An optimal integrated lot sizing policy of inventory in a bi-objective multi-leve supply chain with stochastic constraints and imperfect products

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Abstrak

This paper provides a developed mathematical model to derive the optimal integrated lot sizing in a multi-level supply chain with imperfect quality products. The developed mathematical model has a bi-objective function, with conflicting goals, minimizing the chain inventory costs and maximizing the chain total profit aided to find optimum policy for integrated lot sizing. We further actualize the problem by assuming multiple stochastic constraints. The mathematical formulation of the problem is stochastic, nonlinear, and large. In this regard, the interior point algorithm that is developed as more effective algorithm with less iteration is used for solving the recent convex nonlinear model. Numerical example shows that the developed interior point method is an efficient method with excellent performance in terms of the quality of the solution. Also, Sensitivity analysis shows that the developed interior point method is an efficient method with excellent performance in terms of the quality of the solution.