

The Hong Kong University of Science and Technology

Dept of Information Systems, Business Statistics
and Operations Management
Dept of Industrial Engineering & Logistics Management
Seminar Announcement

Optimal Policies for a Dual-Sourcing Inventory Problem with Stochastic Leadtimes

Dr. Li XIAO

Department of Decision Sciences & Managerial Economics
Chinese University of Hong Kong

Date : 6 November 2015 (Friday)
Time : 11:00 - 12:15 pm
Venue : Room 3003, LSK Business Building



Abstract: We consider a single-product dual-sourcing inventory system with a Poisson demand process and complete backlogging. Inventory can be replenished through the normal supply source, which consists of a two-stage tandem queue with exponential production time at each stage. We can also place an emergency order by skipping the first stage, for a fee. There is no fixed order cost, but there are variable order costs and linear holding and backorder costs. Through a new approach, we obtain optimal ordering policies for the discounted or long-run average system cost, and also characterize near optimal heuristic policies. The approach consists of four steps. The first step is to establish an equivalent system, in the sense that it has the same optimal policy as the original system. The second step is to construct a tandem queueing system, where the costs incurred by service rates and customer waiting are charged in accordance with the equivalent system's cost structure. The third step is devoted to optimal control of the service rate at each server so as to minimize the tandem queue's system-wide cost. The fourth and final step is to translate the queue's optimal policy to an optimal policy for the equivalent system and hence the original system.

Bio: Li XIAO is Research Assistant Professor in Department of Decision Sciences & Managerial Economics at the Chinese University of Hong Kong. She holds a PhD degree in Decision Sciences from National University of Singapore, a Master's degree in Operational Research and Cybernetics from Chinese Academy of Sciences, and a Bachelor's degree in Information and Computing Sciences from Wuhan University. Her research interests mainly lie in the field of stochastic models, with an emphasis on analysis and control of service systems, production systems, and supply chains.