Developing economic order quantity model for non-instantaneous deteriorating items in vendor-managed inventory (VMI) system

Roya Tat1*, Ata Allah Taleizadeh2, Maryam Esmaeil3

1,3- Department of Industrial Engineering, Alzahra University, Tehran, Iran
2- School of Industrial and Systems Engineering, College of Engineering, University of TehranIran

Abstract

This paper develops an economic order quantity model for non-instantaneous deteriorating items with and without shortages to investigate the performance of the vendor-managed inventory (VMI) system. This model is developed for a two-level supply chain consisting of a single supplier and single retailer with a single non-instantaneous deteriorating item. A numerical example and sensitivity analysis are provided to illustrate how increasing or reducing the related parameters change the optimal values of the decision variables of the two proposed models. The results show that VMI works better and charges lower cost in all conditions.

Keywords: vendor-managed inventory, inventory, supply chain, EOQ, non-instantaneous deterioration

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