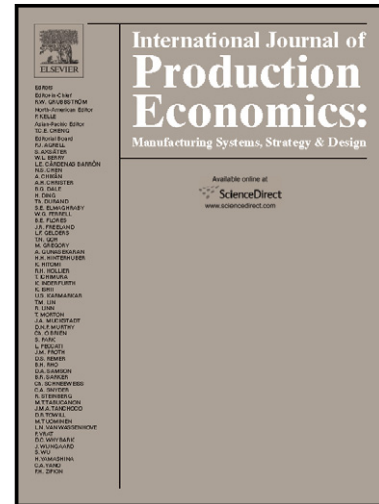


Author's Accepted Manuscript

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www.elsevier.com/locate/ijpe

PII: S0925-5273(15)00281-9
DOI: <http://dx.doi.org/10.1016/j.ijpe.2015.07.032>
Reference: PROECO6169

To appear in: *Int. J. Production Economics*

Received date: 10 February 2015
Accepted date: 27 July 2015

Cite this article as: Sourish Sarkar, Sanjay Kumar, A behavioral experiment on inventory management with supply chain disruption, *Int. J. Production Economics*, <http://dx.doi.org/10.1016/j.ijpe.2015.07.032>

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A Behavioral Experiment on Inventory Management with Supply Chain Disruption

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Abstract

Various operational strategies for mitigating supply chain disruption have been studied theoretically, but few studies have investigated behavioral decision-making in multi-echelon supply chains experiencing disruptions. We explore the effects of communicating disruption information in real-time to supply chain members using the beer distribution game in a controlled laboratory setting. Both upstream (manufacturer) and downstream (retailer) disruptions are independently considered, and in each of these scenarios, the difference between sharing and not sharing the disruption information is investigated. We find that supply chain disruptions may cause higher order variability when compared to the base case (no disruption). For a disruption at an upstream echelon, sharing the disruption information is found beneficial in reducing order variability and supply chain cost—upstream echelons experience more benefits from information sharing than downstream echelons. Therefore, we advocate that manufacturers share supply disruption information in real-time in order to benefit from a reduced bullwhip effect and its associated costs. For a disruption at a downstream echelon, sharing disruption information does not appear to have a significant benefit. Past studies have shown the importance of sharing downstream inventory information with upstream supply chain members. In the event of disruptions, our results demonstrate that sharing upstream disruption information with downstream members is beneficial.

Keywords: bullwhip effect, behavioral operations, multi-echelon supply chain, disruption

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