

Research and Reports on Mathematics

A SCITECHNOL JOURNAL

Editorial

Inventory Models with MAP Demands and Random Replenishment

Rehman Shaik*

Abstract

Combining the study of queuing with inventory is extremely common and such systems are mentioned as queuing-inventory systems within the literature. These systems occur naturally in practice and are studied extensively within the literature. The inventory systems considered within the literature generally include (s,S)type. However, during this paper we glance at opportunistic-type inventory replenishment during which there's an independent point process that's wont to model events that are called opportunistic for replenishing inventory. When a chance (to replenish) occurs, a probabilistic rule that depends on the inventory level is employed to work out whether to avail it or not. Assuming that the purchasers arrive consistent with a Markovian arrival process, the stress for inventory occur in batches of varying size, the stress require random service times that are modeled employing a continuous-time phasetype distribution, and therefore the point process for the opportunistic replenishment may be a Poisson process, we apply matrix-analytic methods to review two of such models. In one among the models, the purchasers are lost when at arrivals there's no inventory and within the other model, the purchasers can enter into the system albeit the inventory is zero but the server has got to be busy at that moment. However, the purchasers are lost at arrivals when the server is idle with zero inventory or at service completion epochs that leave the inventory to be zero. Illustrative numerical examples are presented, and a few possible future work is highlighted.

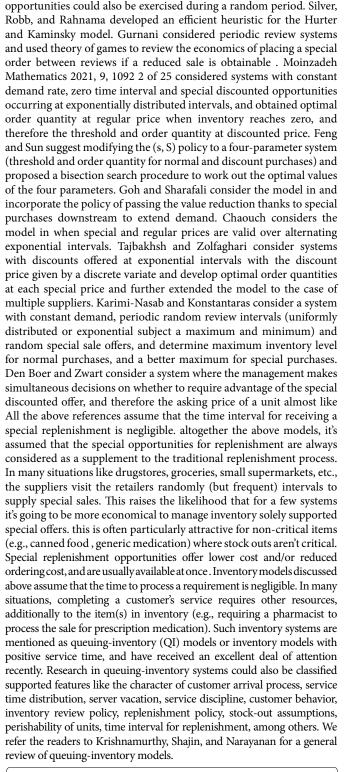
Keywords: Queuing-Inventory Systems; Algorithmic Probability; Batch Demands; Random Opportunities; Lead Times; Matrix-Analytic Methods

Introduction

Models for inventory management under uncertainty are studied extensively the 2 key questions of when and the way many to order are addressed under a spread of things like the character of inventory review (continuous or periodic), order quantity (fixed or variable), time interval for an order to be fulfilled (negligible, constant or random), nature of demand (deterministic or random), and other factors to optimize a function of varied costs like ordering, carrying inventory, lost sales, etc. Most models assume one supplier and glued cost of replenishment. Some models incorporate the supply of random opportunities for replenishment which can lower system costs thanks to reduced cost and/or ordering cost. We ask them as opportunistic replenishment. Friend studied systems with special opportunities occurring consistent with a Poisson process. These opportunities, which can be exercised only at the moment of their occurrence, are offered for an equivalent unit price but at reduced or zero ordering cost. Hurter and Kaminsky extend this model to systems where the special

*Corresponding author: Shaik Rehman, Department of Mathematics, University of Turin, United States, Tel: 8519974606; E-mail: rehman5439@gmail.com

Received: May 17, 2021 Accepted: May 19, 2021 Published: May 21, 2021



Author Affiliation

Department of Mathematics, University of Turin, United States

Top



All articles published in Research and Reports on Mathematics are the property of SciTechnol, and is protected by copyright laws. Copyright © 2021, SciTechnol, All Rights Reserved.