INVENTORY SYSTEM WITH POSTPONED DEMANDS AT A SERVICE FACILITY

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Summary

This paper analyzes an (s, S) inventory system where arrivals of customer form a Poisson process. When inventory level reaches zero due to demand, further demand is sent to a pool which has capacity M $(< \infty)$ and has a buffer with the same capacity as the pool. When inventory level reduces $I(t) \geq s+1$, the demand from buffer customer or external customer can be met. But when the inventory level is $I(t) \leq s$, only external demands shall be met. Pool as well as buffer customer(s) has to wait at least until the next replenishment. In this model, external customer can directly met the demands (i.e., at a negligible service time) but pool customer should go to buffer first with parameter θ and get the service with parameter μ. Entering the pool and buffer will be on the basic of FIFS. The system is analyzed in the steady state case. Some measures of the system performance in the steady state are derived and some numerical illustrations and sensitivity analysis are provided.

Keywords and phrases: Inventory, Postponed demand, pooled customer and Buffer customer

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