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

Simple Policies for Serial Inventory Systems with Lost Sales: Beyond Echelon Base-Stock Policy

by

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Date	:	**17 October 2025 (Friday)**
Time	:	**10:30 – 11:45 AM**
Venue	:	**Case Room 1001, 1/F, LSK Business Building**

Abstract:

We consider a classical periodic-review serial inventory system with lost sales. When unsatisfied demand is backlogged, it is well known that echelon base-stock (EBS) policy that aims to maintain a constant echelon inventory position at each stage is optimal. Under the lost-sales setting, however, the EBS policy is sub-optimal and does not always perform well. In this study, we propose two new classes of heuristic replenishment policies: echelon projected non-stockout probability (EPP3) policy and echelon projected inventory level (EPIL) policy. First, we consider single-index EPP3 and EPIL policies and prove that both policies are asymptotically optimal with large unit penalty costs. Then, we construct dual-index and sequentially optimized policies to enhance the performance of single-index policies. We establish simple bounds on the performance of dual-index EPIL policies when the external replenishment lead times are large. Our numerical results show that both EPP3 and EPIL policies perform consistently near optimal and significantly better than the EBS policy. Finally, we extend both policies and all results to assembly inventory systems with lost sales. This is joint work with Huanyu Yin (CUHK).

Bio:

Xiting Gong is a Professor in the Department of Decisions, Operations and Technology at The Chinese University of Hong Kong (CUHK) Business School. He also holds a courtesy appointment as Professor in the Department of Systems Engineering and Engineering Management. His research focuses on operations management, with primary interests in stochastic inventory theory and its applications, revenue management and pricing, as well as approximation and data-driven algorithms. Professor Gong has published over ten articles in leading academic journals, including *Management Science*, *Operations Research*, and *Production and Operations Management*. His research has been supported by multiple grants, including several ECS/GRF awards from the Research Grants Council (RGC) of Hong Kong, the National Science Fund for Distinguished Young Scholars (2024) and an industry grant from Huawei. He currently serves as an Associate Editor for *Naval Research Logistics* and *Operations Research Letters*.

All interested are welcome!

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