

Perishable Inventory Theory and Its Applications to Blood Bank Management

Abstract

The existence of optimal ordering policies for the perishable product has been demonstrated by Fries and Nahmias and Pierskalla. Unfortunately, computation of the optimal order function is difficult due to the large state spaces needed to describe the process. Consequently, the existing theory has limited utility because it is difficult to understand and virtually impossible to implement, especially in the context of a blood bank inventory. This paper examines a class of simple decision rule ordering policies which eliminate the objections noted above. Application of this theory and further results on issuing and inventory return policies is then made to the blood bank situation. Stability of the optimal policies under certain parametric changes is examined and a decision rule for the computation of the optimal order quantity is estimated. In addition, information and data processing requirements are discussed.