

A Hybrid Heuristic for Inventory Routing Problem with Stochastic Demand

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Abstract

As a variant of vehicle routing problem, inventory routing problem has been approached in many different ways. This study addresses an integrated model for multi-item replenishment with stochastic demand to determine delivery routes where the actual replenishment quantity only becomes known upon arrival at a demand location. In this circumstance, stockout is very likely to occur when daily visits to each customer are not feasible. This study proposes a hybrid tabu search (TS) and variable neighborhood descent (VND) to solve the problem. The proposed method starts from a heuristic initial solution and use TS method to solve the problem. VND is conducted to help escape from being trapped at local optimum.

Keywords

Inventory routing problem; stochastic demand; tabu search; variable neighborhood descent