

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



**Estimating Demand with Unobserved
No-purchases on Revenue-managed Databy
Prof. Anran Li
The Chinese University of Hong Kong**

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



Abstract: This paper investigates the joint estimation of the consumer arrival rate and choice model parameters when “no-purchasers” are not observable. Estimating demand even with the simplest discrete-choice model such as the MNL becomes challenging. Some previous approaches have proposed using market-share to pin down the parameter; however, market-share data are difficult to obtain in practice. Another complication is the sales are “revenue-managed”, that is, optimized nearly continuously by analysts and algorithms. In this paper we propose a two-step GMM based robust method when the firm cannot observe no-purchases, has no market-share information, and the data has been revenue-managed. In Monte-Carlo simulations the performance of our method matches existing methods when the controls are generated randomly, and is superior in accuracy and robustness when optimization-induced endogeneity is present. On a large real-world data set from the fashion industry subject to markdowns as well as stock-outs and unknown management controls our method provides robust estimates compared to existing methods.

Bio: Prof. Anran Li is an associate professor at the Department of Decisions, Operations and Technology at The Chinese University of Hong Kong (CUHK) Business School. Prior to joining CUHK, she was a faculty member at the Department of Management, London School of Economics and Political Science (LSE). Prof. Li received her PhD in Operations Research from Columbia University in 2017.

Prof. Li is broadly interested in designing algorithms and analysing data in order to optimise supply chain decisions. More precisely, Prof. Li focuses on developing and estimating consumer choice models using econometric tools, optimising assortment and recommendation for both traditional retailing and online digital platform, and creating a fair marketplace for all shareholders. Prof. Li’s research has been published in leading journals such as *Operations Research* and *Management Science*. Prof. Li is passionate about bringing impacts to practice through the work. She is an active external researcher and scientist for a number of companies, including Hewlett Packard, SAS Institute, Sabre Airline Solutions and Jet.com.

All interested are welcome!
Enquiries: Dept of ISOM