Pricing and lot-sizing policies for perishable products with advance-cash-credit payments by a discounted cash-flow analysis

Ruihai Li, Ya-Lan Chan, Chun-Tao Chang, Leopoldo Eduardo Cárdenas-Barrón

PII: S0925-5273(17)30272-4
DOI: 10.1016/j.ijpe.2017.08.020
Reference: PROECO 6801


Received Date: 6 June 2017
Revised Date: 7 August 2017
Accepted Date: 21 August 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.
Pricing and lot-sizing policies for perishable products with advance-cash-credit payments
by a discounted cash-flow analysis

Ruihai Li¹, Ya-Lan Chan², Chun-Tao Chang³, Leopoldo Eduardo Cárdenas-Barrón⁴,*

¹School of Business Administration, Shanghai Lixin University of Commerce and Finance, Shanghai, China.
²Department of International Business, Asia University, Taichung, Taiwan 41354, ROC.
³Department of Statistics, Tamkang University, Tamsui, Taipei, Taiwan 25137, R.O.C.
⁴School of Engineering and Sciences, Tecnológico de Monterrey, E. Garza Sada 2501 Sur, C.P. 64849, Monterrey, Nuevo León, México.

*Corresponding author, E-mail address: lecarden@itesm.mx (L. E. Cárdenas-Barrón)

Abstract

A contractor often requests a customer pay an advance payment when signing a contract to install a new roof. A cash payment to cover the contractor’s materials cost is then required upon delivery of the materials to do the job. Then, the contractor grants the customer a credit payment to pay the remainder of the total cost after the work is completed and satisfactory. Hence, an advance-cash-credit (ACC) payment scheme is commonly used in real world business transactions. This paper develops a supplier-retailer-customer chain in which the retailer receives an upstream ACC payment from the supplier while in return offers a downstream cash-credit (some in cash and the rest in credit) payment to customers. Additionally, today’s health-conscious consumers judge product freshness through its expiration date because the freshness of a perishable product degrades with time. As a result, the demand for perishable products is influenced by the combined effect of selling price and product freshness linked to expiration date. Taking time value of money into consideration, then an inventory model by using a discounted cash-flow analysis is developed. Furthermore, the present value of total annual profit is demonstrated that is strictly concave in unit price and strictly pseudo-concave in replenishment time, which simplifies the search for the global solution to a local maximum. Finally, a sensitivity analysis is conducted and several managerial insights are obtained.

Keywords: Supply chain; Pricing; Expiration date; Perishable products; Advance-cash-credit payment.

Acknowledgment The authors greatly appreciate Editor Peter Kelle for fast processing, and two anonymous reviewers for their helpful suggestions. The principal author’s research was funded by the Chinese National Natural Science Fund with Grant No. 71573177. The second author’s research was supported by the National Science Council of the Republic of China under Grant NSC-105-2420-H-468-004-MY2. The fourth author was supported by the Tecnológico de Monterrey Research Group in Industrial Engineering and Numerical Methods 0822B01006.
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