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Vendor–buyer inventory models with trade credit financing under both non-cooperative and integrated environments

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Abstract

Most researchers studied vendor–buyer supply chain inventory policies only from the perspective of an integrated model, which provides us the best cooperative solution. However, in reality, not many vendors and buyers are wholly integrated. Hence, it is necessary to study the optimal policies not only under an integrated environment but also under a non-cooperative environment. In this article, we develop a supply chain vendor–buyer inventory model with trade credit financing linked to order quantity. We then study the optimal policies for both the vendor and the buyer under a non-cooperative environment first, and then under a cooperative integrated situation. Further, we provide some numerical examples to illustrate the theoretical results, compare the differences between these two distinct solutions, and obtain some managerial insights. For example, in a cooperative environment, to reduce the total

cost for both parties, the vendor should either provide a simple permissible delay without order quantity restriction or offer a long permissible delay linked order quantity. By contrast, in a non-cooperative environment, the vendor should provide a short permissible delay to reduce its total cost.

Keywords:

inventory | trade credits | non-cooperative solution | cooperative solution | permissible delay in payments

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