

The Hong Kong University of Science and Technology  
Dept of Information Systems, Business Statistics and Operations Management  
OM Seminar Announcement



**Behavior-Based Pricing in  
Congestion-Prone Systems**  
by  
**Prof. Dongyuan ZHAN**  
**UCL School of Management**

**Date** : 20 October 2023 (Friday)  
**Time** : 10:30 – 11:45 AM  
**Venue** : 3/F Classroom 2 (3003)



**Abstract:** Recent years have witnessed the widespread use of data to recognize repeat and new consumers to offer them different prices, i.e., behavior-based pricing (BBP). While extant research has examined the impacts of BBP on the market, most of this research ignores the congestion effect in serving each consumer. This research extends the literature by investigating the effect of promised delay (PD) on firms and consumers and reveals the implications of BBP in competing congestion-prone systems such as DoorDash and Uber Eats. We establish a two-period dynamic game-theoretic duopoly model embedded with a queueing system. We find that without commitment on PD, implementing BBP with congestion has the same implications as traditional BBP effect without congestion --- BBP hurts the firm profits and increases consumer welfare. However, when firms pre-commit their PDs, the practice of BBP may lower the service quality and increase the operational efficiency of the industry, reversing its benefit to consumers but improving the profits of firms. Moreover, committed PD results in a Matthew effect where the firm with higher base value commits to a lower PD. BBP exacerbates this effect and further widens the quality gap between firms.

This is joint work with Lei Fang, Ying Ouyang and Zhongbin Wang.

**Bio:** Dongyuan Zhan is an Assistant Professor at UCL School of Management. His research focuses on service operations, platform design with an emphasis on strategic behavior of servers or agents whose payoff may include behavioral concerns. For example, he studies compensation for call center representatives competing for calls when there is a speed quality tradeoff; he investigates information acquisition equilibrium in MOOC peer grading platforms when the students care about both fairness and social comparison; he demonstrates how lying aversion impacts the optimal schedule in a priority queue where customers may cheat for priority. His papers have won the Second Place of CSAMSE Best Paper Award, and won twice NET Institute Summer Research Grants. He is on the Editorial Review Board of POMS. He holds a Ph.D. degree from Marshall School of Business at University of Southern California, and an MS and a BS degree from Tsinghua University.

All interested are welcome!  
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