Joint inventory control and pricing in a service-inventory system

Ata Jalili Marand, Hongyan Li, Anders Thorstenson

PII: S0925-5273(17)30225-6
DOI: 10.1016/j.ijpe.2017.07.008
Reference: PROECO 6764


Received Date: 31 October 2016
Revised Date: 26 June 2017
Accepted Date: 6 July 2017


This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.
Joint Inventory Control and Pricing in a Service-Inventory System

Ata Jalili Marand, Hongyan Li, Anders Thorstenson

CORAL, Department of Economics and Business Economics, BSS, Aarhus University
Fuglesangs Allé 4, 8210 Aarhus V, Denmark

Abstract: This study addresses joint inventory control and pricing decisions for a service-inventory system. In such a system both an on-hand inventory item and a positive service time are required to fulfill customer demands. The service-inventory system also captures main features of the classical inventory systems with a positive processing time, e.g., make-to-order systems. In this study the service-inventory system is modeled as an $M/M/1$ queue in which the customer arrival rate is price dependent. The inventory of an individual item is continuously reviewed under an $(r,Q)$ policy. The replenishment lead times of the inventory are exponentially distributed. Furthermore, customers arriving during stock-out periods are lost. The stochastic customer inter-arrival times, service times, and inventory replenishment lead times cause the high complexity of the problem and the difficulty in solving it. The aim of this study is to formulate the problem and solve it to optimality. We make three main contributions: (1) We integrate inventory control and pricing in the service-inventory system. The problem is formulated and analyzed as a fractional programming problem, and structural properties are explored for the model. (2) Two solution algorithms are proposed. The first one provides optimal solutions, while the second one is more efficient. (3) The impact of the integrated inventory control and pricing decisions on the overall system performance is investigated. We compare the solutions of the models both with and without fill-rate and service-reliability constraints and report the main interesting managerial insights.

Keywords: Service-inventory system; Inventory control; Pricing; Operations-marketing interface.

*Corresponding author. E-mail: atajalili@econ.au.dk; Tel.: +45 8716 6016.
†E-mail: hojl@econ.au.dk
‡E-mail: anders.thorstenson@econ.au.dk
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات