

## Accepted Manuscript

Title: Flexible supply chain network design under uncertainty

Authors: Anastasia Chatzikontidou, Pantelis Longinidis,  
Panagiotis Tsiakis, Michael C. Georgiadis

PII: S0263-8762(17)30567-1  
DOI: <https://doi.org/10.1016/j.cherd.2017.10.013>  
Reference: CHERD 2853

To appear in:

Received date: 18-5-2017  
Revised date: 31-8-2017  
Accepted date: 9-10-2017

Please cite this article as: Chatzikontidou, Anastasia, Longinidis, Pantelis, Tsiakis, Panagiotis, Georgiadis, Michael C., Flexible supply chain network design under uncertainty. *Chemical Engineering Research and Design* <https://doi.org/10.1016/j.cherd.2017.10.013>

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# Flexible supply chain network design under uncertainty

Anastasia Chatzikontidou<sup>1</sup>, Pantelis Longinidis<sup>1</sup>, Panagiotis Tsiakis<sup>2</sup> and Michael C. Georgiadis<sup>1\*</sup>

<sup>1</sup>Department of Chemical Engineering, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece

and

<sup>2</sup>Department of Logistics  
TEI of Central Macedonia  
Katerini Greece

\*Corresponding author. Email: mgeorg@auth.gr

## Highlights

- Flexible supply chain network model
- Model relies generalised production/warehousing nodes
- Inventory management and decisions on strategical and tactical level are considered
- Results in a simple supply chain problem revealed cost benefits for this model.

## Abstract

Flexibility in supply chain networks dealing with uncertainty, has become a research challenge over the past years. This work proposes a flexible supply chain network design (SCND) model that uses generalized production/warehousing nodes instead of individual production plants and warehouses while conquers with demand uncertainty using a scenario-based approach. It also deals with inventory management and decisions on strategical and tactical level (facility location, production rate, warehouse capacity, demand allocation between generalized nodes, inventory levels, product flows, suppliers' product availability and links between all facilities). The proposed Mixed-Integer Linear Programming (MILP) model allows intra-layer flows between generalized nodes and aims at minimizing total network cost. A case study is formed to test the applicability of the model for a medium sized European company. A comparison was made between a classic supply chain network and generalized network that deals with uncertainty. Results have revealed cost benefits for this model, making it not only applicable, but also cost effective for the company that will

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