

Simulation of Lean Principles Impact in a Multi-Product Supply Chain

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Abstract : The market competition is moving from the single firm to the whole supply chain one because of increasing competition and growing need for operational efficiencies and customer orientation. Supply chain management allows companies to look beyond their organizational boundaries to develop and leverage resources and capabilities of their supply chain partners. This leads to create competitive advantages in the marketplace and because of this SCM has acquired strategic importance. Lean Approach is a management strategy that focuses on reducing every type of waste present in an organization. This approach is becoming more and more popular among supply chain managers. The supply chain application of lean approach is low diffused. It is not well studied which are the impacts of lean approach principles in a supply chain context. In literature there are only few studies simulating the lean approach performance in single products supply chain. This research work studies the impacts of lean principles implementation along a supply chain. To achieve this, a simulation model of a three-echelon multiproduct product supply chain has been built. Kanban system (and several priority policies) and setup time reduction degrees are implemented in the lean-configured supply chain to apply pull and lot-sizing decrease principles respectively. To evaluate the benefits of lean approach, lean supply chain is compared with an EOQ-configured supply chain. The simulation results show that Kanban system and setup-time reduction improve inventory stock level. They also show that logistics efforts are affected to lean implementation degree. The paper concludes describing performances of lean supply chain in different contexts.

Keywords : inventory policy, Kanban, lean supply chain, simulation study, supply chain management, planning

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