

A Simulation Model to Analyze the Impact of Virtual Responsiveness in an E-Commerce Supply Chain

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Abstract : The design of a supply chain always entails the trade-off between responsiveness and efficiency. The launch of e-commerce has not only changed the way of shopping but also altered the supply chain design while trading off efficiency with responsiveness. A concept called 'virtual responsiveness' is introduced in the context of e-commerce supply chain. A simulation model is developed to compare actual responsiveness and virtual responsiveness to the customer in an e-commerce supply chain. The simulation is restricted to the movement of goods from the e-tailer to the customer. Customer demand follows a statistical distribution and is generated using inverse transformation technique. The two responsiveness schemes of the supply chain are compared in terms of the minimum number of inventory required at the e-tailer to fulfill the orders. Computational results show the savings achieved through virtual responsiveness. The insights gained from this study could be used to redesign e-commerce supply chain by incorporating virtual responsiveness. A part of the achieved cost savings could be passed back to the customer, thereby making the supply chain both effective and competitive.

Keywords : e-commerce, simulation modeling, supply chain, virtual responsiveness

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