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VMI供应链下考虑补货策略的的契约设计

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On Contracts with Risk Share for VMI Program Under Replenishment Strategy

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摘要 结合 (r, Q) 和 (s, S) 两种库存补货策略,提出了货权属供应商的VMI供应链的契约设计问题。采用风险分担的思想,给出了两种可行的风险分担的契约形式。在离散需求下,通过参数试验的形式,分别研究了两种契约形式对供应链效率的影响。研究表明,两种契约能够使得供应链的效率达到满意,同时对于影响效率的参数有一定的鲁棒性,并且在一定情况下能协调供应链。相比收益分享契约,引入风险分享的契约形式能够使得供应链协作的效率更高。研究结论对VMI契约设计有参考意义。

关键词: 供应商管理库存(VMI) 供应商拥有货权 补货策略 风险共担 契约设计

Abstract: This paper deals with the problem of contracts designing for supply chain under VMI (Vendor Managed Inventory) program. Inventory replenishing policies are also taken into consideration. A single supplier and single retailer module are considered under "vendor with owner ship" and discrete demand. Based on risk sharing, 2 contract forms are proposed: Design1: Supplier pays fix amount fee to retailer as the lost sales compensation, while retailer shares the occurred holding cost of supplier. Design2: Retailer pays fix amount fee to supplier and supplier bears the occurred lost sale penalty while retailer shares the occurred holding cost of supplier. Based on Zheng and Federgruen's (r, Q) and (s, S) model, the 2 contracts' performances are studied under the 2 inventory replenishing policies. The result indicates that the efficiency of supply chain under the 2 contracts is satisfactory. And with proper contract parameters' designing, supply chain coordination is also possible. Meanwhile, the result is compared with revenue share contract, which shows that contracts with risk share can achieve higher supply chain efficiency. The later simulation proofs our result. The study shows that one contract performs differently under different supply chain environment; the inventory replenishing policy has impact on contracts performance. It is found that under certain circumstance, supply chain can benefit from sharing risk rather than sharing revenue.

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