

*The Hong Kong Polytechnic University
Department of Logistics and Maritime Studies
Research Seminar*

Selection of Statistical Inferencing Methods in a Data-driven Newsvendor Problem

by

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Time: 10:30am-11:30am
Venue: R508, Shirley Chan Building
The Hong Kong Polytechnic University**

(Conducted in English)

Abstract:

Consider a data-driven newsvendor problem, in which demands in past periods come from an unknown distribution. The way to make demand inference from past data is key to the inventory control problem. We will consider two cases of unknown distributions: (i) the demand is observed and belongs to a parametric family with unknown parameter values; (ii) the demand is censored, that is, we observe the sales quantity in each period and lost sales are unobservable, and knowledge of the demand distribution is not available. In the parametric case, we will investigate the standard maximum likelihood estimation (MLE), and Bayesian inferencing with different priors. We show that for each inferencing method, there exists an optimal statistical solution. Then we show that Bayesian inferencing with flat prior always dominates MLE if the statistical solution of the both methods are functions of sufficient statistics. For the second case, we propose an adaptive policy based on online learning approach.

Bio:

Dr Xianghua Gan is an Associate Professor in the School of Business Administration at Southwestern University of Finance and Economics. He received a B.S. degree in Mathematics from The Beijing Normal University, the M.S. degree in Mathematics from Sichuan University, and Ph.D. degree in Operations Management from the University of Texas at Dallas. His research has been focused on supply chain coordination and published several papers in Production and Operations Management and European Journal of Operational Research, one of which won the Wickham Skinner Best Paper Award at the second World Conference on POM & 15th Annual POM Conference in 2004. His current research involves study of data-driven inventory control problems with tools and approaches developed in statistical learning and machine learning.

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All are welcome!