World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:9, No:06, 2015

Designing Inventory System with Constrained by Reducing Ordering Cost, Lead Time and Lost Sale Rate and Considering Random Disturbance in Ordering Quantity

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Abstract : In the business environment it is very common that a lot received may not be equal to quantity ordered. in this work, a random disturbance in a received quantity is considered. It is assumed a maximum allowable limit for storage space and inventory investment.The impact of lead time and ordering cost reductions once they act dependently is also investigated. Further, considering a mixture of back order and lost sales for allowable shortage system, the effect of investment on reducing lost sale rate is analyzed. For the proposed control system, a Lagrangian method is applied in order to solve the problem and an algorithmic procedure is utilized to achieve optimal solution with the global minimum expected cost. Finally, proves on concavity and convexity of the model in the decision variables are shown.

Keywords : stochastic inventory system, lead time, ordering cost, lost sale rate, inventory constraints, random disturbance
Conference Title : ICMMNO 2015 : International Conference on Mathematical Modelling and Numerical Optimisation
Conference Location : Copenhagen, Denmark
Conference Dates : June 11-12, 2015