

行政院國家科學委員會專題研究計劃成果報告

考慮生產率依賴於需求和存貨水準的生產存貨模式 A Production Inventory Model Which Considers the Dependence of Production Rate on Demand and Inventory Level

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一、中文摘要

本計劃在探討退化性的產品，當需求率被假設為遞減指數而其生產率在任一瞬間均依賴於需求和存貨水準的生產存貨模式，缺貨和超出的需求積存是被允許的。因此，數學模式的生產排程期間、最大存貨量、缺貨量和總平均成本能被推導出。本計劃也簡要的討論模式的特例，並以實例驗證所發展之理論，最後改變基本參數的值來探討其解的敏感性。

Special cases of the model are discussed. In addition, a numerical example is illustrated to show how the theory works. Finally, the sensitivity of these solutions to changes in underlying parameter values is also discussed.

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二、英文摘要

This project presents a production inventory model for deteriorating products in which the production rate at any instant depends on the demand and the inventory level. While the demand rate is assumed to decrease exponentially, shortages are allowed and excess demand is backlogged as well. Approximate expressions are obtained for the production scheduling period, maximum inventory level, unfilled order backlog and the total average cost.