On a finite production model with random defective rate and shortages allowed and backordered

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Abstract

Chiu and Chiu (2003) studied the problem of random defective rate on the *Economic Production Quantity* (EPQ) model with backorder permitted. They considered a random defective rate and all defective items assumed not repaired. In this note, we will offer a simple algebraic approach to replace his differential calculus skill to find the optimal production lot size and optimal maximal backorder level allowed under the expected annual cost minimized.

Keywords and phrases : *Scrap item, imperfect quality, production quantity, lot sizing, inventory, algebraic method.*

1. Introduction

One of the important manufacturing strategy to most manufacturing firms, is to be the low cost producer. That is, a firm must be able to effectively utilize its resources and minimize overall production costs. The *Economic Production Quantity* (EPQ) model is often employed practically in determining production lot size that minimizes total inventory costs. The EPQ can be considered an extension to the well-known *Economic Order Quantity* (EOQ) model, when items are produced internally instead of are

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