Accepted Manuscript

An Arc Interdiction Vehicle Routing Problem with Information Asymmetry

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PII: S0360-8352(17)30552-1

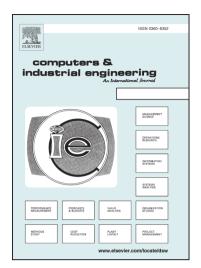
DOI: https://doi.org/10.1016/j.cie.2017.11.019

Reference: CAIE 4990

To appear in: Computers & Industrial Engineering

Received Date: 4 April 2015

Revised Date: 19 September 2017 Accepted Date: 20 November 2017



Please cite this article as: Bidgoli, M.M., kheirkhah, A., An Arc Interdiction Vehicle Routing Problem with Information Asymmetry, *Computers & Industrial Engineering* (2017), doi: https://doi.org/10.1016/j.cie. 2017.11.019

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ACCEPTED MANUSCRIPT

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Title page

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Abstract

In some cases, due to security, sensitivity or high value, it is possible that shipments are interrupted by some adversary decision makers. The vehicle routing problem (VRP) for these kinds of shipments is some more complicated in comparison with classical VRPs, and it has been considered recently by researchers.

In reality, two decision makers may have different perceptions or asymmetric information about the network. We study vehicle routing network interdiction problem with information asymmetry and investigate the benefits and risks of considering this assumption. By taking the average of benefits and risks over some network instances, it is observed that when more budgets is assigned to interdiction and the distributor estimates the interdictor's parameters with less accuracy, Network Interdiction Vehicle Routing Problem (NIVRP) with information asymmetry is able to formulate the real cases, more effectively.

Keywords: Network interdiction, Vehicle routing problem, Information asymmetry, Bi-level programming

1. Introduction

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