Joint Forecasting for Airline Pricing and Revenue Management

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Date: 29.06.2018, Venue: P12 @ 12PM

Abstract

Demand forecast plays a critical role in the performance of airline pricing and revenue management systems. Traditional airline forecasting models assume that the historical price, fare structure and flight schedule roughly stay the same for the future. They also sometime assume that demand for the products are independent and often ignore the dependency of the demand on the airline inventory control policy or real time price changes. In this talk, we develop three progressively more complex new forecasting models, which take all of the above into consideration. In addition, these new models try to better capture the underlying customer behavior by including the maximum willingness to pay of the customer and the choice attributes of the available options (services). The choice component in our models is similar to a mixed logit model. Our first model excludes price from the set of choice attributes. The second model considers price as one of the choice attributes. The utilities of maximum willingness to pay and choices are combined in the third model. We propose a method to calibrate the forecasting models. We compare the models and analyze the results by utilizing Airline Planning and Operations Simulator (APOS) on real airline data. The parameters and the availabilities are then used to compute the expected demand forecast and forecasting accuracies. The forecasts can be used as inputs to optimization modules for dynamic pricing and inventory control.

Speaker Profile:

Dr. R K Amit is currently working as an Associate Professor in the Department of Management Studies, IIT Madras. He obtained his undergraduate degree from IIT Kanpur and Ph.D. from IISc Bangalore. His research and teaching interests are game theory, decision theory, and optimization, and their applications in management. His research has appeared in top journals. He is currently working on various industry-motivated research problems as well as sponsored research projects.
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