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General Analysis of (s, S) Inventory System Exposed to Calamities

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Abstract

This paper is devoted to the analysis of an (s, S) inventory system having two different types of demands, namely unit demand and bulk demand. The bulk demand for the entire on-hand inventory occurs due to some natural calamity. The lead times and intervals of time between successive demands are i.i.d. random variables. In the first part of the paper, this model is treated under Markovian environment and steady state probability vector of inventory levels is obtained using NEUTS' matrix method. Numerical results are also presented. In the second part, inventory level probabilities are presented using renewal and convolution techniques assuming all the random variables follow general distributions.

Keywords: Inventory System, Markovian Environment, NEUTS' Matrix Method.