

# A Multi Objective Robust Model for Capacity-Constraint Hub-Covering Flow Problem\*

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***Abstract***—during the past few decades, there have been tremendous efforts on reducing the cost of transportation, which is normally a significant amount of the cost of production. This paper presents a robust methodology as a multi objective hub covering flow problem (HCFP) with capacity constraints. The primary objective of HCFP is to find the best configuration network, which minimizes the total cost of opening hubs and transporting demand flow subject to some constraints such as distance constraint between the hub and non-hub nodes. For handling the inherent uncertainty associated with input data, a robust HCFP (RHCFP) is proposed. The study uses weighing method in order to solve the resulted models. To examine the performance of the proposed models, the study uses various test problems to carefully analyze the problem under different circumstances. In addition, the study uses Monte Carlo simulation technique to measure the efficiency of the robust model. For better comparison of two approaches, a unique performance measure is also introduced, known as total performance measure, which demonstrates better performance of the proposed robust model for real-world problems (*Abstract*)

***Keywords***— *hub covering flow problem; capacity constraint; robust optimization; evaluation*

## Biography

**Sogol Saremi** is a graduated master student at Iran University of Science and technology studying Industrial Engineering. She has fulfilled her bachelor degree in RailWay engineering from the same university and published some papers regarding resilient scheduling in maritime transportation.

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