optimisation model including both quantitative and qualitative objectives to cope with these issues. Taking marketing and lot-sizing decisions into account simultaneously, the model aims to maximise the total profit of manufacturer and to improve service aspects of retailing simultaneously to set different prices with arbitrage consideration. After applying appropriate strategies to defuzzify the original model, the resulting non-linear multi-objective crisp model is then solved by a fuzzy goal programming method. An efficient stochastic search procedure using particle swarm optimisation is also proposed to solve the non-linear crisp model.

MSC:

91B24 Microeconomic theory (price theory and economic markets)
90B05 Inventory, storage, reservoirs
90C90 Applications of mathematical programming
93C42 Fuzzy control/observation systems
93E20 Optimal stochastic control

Keywords:

joint pricing and lot sizing; price differentiation; arbitrage; credibility measure; fuzzy optimisation; linguistic variable

Full Text: DOI

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