A Hybrid Local Search Algorithm for Production Routing Problem

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Abstract

In many supply chain systems, the decision problems of production, inventory, distribution and routing operations are generally optimized independently. In this usual approach, the decisions taken for a particular operation are used as input data for its successor operations. On the other hand, the integration of these decision problems has attracted research interest due to the benefits provided by the coordination of these operations. The production routing problem (PRP) is an integrated operational planning problem that combines the two well-known optimization problems, vehicle routing problem (VRP) and lot sizing problem (LSP). The aim of solving the PRP is to optimize the production, inventory, distribution and routing decisions simultaneously. In this study, a hybrid local search algorithm which integrates an adaptive threshold accepting function with a short-term tabu list is proposed. The algorithm is applied to a set of randomly generated problem instances. The performance of the developed algorithm is evaluated according to the computational results.

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