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A simulated annealing algorithm to the multi-period fixed charge distribution problem associated with backorder and inventory

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Abstract

This paper addresses a multi-period fixed charge distribution problem associated with backorder and inventory. The objective is to determine the size of the shipments, backorder and inventory at each period, so that the total cost incurred during the entire period towards transportation, backorder and inventory is minimised. A pure integer non-linear programming problem is formulated. A simulated annealing based heuristic is proposed to solve and is illustrated. The proposed methodology is evaluated by comparing its solutions with the lower bound and equivalent variable cost solutions. The comparisons reveal that the simulated annealing generates better solutions than the equivalent variable cost solutions and is capable of providing solutions closer to the lower bound solutions of the problems.

Keywords:

transportation | logistics | multi-period fixed charge distribution problem | heuristics | simulated annealing

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