

# **On the Impact of Cargo Capacity and Cost on Shipment Consolidation**

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## **Abstract**

In this paper, we examine a periodic-review shipment scheduling problem where a shipment consolidation depot is responsible for delivering orders to multiple retailers (customers) located in close proximity to each other. We explicitly consider the stochastic dynamic nature of the demand. We also account for the fact that orders placed by retailers at different times may be combined into a single, large shipment at the consolidation depot, and, hence, the dispatch quantity in each period is determined based on the consolidated load observed at the end of that period. We formulate the problem at hand via a stochastic dynamic programming approach and investigate the impact of cargo capacity and cost. We investigate both single- and multi-truck dispatch scenarios and analyze the structural properties of optimal shipment scheduling policies.