Gao, Jinmin; **Le, Meilong**; **Qu, Linchi**

Two-stage decision approach of air pricing and seat inventory control. (Chinese. English summary) ⟦Zbl 1438.90149⟧

Summary: For the joint decision making problem of pricing and seat inventory control in airline revenue management, a two-stage decision approach is proposed. Firstly, corresponding joint models are established and analyzed with the good of maximizing the total revenue, including non-nested models (the deterministic model and the stochastic model) and nested models. Some conclusions are obtained through solving and simulating the models. For ticket pricing, the price from the stochastic model is the highest. The second highest is that from the nested model. The price from the deterministic model is the lowest. For the booking limit of low fare classes, the stochastic model is the strictest. The second strictest is deterministic model. The nested model is the loosest among them. The finally simulation results show that, the nested model produces the highest total revenue, and for non-nested models, the deterministic model does not always outperform the stochastic model. In order to response to the complexity of solving the large-scale example of the nested model, we regard the price from the non-nested model as the input price of the nested model respectively and obtain corresponding seat allocation results. Also, two groups of two-stage strategies of pricing and seat inventory control are produced, which are verified by example simulation. The results show that, the two-stage strategy from the combination of the stochastic model and the nested model performs better, and it can generate total revenue closer to the optimal level.

MSC:

90B50   Management decision making, including multiple objectives
91B24   Microeconomic theory (price theory and economic markets)

Keywords:

pricing of air ticket; seat inventory control; joint decision making; nested model; two-stage strategy

Full Text: DOI