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Information distortion in a supply chain: The bullwhip effect. (English) Zbl 0888.90047
Manage. Sci. 43, No. 4, 546-558 (1997).

Summary: Consider a series of companies in a supply chain, each of whom orders from its immediate upstream member. In this setting, inbound orders from a downstream member serve as a valuable informational input to upstream production and inventory decisions. This paper claims that the information transferred in the form of “orders” tends to be distorted and can misguide upstream members in their inventory and production decisions. In particular, the variance of orders may be larger than that of sales, and the distortion tends to increase as one moves upstream – a phenomenon termed “bullwhip effect”. This paper analyzes four sources of the bullwhip effect: demand signal processing, rationing game, order batching, and price variations. Actions that can be taken to mitigate the detrimental impact of this distortion are also discussed.

MSC:

90B05 Inventory, storage, reservoirs
90B30 Production models

Cited in **2** Reviews
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Keywords:

bullwhip effect; supply chain; demand signal processing; rationing game; order batching; price variations

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