

An Efficient Computational Method for Non-Stationary (R,S) Inventory Policy with Service Level Constraints

In session Solution Approaches for Lot-sizing Problems II, stream Lot-sizing and Scheduling, Economic Order Quantity.

Monday, 10:40-12h00

Authors (first author is the speaker)

1. Mustafa Dogru

Bell Labs, Alcatel-Lucent

2. Armagan Tarim

Cork Constraint Computation Centre, University College Cork

3. Ulas Ozen

Bell Labs, Alcatel-Lucent

4. Roberto Rossi

Logistics, Decision and Information Sciences, Wageningen UR

Abstract

This paper provides an efficient computational approach to solve a mixed integer programming (MIP) model developed for calculating the parameters of an (R,S) policy in a finite horizon with non-stationary stochastic demand and service level constraints. Given the replenishment periods, we characterize the optimal order-up-to levels for the MIP model and use it to guide the development of a relaxed MIP model, which can be solved in polynomial time. Extensive numerical tests show that our method dominates the MIP solution approach and can handle real-life size problems in trivial time.

Keywords

- Production and Inventory Systems
- Mathematical Programming
- Supply Chain Management

Status: accepted