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Two-warehouse partial backlogging inventory model with ramp type demand rate, three-parameter Weibull distribution deterioration under inflation and permissible delay in payments

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Abstract:

Decay or deterioration of physical goods while in stock is a natural phenomenon in many inventory systems. The three-parameter Weibull distribution is an excellent generalization of exponential decay, which can be used for items with any initial value of the rate of deterioration and for items which starts deteriorating only after a certain period of time. To reduce the amount of deterioration and the limited storage facility in own warehouse (OW) the retailer's is moving their excess items to store in a rented warehouse (RW). Generally it is seen that for any new brand of consumer goods coming to the market, the demand rate increases with time up to a certain period and then ultimately stabilize and becomes constant. This kind of stabilization has been termed as 'ramp-type' demand rate. So, in this paper, we have developed two warehouse inventory models with ramp type demand rate and three-parameter Weibull distribution deterioration (ThPWD) under inflationary conditions, where permissible delay in payment is available for retailer if outstanding amount is compensated within the given credit period. Since, not all customers are willing to wait for backlogged during the shortage period, in this investigation shortages are also allowed and partially backlogged. The purpose of this study is not only to find retailer's optimal replenishment

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