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Consignment and vendor managed inventory in single-vendor multiple buyers supply chains

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Abstract

In this paper we model a consignment (CS) and vendor-managed inventory (VMI) policy for a single vendor and multiple buyers supply chain with known demand. We study three vendor-buyers partnerships: (i) the vendor and the buyers act independently, (ii) the vendor enters in a vendor-managed inventory consignment (VMI&CS) partnership with the buyers and (iii) the vendor and the buyer belong to a vertically integrated firm where a single decision maker decides about the ordering policies. We use relationships (i) and (ii) to study the benefits of the VMI&CS agreement. We provide analytical and numerical results. We find that such an agreement is more beneficial when the vendor has a flexible capacity. It is also more attractive to buyers when they have significant order costs and the vendor's setup cost is not large. Finally we find that under VMI&CS the vendor will tend to make more frequent shipments with smaller lots.

Keywords:

- inventory management
- consignment
- vendor managed inventory
- supply chain

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