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Volume 39, 2008 - [Issue 8](#)

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# An inventory model for ameliorating and deteriorating items taking account of time value of money and finite planning horizon

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Pages 801-807 | Received 18 Nov 2004, Accepted 06 Jan 2008, Published online: 19 May 2008

Cite this article <https://doi.org/10.1080/00207720801902523>

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## Abstract

The objective of this study is to develop an optimal replenishment inventory strategy to consider both ameliorating and deteriorating effects taking account of time value of money and finite planning horizon. The amelioration rate and the deterioration rate are assumed to follow a Weibull distribution. The inventory system is particularly useful for young livestock whose utility increase over time. The discounted cash flow and optimisation technique are used to derive an optimal solution. A numerical example and sensitivity analysis are given to illustrate the theory of the inventory system.

Keywords:

amelioration

deterioration

weibull distribution

finite planning horizon

time value of money

# Acknowledgements

We would like to express our appreciation to the referees for their comments and contributions to the quality of the article. Financial support from the National Science is acknowledged.

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