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**AN ECONOMIC ANALYSIS FOR THE CAPACITATED HUB
LOCATION-ROUTING PROBLEM****Abstract:**

Hub and spoke (H&S) network reflecting the scale economies through consolidation and a large amount of freight transportation is widely used to reduce total transportation costs. H&S network has transportation routes that go to the final destination point pass through hub linking destination from hub linking origin. In this paper we deal with a capacitated hub location-routing problem (HLRP). The HLRP not only considers the locations of the capacitated p-hubs but also deals with the vehicle routing problem for collection and delivery of goods. This problem is formulated as an integer programming model with the objective of the minimum total transportation cost and the fixed cost associated with the establishment of hubs. As the HLRP has impractically demanding for the large sized problems, we develop a solution method based on ant colony optimization algorithm which solves hub location and vehicle routing problem hierarchically. Its performance is examined through a comparative study.

Keywords:

Hub and Spoke Network, Hub Location-Routing, Integer Programming, Ant Colony Optimization

JEL Classification: C61, R40, C52