Abstract

Recent years have witnessed rapid development of high-speed railway in China. Compared with traditional railway, the high-speed railway has many advantages such as higher speed, shorter departure interval time, and better services for customers. It is known that the major revenue of high-speed railway comes from ticket selling. Considering demand uncertainty from passengers and the capability of dynamically adjusting the selling decisions on basis of the new information technology, e.g., "12306 website", people are now able to adopt more effective operation approaches to improve the revenue together with the occupancy rate. This thesis discusses the dynamic inventory control problem associated with the ticket selling decisions.

Specifically, this thesis conducts an exploration of whether the high-speed railway corporation satisfies customers sequentially arriving according to the Poisson process. Different from previous research which mainly focuses on a certain stationary control methods, dynamic programming models is applied to analyze whether a customer with specific destination should be satisfied. Furthermore, it analyzes the decisions problem of two intervals and three intervals by adopting the numerical analysis method. The result of the numerical analysis provides some managerial insights for the optimal decisions, and discusses how the initial inventory level and the demand arrival rate affect the customer satisfaction rate.