

An efficient search algorithm for obtaining the optimal replenishment strategies in assembly-type just-in-time supply chain systems

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Abstrak

An assembly-type just-in-time (JIT) supply chain system is composed of a main serial supply chain and several branching serial supply chains merging to the main supply chain. Under the assumption of constant demand rate, the replenishment problem in the assembly-type JIT supply chain systems can be formulated as a mixed-integer non-linear programming problem. We conduct thorough theoretical analysis on the properties of the objective function value curve in this study. Following our theoretical analysis, we propose a search algorithm that effectively solves an optimal solution. Our numerical experiments show that the average run time of the proposed algorithm grows in a linear order of the problem size, and the proposed algorithm may serve as an efficient solution approach for the decision-maker.