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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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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

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