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A production-inventory model for a two-echelon supply chain when demand is dependent on sales teams' initiatives

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Abstract:

This paper investigates the issue of channel coordination for a two echelon supply chain consisting of one manufacturer and one retailer. In this supply chain, the demand is sensitive to promotional efforts/sales teams' initiatives. A production-inventory model is developed that considers the procurement cost per unit as a function of the production rate. To resolve the issues of channel coordination and promotion-based demand, a variety of centralized coordinating systems are explored. An analytical method is employed to achieve optimal production rate, production lot size, backlogging and the initiatives of sales teams so that the profits of both manufacturer and retailer are maximized. Some numerical examples are solved in order to better understand the proposed production-inventory model. The results of a sensitivity analysis are also provided. Finally, some conclusions and future researches are included.

Key words: Inventory; production; supply chain; collaboration; backlogging.

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