A closed-loop multi echelon green supply chain network with stochastic demand

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Abstract

This paper tries to develop a closed-loop multi-period and multi-echelon supply chain model with the goal of maximizing profits and reducing the impact of environmental hazards. In this model, demand is considered stochastic. A model has been developed considering green supply chain network, to meet the potential customer demands by supplying them at different time. The proposed model includes forward and reverse direction. It consists of suppliers, facilities, distributors and first customers in the forward direction and disassembly, disposal, recycling, redistribution centers and second customers in the reverse one. A mixed integer nonlinear mathematical model is proposed and solved by exact method. In order to validate the proposed mathematical model, several samples are generated and solved using the GAMS software. Furthermore, sensitivity analysis has done on crucial parameters to assess model performance.

Keywords
Closed-loop, Green supply chain, Stochastic demand, Mathematical Model

Biographies

Iraj Mahdavi is the full Professor of Industrial Engineering at Mazandaran University of Science and Technology, Babol, Iran. He received his Ph.D. from India in Production Engineering. He is also in the editorial board of five journals and scientific committee member of international conferences. He was awarded as the best researcher of

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