Joint Dynamic Pricing of Multiple Perishable Products Under Consumer Choice (p. 1345)

Yalçın Akçay, Harihara Prasad Natarajan, Susan H. Xu

Firms are increasingly adopting revenue management methods to improve profits. The problem gets harder when there are multiple classes of substitutable products, such as standard and deluxe rental cars or hotel rooms. Because the products are substitutable, individual product demands are linked through consumer choice processes. Hence, the seller must formulate a joint dynamic pricing strategy while explicitly incorporating consumer behavior. The authors show that pricing policy must be based on the form of product differentiation: If one product is superior to the other across all consumers (e.g., a deluxe room), optimal pricing can be based solely on aggregate inventory rather than individual inventories of each product, and the inventory of higher-quality product determines the price difference between the two substitute products. For products without a uniformly clear customer preferences (such as early or late flight departure times), the authors show that individual, rather than aggregate, product inventory availability drives pricing for each product. The insight for management: Optimal yield management strategies of substitute products depend directly on the clarity of consumer preferences between them.