

عنوان مقاله:

A vendor managed inventory control model for a pharmaceutical closed-loop supply chain

محل انتشار:

شانزدهمین کنفرانس بین المللی مهندسی صنایع (سال: 1398)

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نویسندگان:

;Niloofer Rahimi - Faculty of Industrial and Systems Engineering, Tarbiat Modares University

;Seyed Hessameddin Zegordi - Faculty of Industrial and Systems Engineering, Tarbiat Modares University

;Ehsan Nikbakhsh - Faculty of Industrial and Systems Engineering, Tarbiat Modares University

خلاصه مقاله:

Optimal usage of medicine and their proper disposal is an essential issue in pharmaceutical supply chains. Waste of medicine or their improper usage could be prevented by using an efficient inventory control system in locations such as pharmacies and hospitals. In this paper, we consider a vendor managed inventory system in a pharmaceutical closed-loop supply chain in order to collect medications unwanted or near to their expiration date. Returned medications divided into two categories. The first category (category A) composes of medications that could be sold in online channels under the control of the vendor, and the second category (category B) composes of medications that will be disposed at governmental disposal sites. A single-vendor, multi-retailer, and multi-product supply chain is considered in which the vendor replenishes the retailers at different times. The model is based on the economic ordering quantity (EOQ) model. The problem has been modeled as a mixed-integer nonlinear programming model aiming to maximize the total profit of the supply chain. The results indicate that increasing the amount of percentage of medications in category A will increase the total profit of the vendor and the supply chain.

کلمات کلیدی:

Closed-loop supply chain; Vendor managed inventory; Pharmaceutical supply chain; Mixed-integer nonlinear programming

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