

AN EOQ INVENTORY MODEL FOR WEIBULL DISTRIBUTED DETERIORATING ITEMS WITH POWER DEMAND PATTERN AND SHORTAGES

S. P. Singh and V. K. Sehgal

Abstract

In this paper, an EOQ model is developed for Weibull deteriorating items with power demand pattern in which shortages are allowed and completely backlogged. In this model, we have considered Weibull two-parameter deterioration and power demand pattern. Finally, a numerical example has been studied along with its sensitivity.

Keywords and phrases: EOQ model, power demand, Weibull distribution, shortages, deterioration.

Received May 21, 2011

References

- [1] P. M. Ghare and G. F. Schrader, A model for exponentially decaying inventories, *J. Ind. Eng.* 14 (1963), 238-243.
- [2] R. P. Covert and G. C. Philip, An EOQ model for items with Weibull distribution deterioration, *AIIE Trans.* 5 (1973), 323-326.
- [3] V. P. Goel and S. P. Aggarwal, Order level inventory system with power demand pattern for deteriorating items, *Proceedings of all India Seminar on Operational Research and Decision Making, University of Delhi, Delhi-110007, 1981.*
- [4] S. P. Aggarwal, A note on an order – level inventory model for a system with constant rate of deterioration, *Opsearch* 15 (1978), 184-187.
- [5] A. C. Cohen, The reflected Weibull distribution, *Tecnometrics* 15 (1973), 867-873.
- [6] W. A. Donaldson, Inventory replenishment policy for a linear trend in demand – An analytical solution, *Oper. Res. Quart.* 28 (1977), 663-670.
- [7] E. A. Silver, A simple inventory replenishment decision rule for a linear trend in demand, *J. Oper. Res. Soc.* 30 (1979), 71-75.
- [8] E. Ritchie, The EOQ for linear increasing demand, A simple optimal solution, *J. Oper. Res. Soc.* 35 (1984), 949-952.

- [9] S. K. Ghosh and K. S. Chaudhari, An order-level inventory model for a deteriorating item with Weibull distribution deterioration, time-quadratic demand and shortages, *Adv. Model. Optim.* 6(1) (2004), 21-35.
- [10] T. K. Datta and A. K. Pal, Order level inventory system with power demand pattern for items with variable rate of deterioration, *Indian J. Pure Appl. Math.* 19(11) (1988), 1043-1053.
- [11] M. Deb and K. S. Chaudhari, An EOQ model for items with finite rate of production and variable rate of deterioration, *Opsearch* 23 (1986), 175-181.
- [12] A. K. Pal and B. Mandal, An EOQ model for deteriorating inventory with alternating demand rates, *Korean J. Comput. Appl. Math.* 4(2) (1997), 397-407.
- [13] R. B. Misra, Optimum production lot size model for a system with deteriorating inventory, *Internat. J. Product. Res.* 13 (1975), 495-505.
- [14] U. Dave and U. K. Patel, (t, s_i) policy inventory model for deteriorating items with time proportional demand, *J. Oper. Res. Soc.* 32 (1981), 137-142.
- [15] Y. K. Shah and M. C. Jaiswal, An order level inventory model for a system with constant rate of deterioration, *Opsearch* 14 (1977), 174-184.
- [16] A. K. Jalan, R. R. Giri and K. S. Chaudhuri, EOQ model for items Weibull distribution deterioration, shortages and trended demand, *Internat. J. Syst. Sci.* 27 (1996), 851-855.
- [17] S. C. Giri and S. K. Goyal, Recent trends in modelling of deteriorating inventory, *Eur. J. Oper. Res.* 134 (2001), 1-16.