

Simulating Economic Order Quantity and Reorder Point Policy for a Repairable Items Inventory System

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Abstract : Repairable items inventory system is a management tool used to incorporate all information concerning inventory levels and movements for repaired and new items. This paper presents development of an effective simulation model for managing the inventory of repairable items for a production system where production lines send their faulty items to a repair shop considering the stochastic failure behavior and repair times. The developed model imitates the process of handling the on-hand inventory of repaired items and the replenishment of the inventory of new items using Economic Order Quantity and Reorder Point ordering policy in a flexible and risk-free environment. We demonstrate the appropriateness and effectiveness of the proposed simulation model using an illustrative case problem. The developed simulation model can be used as a reliable tool for estimating a healthy on-hand inventory of new and repaired items, backordered items, and downtime due to unavailability of repaired items, and validating and examining Economic Order Quantity and Reorder Point ordering policy, which would further be compared with other ordering strategies as future work.

Keywords : inventory system, repairable items, simulation, maintenance, economic order quantity, reorder point

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