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## 合同订购与现货市场混合交易下的双渠道供应链优化决策

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## Optimal Decision of Dual Source Supply Chain Combining Contract Ordering and Spot Market

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- 摘要
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**摘要** 为了更好地匹配需求与供应, 提高企业收益和服务水平, 本文研究了合同订购与现货市场交易结合下的双渠道供应链优化决策问题。首先分析了单纯批发价合同订购模式下的决策, 进一步考虑现货市场单向交易及双向交易的情形, 将供应链回购合同与数量柔性合同引入单向现货市场, 建立了这两类合同订购分别与现货市场补货、现货市场卖货相结合的订购模型, 以及批发价合同订购与现货市场买卖双向交易联合的决策模型。分析了不同模式下回购价格、缺货成本、补货成本、现货价格、现货价格波动及风险偏好对订购决策的影响, 并通过算例仿真, 分析了各类现货市场的使用对销售商收益的影响。结果表明, 合同订购与双向现货市场结合可以充分利用现货市场即时交易的优势, 提高供应链效益; 而合同订购与单向现货市场结合, 虽然可以通过合同提高供货水平, 降低库存积压风险, 但该情形需要考虑供应商的回购或补货价格, 销售商仍有一定风险。不论单向或双向现货市场与合同订购的联合, 均可使供应链的利润优于单纯合同订购的情形。

**关键词:** 供应合同 现货市场 混合双渠道 优化订购决策

**Abstract:** To better match the demand with supply and improve enterprise's profit as well as service level, optimal decisions based on combination of contract order and spot market under double channel supply chain situations are discussed. Firstly, pure wholesale contract for the optimal order quantity is analyzed. Based on that, by consideration of one-way and two-way trading patterns, buyback contract and quantity flexibility contract are introduced into one-way spot market and three order models are designed, which are order model combining buyback contract with replenishment of the spot market, order model combining quantity flexibility contract with spot market selling pattern and order model combining wholesale price contract with two-way trading patterns of spot market. As for these models, some parameters on affects of supply chain performance are analyzed, such as buyback price, cost of out of stock, replenishment costs, spot price and its volatility and risk preference for vendors. Finally, through the numerical simulation, impact of different spot markets on vendor revenue is analyzed. It is proved that combination of contract order and two-way spot market enables to take advantage of real-time trading of spot market and improve the supply chain profit. Combination of contract order and one-way spot market although enables to improve supply service level and reduce inventory risk. However, buyback price and replenishment price need to be considered, causing certain amount of risk. Combination of one-way or two-way spot market and contract order can make more revenue than just contract order.

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