

Long-Haul Shipment Optimization for Less-Than-Truckload Carriers

ABSTRACT

Less-than-truckload (LTL) carriers supply freight transportation services for small parcel shipments. These companies consolidate multi-shipments in vehicles in order to guarantee the efficiency of the system. In this paper, we present a methodology to solve the long-haul routing design problem with capacitated delegations and time-constrained shipments for LTL carriers. The methodology encompasses direct, hub&spoke and stopover strategies to allocate shipments in the set of routes. The resolution method is based in a Tabu Search algorithm. The search process in the solution domain is dynamically performed with four possible perturbations. The results obtained in a set of test problems have demonstrated that the restart parameters play a significant role in the efficiency of the algorithm. On the other hand, the implementation of the computational technique in the long-haul operations network of the largest carrier in Spain has result in a reduction of 6% in transportation costs.