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

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## 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

# Additional information

## Notes on contributors


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Ata Allah Taleizadeh is an assistant professor in School of Industrial and Systems Engineering in University of Tehran in Iran. He received his PhD in industrial engineering from Iran University of Science and Technology. Moreover he received his BSc and MSc degrees, both in industrial engineering, from Azad University of Qazvin and Iran University of Science and Technology, respectively. His research interest areas include inventory control and production planning, pricing and revenue optimisation and uncertain programming. He has published several papers and chapter books in reputable journals and he serves as the editor/editorial board member for a number of international journals.


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Maryam Esmaeili received her BSc degree in applied mathematics and operations research and MS and PhD degree in industrial engineering. Her research interests are in optimisation, game theory, supply chain management, warranty and service management. She is currently assistant professor of industrial engineering in Alzahra University. She has published several papers in reputable journals.

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