Non-cooperative and cooperative vendor-buyer inventory models with defective items and backlogging

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Abstract

In most inventory models, vendor/buyer optimality has been discussed independently. However, this type of one-sided optimality is not suitable in today's global markets. In addition, as a result of poor quality materials, carelessness of workers, poor performance of machines, and perhaps in combination with imperfect production processes, an arrival lot often contains defective items. Consequently, this paper investigates vendor-buyer inventory policy for flawed items in a buyer's arrival order lot with backlogging. First, we derive inventory models based upon non-cooperative and cooperative strategy in which the order quantity, backorder quantity and the number of shipments from vendor to buyer are decision variables. Second, algorithms are developed to obtain the optimal production and inventory policy. Finally, several numerical examples are given to illustrate the theoretical results.

Keywords: inventory, defective, shortage, Stackelberg, Pareto