

**Optimal Control of Service Parameter for a Perishable
Inventory System with Service Facility,
Postponed Demands and Finite Waiting Hall**

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Abstract

This paper deals with the problem of optimally control service rates for a continuous review (s, S) inventory system with a service facility consisting of finite buffer (waiting hall) and a single server. The customers arrive according to a Poisson process. The customer's demand is satisfied after an exponential service time. An arriving customer, who finds the buffer is full, enters into the pool of finite size or leaves the system according to a Bernoulli trial. The replenishment time of the order is distributed as exponential. The life time of each item in the inventory is assumed to be exponential distribution. Here we determine the service rates to be employed at each instant of time so that the long-run total expected cost rate is minimized. The problem is modeled as a semi-Markov decision problem. The stationary optimal policy is computed using linear programming algorithm and the results are illustrated numerically.

Keywords: Control of service rates, postponed Demands, finite life time, finite buffer