The Hong Kong University of Science and Technology

Dept of Information Systems, Business Statistics and Operations Management
Dept of Industrial Engineering & Decision Analytics

Joint Seminar Announcement

Food Delivery Service and Restaurant: Friend or Foe?

by

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Date	:	**19 March 2021 (Friday)**
Time	:	**10:30 - 11:45 am**
Zoom ID	:	**936 7156 0391 (password 696939)**

Abstract: With food delivery services, customers can hire delivery workers to pick up food on their behalf. To investigate the long-term impact of food delivery services on the restaurant industry, we model a restaurant serving food to customers as a stylized single-server queue with two streams of customers. One stream consists of tech-savvy customers who have access to a food delivery service platform. The other stream consists of traditional customers who are not able to use a food delivery service and only walk in by themselves. We study a Stackelberg game, in which the restaurant first sets the food price; the food delivery platform then sets the delivery fee; and, last, rational customers decide whether to walk in, balk, or use a food delivery service if they have access to one. We show that the food delivery platform does not necessarily increase demand for the restaurant but may just change the composition of customers, as the segment of tech-savvy customers grows. Hence, paying the platform for bringing in customers may hurt the restaurant's profitability. We demonstrate that a one-way revenue-sharing contract with a price ceiling or a two-way revenue-sharing contract can coordinate the system and create a win-win. Furthermore, under conditions of no coordination between the restaurant and the platform, we show, somewhat surprisingly, that more customers having access to a food delivery service may hurt the platform itself and the society, when the food delivery service is sufficiently convenient and the pool of delivery workers is large enough. This is because the restaurant can become a delivery-only kitchen and raise its food price by focusing on food-delivery customers only, leaving little surplus to the platform. This implies that limiting the number of delivery workers can provide a simple yet effective means for the platform to improve its own profit while benefiting the social welfare.

Bio: Dr Jianfu Wang, Jeff is an Associate Professor of Management Sciences at the College of Business, City University of Hong Kong. He received his PhD in Operations Management from Rotman School of Management at the University of Toronto. His research interests include queueing theory and its application in service operations, queueing economics, healthcare operations, and revenue management.

All interested are welcome!
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