中国管理科学 2013, Vol. 21 Issue (4) :44-52
论文

基于库存分担策略的装配系统准时供货模型研究

关旭[1], 马士华[2], 应丹丰[2]

1. 武汉大学经济与管理学院, 湖北 武汉 430072;
2. 华中科技大学管理学院, 湖北 武汉 430074

On-time Delivery Model In a ‘N to 1’ Assembly System with Inventory Sharing Policy

GUAN Xu[1], MA Shi-hua[2], YING Dan-feng[2]

1. Economics and Management School, Wuhan University, Wuhan 430072, China;
2. School of Management, Huazhong University of Science and Technology, Wuhan 430072, China

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摘要 本文考虑一个由多供应商和单制造商构成的装配系统。当市场的需求时间无法确定时,制造商通过对供应商设定合理的库存分担策略来降低自身成本,供应商则需要自行决定对制造商的补货时间并承担相应的库存持有成本和延迟惩罚成本。文章同时建立了供应商之间的纳什博弈模型和以制造商为主方的主从博弈模型,以找到供应商的最佳供货时间和制造商最优的库存承担时限。通过对比不同模式下供应链的整体绩效,找到实现供应链协调运作的必要条件,并通过数据分析进一步证明相关结论。

关键词： 装配系统 准时供应 库存承担时限 遍历算法

Abstract： In a assembly system with uncertain demand time, suppliers' uncoordinated deliver times can heavily bring down the manufacturer's and the supply chain's performances. Under such a circumstance, manufacturer has to use some inventory control policies (e.g., VMI) to reduce his inventory cost, while the supplier tries to deliver at the most appropriate time. In this paper, the supplier optimal deliver time and the manufacturer's best inventory holding period in an assemble system with uncertain demand time are studied. To this end, two different models are conducted in N-1 setting: the Nash game among the multi-suppliers, and the Stacklberg game between the manufacturer and the suppliers. The manufacturer's optimal limited inventory holding period under two different conditions is also discussed. One is the manufacturer that sets the same inventory holding period to all the suppliers, and the other is the manufacturer that can choose different inventory holding periods to the different suppliers. The result identifies the suppliers' optimal deliver time and shows that the manufacturer can effectively improve his and the channel's profit by either means. In other words, traditional VMI policy isn't good for neither the manufacturer nor the supply chain. By numerical analysis, the sensitivities of the supplier heterogeneity are identified, and it is shown that the supply chain efficiency increases when the manufacturer is able to choose different inventory holding periods. Moreover, the essential condition for the supply chain coordination is concisely provided.

收稿日期: 2011-08-09;

基金资助:国家自然科学基金重点资助项目(71231007);国家自然科学基金资助项目(71072035,71071050)

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关旭, 马士华, 应丹丰 .基于库存分担策略的装配系统准时供货模型研究[J] 中国管理科学, 2013,V21(4): 44-52

[1] Kwon H D, Lippman S A, McCardle K F, et al. Project management contracts with delayed payments[J]. Manufacturing & Service Operations Management, 2010, 12(4): 692-707.

[2] Shah J,Goh M. Setting operating policies for supply hubs[J]. International Journal of Production Economics, 2006, 100: 239-252.

[3] 马士华,黄焜,何媛媛. 基于Supply-Hub运作模式的供应商协同补货策略研究[J].管理工程学报,2011, 25(1):26-33.

[4] Song Jingsheng,Zipkin P. Supply-chain operations: Assemble-to-order systems[J]. Handbooks in Operations Research and Management Science, 2003,11: 561-596.

[5] Agrawal N, Nahmias S. Rationalization of the supplier base in the presence of yield uncertainty[J]. Production & Operation Management, 1997, 6(3): 291-308.

[6] Song Jingsheng, Yao D D. Performance analysis and optimization of assemble to order with random leadtimes[J]. Operations Research, 2002, 50(5): 889-903

[7] Jiang Li, Wang Yunzeng.Supplier competition in decentralized assembly systems with price-sensitive and uncertain demand[J]. Manufacturing & Service Operations Management, 2010, 12(1): 93-101.

[8] Leng M, Parlar M. Game-theoretic analyses of decentralized assembly supply chains: non-cooperative equilibria vs. coordination with cost-sharing contracts[J]. European Journal of Operational Research, 2010, 204: 96-104.

[9] Gerchak Y, Wang Yunzeng. Revenue-sharing vs. wholesale-price contracts in assembly systems with random demand[J]. Production and Operations Management, 2004, 13(1): 23-33.

[10] Kim E, Lee K, Kang S. Optimal purchasing policy in a two-component assembly system with different purchasing contracts for each component[J]. Mathematical Methods of Operations Research, 2006, 63: 301-327.

[11] Granot D, Yin Shuya. Competition and cooperation in decentralized push and pull assembly systems[J]. Management Science, 2008, 54(4): 733-747.

[12] Iyer A.V, Bergen M E.Quick response in manufacturer-retailer channels[J].Management Science, 1997, 43 (4): 559-570.

[13] Grout J R, Christy D P. A model of incentive contracts for just-in-time delivery[J]. European Journal of Operational Research, 1996, 96: 139-147.

[14] Grout J R. Influencing a supplier using deliverywindows:its effect on the variance of flow times and on-time delivery[J].Decision Sciences, 1998, 29(3), 747-764.

[15] Guirida A L,Nagi R.Cost characterizations of supply chain delivery performance[J].International Journal of Production Economics, 2006, 102, 22-36.

[16] 杨文胜,李莉. 基于Stackelberg模型的准时交货激励契约分析[J]. 系统工程理论与实践, 2006, 3(12): 17-23.

[1] 马士华, 王青青.同步物流系统下准时化生产与配送调度问题研究[J]. 中国管理科学, 2012,20(6): 125-132

[2] 郭佳, 傅科, 陈功玉.可变产能的按订单装配系统库存和生产决策研究 [J]. 中国管理科学, 2012,(3): 94-103