

Impact of Advance Demand Information in Supply Chain Performance

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Abstract

Supply chain is a network of organizations or stages that are directly or indirectly involved in fulfilling customer requirements. Decisions taken at one organization affects the performance of the other organizations in the supply chain. So the performance of the supply chain depends on the decisions taken at each organization in it. One of the serious issues in a supply chain is the bullwhip effect which causes performance degradation of a supply chain. Bullwhip effect is the increase in demand variability from downstream stage to upstream stage in a supply chain. Reduction in bullwhip effect can significantly improve the efficiency or profitability of a supply chain. One of the ways to reduce this effect is by information sharing among the organizations in a supply chain. The objective of this paper is to know the impact of imperfect Advance Demand Information (ADI) sharing on bullwhip effect in a four stage serial supply chain and to evaluate the supply chain performance by conducting an experiment similar to the beer distribution game. The performance measures used are variance of orders placed by each stage, fill rate, total inventory at each stage and total holding cost of the supply chain. Results show that imperfect ADI improves the performance of the supply chain. It is also found that there is no remarkable bullwhip effect when order up to level (R, S) policy with safety stock is used.

Keywords: Information Sharing, Bullwhip Effect, Imperfect ADI, (R, S) Policy.