

Author's Accepted Manuscript

Building up Resilience in a Pharmaceutical Supply Chain through Inventory, Dual Sourcing and Agility Capacity

Florian Lücker, Ralf W. Seifert



PII: S0305-0483(17)30029-4
DOI: <http://dx.doi.org/10.1016/j.omega.2017.01.001>
Reference: OME1742

To appear in: *Omega*

Received date: 9 September 2015

Accepted date: 10 January 2017

Cite this article as: Florian Lücker and Ralf W. Seifert, Building up Resilience in a Pharmaceutical Supply Chain through Inventory, Dual Sourcing and Agility Capacity, *Omega*, <http://dx.doi.org/10.1016/j.omega.2017.01.001>

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 galley proof before it is published in its final citable 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

Building up Resilience in a Pharmaceutical Supply Chain through Inventory, Dual Sourcing and Agility Capacity

Florian Lücker^{a,*}, Ralf W. Seifert^{a,b}

^a*École Polytechnique Fédérale de Lausanne, Odyssea 4.16, Station 5, CH-1015 Lausanne, Switzerland*

^b*IMD, Chemin de Bellerive 23, P.O. Box 915, CH-1001 Lausanne, Switzerland*

Abstract

This paper is inspired by a risk management problem faced by a leading pharmaceutical company. Key operational risk mitigation measures include Risk Mitigation Inventory (RMI), Dual Sourcing and Agility Capacity. We study the relationship between these three measures by modeling the drug manufacturing firm that is exposed to supply chain disruption risk. The firm determines optimal RMI levels for assumed Dual Sourcing and Agility Capacity. We quantify the decrease in RMI levels in the presence of Dual Sourcing and Agility Capacity. Furthermore, using an example, we analyze RMI, Dual Sourcing and Agility Capacity decisions jointly. It turns out that RMI and Agility Capacity can be substitutes as long as no Dual Source is available. Once the Dual Source is available, Agility Capacity and Dual Sourcing appear to be substitutes. We further show that for long disruption times, the optimal Dual Source production rate may decrease in the disruption time. Within our modeling framework, we introduce an operational metric that quantifies Supply Chain Resilience. Supply chain disruptions can have a severe business impact and need to be managed appropriately.

*Corresponding author

Email address: florian.luecker@epfl.ch (Florian Lücker)

Download English Version:

<https://daneshyari.com/en/article/5111692>

Download Persian Version:

<https://daneshyari.com/article/5111692>

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