Determining the Optimal Inventory and Investment Strategies

for Quality Improvement in the Fuzzy Sense

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Abstract

The cost of capital (i.e., opportunity cost) is one of the key factors in making the inventory and investment decisions. In an unstable environment, the opportunity cost rate may not be fixed, rather it may slightly change from time to time due to various uncertainties. To capture this reality, this paper extends the EOQ model with investment in quality improvement to include the imprecision of opportunity cost rate, where the triangular fuzzy number is employed to handle the vagueness. We investigate the aforementioned problem and derive the optimal solution for lot size and quality level in the fuzzy sense. A numerical example is provided and the results of fuzzy and crisp models are compared.

Keywords: Inventory, Investment, Quality Improvement, Fuzzy Numbers.