







Q



International Journal of Systems Science >

Figures & data

Volume 45, 2014 - Issue 12

347 11 0 Altmetric
Original Articles

Supply chain coordination with defective items and quantity discount

Hsien-Jen Lin & Yu-Jen Lin ≥

Pages 2529-2538 | Received 13 Feb 2012, Accepted 08 Sep 2012, Published online: 26 Feb 2013







Read this article



Abstract

Full Article

This study develops an integrated inventory system involving defective items and quantity discount for optimal pricing and ordering strategies. The model analysed in this study is one in which the buyer orders a quantity, the vendor produces more than buyer's order quantity in order to reduce set-up cost, and then he/she offers an all-units quantity discount to the buyer. Our objective is to determine the optimal order quantity, retail price, mark-up rate, and the number of shipments per production run from the vendor to the buyer, so that the entire supply chain joint total profit incurred has a maximum value. Furthermore, an algorithm of finding the optimal solution is developed. Numerical examples are provided to illustrate the theoretical results.

Keywords:

integrated inventory system

quantity discount

mark-up rate

defective items

Acknowledgements

The authors are grateful to the editor (Peter Fleming), the associate editor, and the anonymous referees for their valuable comments and suggestions.

Additional information

Notes on contributors



Hsien-Jen Lin

Hsien-Jen Lin is Associate Professor of Applied Mathematics at Aletheia University in Taiwan. He received his MS in Applied Mathematics from Michigan State University, USA, and his PhD in Mathematics from National Central University in Taiwan. His current research interests are in the field of production/inventory control, mathematical finance, stochastic model, probability, and statistics. His research has appeared in journals such as Applied Mathematical Modelling, Mathematical Problems in Engineering, Stochastic Analysis and Applications, Statistics & Probability Letters, Journal of the Korean Statistical Society (An Official Journal of the Korean Statistical Society), Journal of the Chinese Statistical Association, International Journal of Systems Science, International Journal of Information and Management Sciences, Yugoslav Journal of Operations Research, Far East Journal of Mathematical Sciences, International journal of pure and applied mathematics. He is Managing Editor for Tamsui Oxford Journal of Information and Mathematical Sciences.



Display full size



Yu-Jen Lin

Yu-Jen Lin is a Professor in the Department of Industrial Engineering and Management at St. John's University in Taiwan. He earned his BS in Mathematics, MS in Mathematics, and PhD in Management Sciences from Tamkang University. His research interests are in the field of Production/Inventory Control. He has publications in Journal of the International Journal of Production Economics, Computers and Industrial Engineering, Applied Mathematics and Computation, TOP An Official Journal of the Spanish Society of Statistics and Operations Research, International Journal of Systems Science, 4OR - A Quarterly Journal of Operations Research, OR Spectrum, International Journal of Information and Management Sciences, Journal of the Chinese Institute of Industrial Engineers, Yugoslav Journal of Operations Research, Journal of Statistics & Management Systems.



Related Research Data

An optimization approach for supply chain management models with quantity discount policy

Source: European Journal of Operational Research

Modeling quantity discounts under general price-sensitive demand functions: Optimal

policies and relationships

Source: European Journal of Operational Research

Economic Production Cycles with Imperfect Production Processes

Source: IIE Transactions

Effective investment to reduce lost-sales rate in a periodic review inventory model

Source: OR Spectrum

Discount pricing decisions in distribution channels with price-sensitive demand

Source: European Journal of Operational Research

Channel coordination and volume discounts with price-sensitive demand

Source: International Journal of Production Economics

Integrated vendor-buyer cooperative models with stochastic demand in controllable

Related research 1



People also read

Recommended articles

Cited by

Information for

Authors

R&D professionals

Editors

Librarians

Societies

Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

Help and information

Help and contact

Newsroom

All journals

Books

Keep up to date

Register to receive personalised research and resources by email



Sign me up













Copyright © 2025 Informa UK Limited Privacy policy Cookies Terms & conditions Taylor and Francis Group

Accessibility