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An Integrated Inventory Model with Default Risk under Two Stage Trade Credit Financing

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Abstract

This study presents a stylized model to determine optimal ordering, delivery and payment decisions for the integrated supplier-retailer inventory model. The model assumes that both the supplier and retailer have adopted a trade credit strategy. This paper examines the policy of granting permissible delays, which increases retailer's cost and default risk. We assume that market demand for the product and the default risk increase with the customer's credit period, N. By analyzing the total channel profit function, we develop an algorithm that determines the optimal length of the downstream trade credit period, the optimal cycle length for the retailer, and the numbers of shipments per production run from the supplier to the retailer. Numerical examples are provided to illustrate the practical usage of the proposed method.

Keywords: Supply chain, production, trade credit, credit period-link demand, default risk.