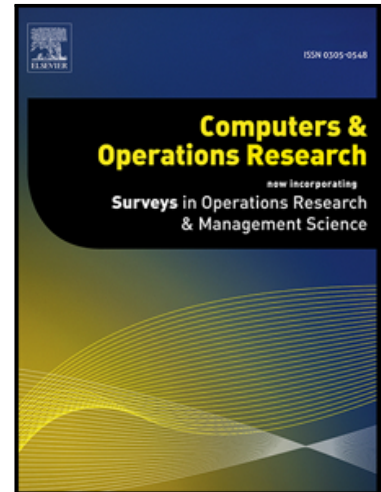


Accepted Manuscript

Data driven hybrid evolutionary analytical approach for multi objective location allocation decisions: Automotive green supply chain empirical evidence

Ian Shivraj Doolun , S.G. Ponnambalam ,
Nachiappan Subramanian , Kanagaraj G

PII: S0305-0548(18)30008-X
DOI: [10.1016/j.cor.2018.01.008](https://doi.org/10.1016/j.cor.2018.01.008)
Reference: CAOR 4391



To appear in: *Computers and Operations Research*

Received date: 16 March 2017
Revised date: 14 December 2017
Accepted date: 9 January 2018

Please cite this article as: Ian Shivraj Doolun , S.G. Ponnambalam , Nachiappan Subramanian , Kanagaraj G , Data driven hybrid evolutionary analytical approach for multi objective location allocation decisions: Automotive green supply chain empirical evidence, *Computers and Operations Research* (2018), doi: [10.1016/j.cor.2018.01.008](https://doi.org/10.1016/j.cor.2018.01.008)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Data driven hybrid evolutionary analytical approach for multi objective location allocation decisions: Automotive green supply chain empirical evidence

Ian Shivraj Doolun^a, S. G. Ponnambalam^b, Nachiappan Subramanian^c, Kanagaraj G^d

^a Dematic Pty Ltd, 24 Narabang Way, Belrose, NSW 2085, Australia. idooolun90.id@gmail.com

^b School of Engineering, Monash University Malaysia, 47500 Bandar Sunway, Malaysia. sgponnambalam@monash.com

^c School of Business Management and Economics, University of Sussex, Falmer, Brighton BN19SL, United Kingdom, N.Subramanian@sussex.ac.uk

^d Department of Mechatronics Engineering, Thiagarajar College of Engineering, Madurai – 625015, India, gkmech@tce.edu

Abstract

The strategic location of manufacturing plants and warehouses and the allocation of resources to the various stages of a supply chain using big data is of paramount importance in the era of internet of things. A multi-objective mathematical model is formulated in this paper to solve a location-allocation problem in a multi-echelon supply chain network to optimize three objectives simultaneously such as minimization of total supply chain cost (TSCC), maximization of fill rate and minimization of CO₂ emissions. Data driven hybrid evolutionary analytical approach is proposed by integrating Non-Dominated Sorting Genetic Algorithm-II (NSGA-II) to handle multiple objectives into Differential Evolution (DE) algorithm. Five variants of the hybrid algorithm are evaluated in addition to comparing the performance with the existing Multi-Objective Hybrid Particle Swarm Optimization (MOHPSO) algorithm. Extensive computational experiments confirm the superiority of the proposed Data driven hybrid evolutionary analytical approach over the existing MOHPSO algorithm. This study identifies a specific variant that is capable of producing the best solution in a higher order simulated instances and complex realistic scenario such as an automotive electronic parts supply chain in Malaysia.

Keywords: Location-Allocation Decision, Supply Chain Network, Multi-objective Differential Evolution, Big Data.

Download English Version:

<https://daneshyari.com/en/article/6892554>

Download Persian Version:

<https://daneshyari.com/article/6892554>

[Daneshyari.com](https://daneshyari.com)