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Single-supplier single-manufacturer multi-retailer consignment policy for retailers' generalized demand distributions

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Abstract

Most existing publications regarding the supply chain (SC) have concentrated on two-tier models that include the vendor and the buyer. In reality, SC systems are more multifaceted and consist of at least three parties: supplier, manufacturer, and retailer. This study presents a manufacturer managed consignment policy (CP) model for a three-tier supply chain involving a single supplier, a single manufacturer, and multiple retailers. We also present a traditional policy (TP) model considering similar circumstances for a comparative study. In these models, we consider that retailers' demands are random variables following generic probability density functions. The manufacturer collects raw materials from the supplier to produce finished goods, and then delivers the finished items to the retailers depending upon the retailers' demand. These are profit maximizing models. We present techniques for solving these problems. We demonstrate the potential significance of the proposed models using comparative studies based on three numerical example

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