

A Supplier-Retailer Coordination with Product of Fixed Lifetime

Hark Hwang* · Kyu Hun Hahn**

* Department of Industrial Engineering

** Korea Advanced Institute of Science & Technology

Abstract

It has been customary for retail stores to return the goods to the suppliers (manufacturers) which remain unsold by their expiry date. Recently, a new market practice appears which is replacing the returns policies for perishable items. The new practice requires some coordinating efforts between the two parties, that is, in return for a lower unit price the supplier offers, the retailers are not permitted returning the unsold goods. Thus the retailer can lower the consumer price, which results in an increased product demand from the consumers. Consequently, both parties are expected to enjoy higher financial gains in addition to the satisfied customers.

This paper deals with the above supplier-retailer-customers distribution system. We develop a mathematical model to determine the suppliers discounted price as well as the retailers order up-to inventory level and unit selling price which maximize the retailers profit. It is assumed that the demand rate is decreasing function of the unit selling price and increasing function of the retailers inventory level. The effects of the system parameters on the decision variables are investigated using a numerical example.