Effect of repair cost on the rework decision-making in an economic production quantity model

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Abstract

This paper studies effects of repair cost on the rework decision-making in an imperfect quality *Economic Production Quantity* (EPQ) model. The optimal lot sizes and the expected annual inventory costs for the cases of EPQ model with a rework process and without any reworking of defective items are compared and analyzed. With straightforward numerical derivations, this note proposes a set of mathematical equations to assist in determining on whether it is beneficial or not to rework. Sensitivity analysis and numerical example are provided to demonstrate their practical usages.

Keywords : *Manufacturing, production, rework-or-scrap, EPQ, defective rate.*

1. Introduction

The *Economic Order Quantity* (EOQ) model was first introduced several decades ago, it balances the inventory holding and setup costs and derives an optimal order quantity that minimizes total inventory costs. Regardless of its simplicity, the EOQ model is still applied industry-wide today [1, 10, 11, 13]. In the manufacturing sector, when items are produced internally instead of being obtained from an outside supplier,

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