

Optimal pricing and replenishment policy for a deteriorating item in a two-echelon supply chain

Tsung-Hui Chen

*Institute of Industrial Management
National Central University
Jhongli 32001
Taiwan*

*Department of Marketing & Logistics Management
National Pingtung Institute of Commerce, 51
Min-Sheng E. Road
Pingtung 90041
Taiwan*

Jen-Ming Chen *

*Institute of Industrial Management
National Central University
Jhongli
Taiwan 32001
R.O.C.*

Abstract

This paper deals with an emerging problem that jointly determines the optimal retail price and inventory replenishment policy in a manufacturer-retailer channel. We formulate both the centralized and the decentralized decision-making policies in the two-echeloned supply chain with an aim to maximizing the total profits. The demand in the retail end is assumed to be price-dependent and the item is subject to continuously exponential decay. We derive the optimal solutions, prove their optimality, and carry out numerical study. In addition, a profit-sharing mechanism, through a quantity discount scheme, is proposed so that Pareto improvement, i.e., one party is better-off and the other is not worse-off, can be achieved among channel participants.

Keywords : Inventory, pricing, replenishment, channel coordination, deterioration.

**E-mail: jmchen@mgt.ncu.edu.tw*

Journal of Statistics & Management Systems

Vol. 9 (2006), No. 2, pp. 285–299

© Taru Publications