

# **Production And Shipment Lot Sizing In A Vendor-Buyer Supply Chain With Transportation Cost**

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## **Summary**

Previous research on the joint vendor-buyer problem focused on the production shipment schedule in terms of the number and size of batches transferred between the two parties. It is a fact that transportation cost is a major part of the total operational cost. However, in most joint vendor-buyer models, the transportation cost is only considered implicitly as a part of fixed setup or ordering cost and thus is assumed to be independent of the size of the shipment. As such, the effect of the transportation cost is not adequately reflected in final planning decisions. There is a need for models involving transportation cost explicitly for better decision-making. In this study we analyze the vendor-buyer lot-sizing problem under equal-size shipment policy. We introduce the complete solution of the problem in an explicit and extended manner that has not existed in the literature. We incorporate transportation cost explicitly into the model and develop optimal solution procedures for solving the integrated models. All-unit-discount transportation cost structures with and without over declaration have been considered. Numerical examples are presented for illustrative purpose. (c) 2006 Elsevier B.V. All rights reserved.

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