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Supply chain coordination with defective items and quantity discount

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Abstract

This study develops an integrated inventory system involving defective items and quantity discount for optimal pricing and ordering strategies. The model analysed in this study is one in which the buyer orders a quantity, the vendor produces more than buyer's order quantity in order to reduce set-up cost, and then he/she offers an all-units quantity discount to the buyer. Our objective is to determine the optimal order quantity, retail price, mark-up rate, and the number of shipments per production run from the vendor to the buyer, so that the entire supply chain joint total profit incurred has a maximum value. Furthermore, an algorithm of finding the optimal solution is developed. Numerical examples are provided to illustrate the theoretical results.

Keywords:

integrated inventory system | quantity discount | mark-up rate | defective items

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