

运筹学与信息科学研究所

Department of Operations Research and Information Science

学术报告

题目： Optimal Pricing for Queueing Systems with Loss-Averse Customers

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时间： 11月11日（星期一） 14:00 - 14:40

地点： 数学院思源楼 615

摘要： We consider a single-server queueing system with uncertain service rate, in which customers have either disappointment-based loss-averse (DLA) or regret-based loss-averse (RLA) behavior. We explore the implications of DLA and RLA behaviors in terms of customers' decisions, the system manager's pricing strategies and other system metrics. We further emphasize the differences in these implications. We respectively consider the state-independent and state-dependent models to capture customers' DLA behavior and RLA behavior. We build a queueing game to first analyze customers' equilibrium decisions, and then investigate the system manager's pricing strategies from the perspectives of revenue and social welfare maximization. Our main findings are as follows. Given that customers' DLA behavior discourages customers from joining the queue, common intuition suggests that the manager should reduce the price to attract more customers. However, we observe that the revenue-optimal price may actually rise as customers' DLA level increases. In contrast, we demonstrate that RLA behavior has no impact on the system manager's pricing strategies in the context of revenue maximization, despite that RLA customers experience disutilities. From a welfare-maximization perspective, in the presence of DLA and RLA behaviors, we demonstrate that interestingly, there may be no efficiency loss when the system manager implements the revenue-maximization pricing decision. Compared to revenue maximization, the system manager should consistently raise prices to mitigate the effects of customers' loss aversion. In a queueing system, it is crucial for the system manager to accurately identify the customers' loss aversion behaviors when determining prices; failure to do so may cause negative impacts on revenue and social welfare.

报告人简介： 黄军飞现为香港中文大学商学院决策、运营与科技学系副教授。他的研究兴趣包括排队系统的渐进分析和最优控制及相关理论在生产、服务系统中的应用。他曾获得优秀青年科学基金（港澳），香港中文大学青年学者研究成就奖，MSOM Service Management SIG Best Paper Award（MSOM协会）及Uriel G. Rothblum Prize for Excellent Work in Operations Research（以色列运筹学会）等科研奖项。