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Cost-Optimized Extra-Lateral Transshipments

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Abstract : Ever increasing demand for cost efficiency and customer satisfaction through reliable delivery have been a mandate for logistics practitioners to continually improve inventory management processes. With the cost optimization objectives, this study considers an extended scenario where sourcing from the same echelon of the supply chain, known as lateral transshipment which is instantaneous but more expensive than purchasing from regular suppliers, is considered by warehouses not only to re-actively fulfill the urgent outstanding retailer demand that could not be fulfilled by stock on hand but also for preventively reduce back-order cost. Such extra lateral trans-shipments as preventive responses are intended to meet the expected demand during the supplier lead time in a periodic review ordering policy setting. We develop decision rules to assist logistics practitioners to make cost optimized selection between back-ordering and combined reactive and proactive lateral transshipment options. A method for determining the optimal quantity of extra lateral transshipment is developed considering the trade-off between purchasing, holding and backorder cost components.

Keywords : lateral transshipment, warehouse inventory management, cost optimization, preventive transshipment
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