TOPIC: “Dynamic Capacity Allocation to Customers Who Remember Past Service”

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ABSTRACT

We study the problem faced by a supplier deciding how to dynamically allocate limited capacity among a portfolio of customers who remember the fill rates provided to them in the past. A customer’s order quantity is positively correlated with past fill rates. Customers differ from one another in their contribution margins, in their sensitivity to the past, and in their demand volatility. We seek to understand the impacts of these factors on the supplier’s allocation policy. We approach the problem using approximate dynamic programming, by incorporating a dynamic model of customers’ behavioral responses. The model trades off customer characteristics to rationalize the fill rates the firm should target for each customer.

(joint work with Daniel Adelman)