

## Optimal lot sizing in manufacturing revisited

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### Abstract

The lot sizing problem with non-instantaneous delivery and continuous consumption of manufactured items has been extensively investigated incorporating various non-manufacturing related cost and lot size variables. When the production cost per unit and the time per unit are functions of controllable manufacturing process variables, the selection of process variables impacts on the total stocking cost and the Economic Lot Size (EOQ). The EOQ in this context does not necessarily correspond to what may result if minimum production cost parameters are used. Furthermore, other constraints like maximum in-process inventory allowed, range of production rate allowed etc requires non-linear optimization techniques to solve the EOQ problem. This paper discusses these issues.

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*Keywords : Inventory control, optimization, machining economics.*

### Introduction

The traditional approach to finding the optimal lot size is based on balancing the annual carrying cost and annual setup cost. When quantity discounts are present, then the acquisition cost of the item is also taken into account in determining the economic order quantity when purchasing or the economic lot size when manufacturing. A comprehensive survey of research in this area has been given by Elmaghraby [4]. Karmakar [5] has proposed a solution to the batching problem by incorporating lead time in lot sizing. Ramaswamy and Lambert [7] treated processing cost

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