

Ciancimino, Elena; Cannella, Salvatore; Bruccoleri, Manfredi; Framinan, Jose M.

On the bullwhip avoidance phase: the synchronised supply chain. (English) Zbl 1253.90023
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Summary: We analyse the operational response of a Synchronised Supply Chain (SSC). To do so, first a new mathematical model of a SSC is presented. An exhaustive Latin Square design of experiments is adopted in order to perform a boundary variation analysis of the main three parameters of the periodic review smoothing (S, R) order-up-to policy: i.e., lead time, demand smoothing forecasting factor, and proportional controller of the replenishment rule. The model is then evaluated under a variety of performance measures based on internal process benefits and customer benefits. The main results of the analysis are: (I) SSC responds to violent changes in demand by resolving bullwhip effect and by creating stability in inventories under different parameter settings and (II) in a SSC, long production-distribution lead times could significantly affect customer service level. Both results have important consequences for the design and operation of supply chains.

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90B05 Inventory, storage, reservoirs

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inventory; supply chain management; simulation; collaboration; information sharing

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