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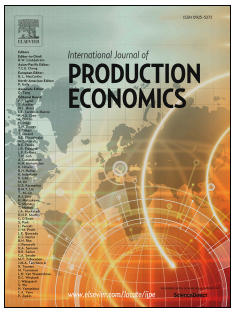

Coordination of a production network with a single buyer and multiple vendors with geometrically increasing batch shipments

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Coordination of a production network with a single buyer and multiple vendors with geometrically increasing batch shipments

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Abstract

This paper considers the joint economic lot size model for the special case where multiple vendors supply a single product to a single buyer. The production lots of each vendor are transferred to the buyer in batches increasing in size according to a fixed factor, where the size of the batches may differ from vendor to vendor. To coordinate the production cycles of the vendors and the consumption cycle of the buyer, we use two different shipment policies, namely one policy where batches are shipped to the buyer directly after their completion, and one policy where shipments are made whenever the inventory at the buyer reaches zero. Mathematical models are proposed for each policy, and solution procedures are suggested. Subsequently, the performance of the policies is evaluated in a numerical experiment, and both policies are compared to the situation where batches of equal sizes are shipped from the vendors to the buyer. The paper concludes with suggestions for further research.

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