

## Optimal Policies in a Two-Level Supply Chain with Defective Product and Price Dependent Demand

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**Abstract :** This paper deals with a two-level supply chain consisted of one manufacturer and one retailer for single-type product. The demand function of the customers depends on price. We consider an integrated production inventory system where the manufacturer processes raw materials in order to deliver finished product with imperfect quality to the retailer. Then retailer inspects the products and after that delivers perfect products to customers. The proposed model is based on the joint total profit of both the manufacturer and the retailer, and it determines the optimal ordering lot-size, number of shipment and selling price of the retailer. A numerical example is provided to analyse and illustrate the behaviour and application of the model. Finally, sensitivity analysis of the key parameters are presented to test feasibility of the model.

**Keywords :** supply chain, pricing policy, defective quality, joint economic lot sizing

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