



Operations Research

Publication details, including instructions for authors and subscription information:
<http://pubsonline.informs.org>

The Analyst's Bookshelf

To cite this article:

(1968) The Analyst's Bookshelf. Operations Research 16(3):699-701. <https://doi.org/10.1287/opre.16.3.699>

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Reviews

ELIEZER NADDOR, *Inventory Systems*, John Wiley and Sons, New York, N. Y., 1966, 355 pages, \$11.50

ACCORDING to the description given on the dust jacket, this text is intended as a high-level text and reference work. It is divided into four parts and seventeen chapters.

Part I, consisting of the first two chapters, introduces the definitions and terminology to be used and discusses some of the general characteristics of inventory systems. It is essential to read these to understand the remainder of the text, since the terminology used by the author is not always the same as that in general use.

Part II, consisting of Chapters 3 through 7, is devoted to deterministic inventory systems and includes a discussion of a number of variants of the standard deterministic lot-size model.

In Part III, which consists of Chapters 8 through 12, the treatment turns to probabilistic models. Chapters 8 through 11 deal with periodic review models in which the inventory level is brought up to a given value at the beginning of each period. An important topic that has received little attention in inventory theory is the integration of demand forecasting into the inventory models themselves; Chapter 12 attempts to do this in one very simple case where a moving average forecast is used. Not too much of general interest is done, however, because of the apparent complexity of the problem.

Part IV continues the discussion of periodic review inventory models. Chapters 13 and 14 deal with the case where, if at a review time the inventory level is less than or equal to r , a large enough multiple of a quantity Q is ordered to bring the inventory level of x into the interval $r < x \leq R$. Chapters 15 and 16 deal with some elementary cases of periodic review systems having the characteristic that if the inventory level is less than or equal to r at a review time, the level is brought up to R . The final chapter compares the various policies for periodic review systems by analytical and numerical methods. No mention is made, however, of the work done by others in this area—for example, the extensive numerical comparisons done by WAGNER, ET AL.

A most unusual feature of this text is that the treatment of probabilistic inventory models covers only periodic review models. No discussion of any probabilistic continuous-review models is given—not even a discussion of the simplest lot-size reorder-point model. The reason for this seems to stem in part from the author's apparent desire to avoid probability functions that describe the demand in a period of length t for arbitrary values of t . Only the probability functions representing the demand in a period of given length are normally used. This also causes the author to use some rather peculiar methods to compute time averages, since time does not appear in the probability functions. However, the author does not completely exclude time, since on several occasions he considers the problem of

determining the optimal length of a period. In principle, of course, the rR systems include the lot-size reorder-point systems when the length of a period is made a variable. This, however, is not a case considered by the author, and even if it were, it would seem to be an unnecessarily complicated way to introduce simple lot-size reorder-point systems.

The procedure that is always followed in the text is that of determining the optimal values of the parameters that appear in some prespecified operating doctrine. No attempt is made to determine the optimal operating doctrine for a given system, or to point out the conditions under which a given doctrine will be optimal. For example, no discussion is given of SCARF's work on K -convexity.

Another surprising feature of the text is the complete absence of any discussion of dynamic inventory models and dynamic programming. Not even the simple and fundamental WAGNER-WHITIN deterministic dynamic lot-size model is covered. Some other topics that seem to be omitted include any discussion of stochastic lead times, of multidepot or multi-echelon models, or of the entire area of practical applications and problems of implementation.

On the whole, the mathematical level of the text is fairly elementary, and thus would make the text suitable for introductory courses in inventory theory. Although the dust jacket suggests that it is intended as a high-level text, it probably would not appeal to readers who were highly sophisticated mathematically. A fair number of problems is included at the end of each chapter. These, as is desirable, span a wide range in terms of difficulty.

GEORGE HADLEY

**DAVID SOLOMONS, *Divisional Performance: Measurement and Control*,
Financial Executives Research Foundation, Inc., 50 West 44th
Street, New York, N. Y., 10036, 1965, 319 pages, \$12.50**

THIS BOOK is aimed primarily at practicing executives rather than operations-research practitioners or theorists. Nevertheless, it deals with a set of problems of interest to all. How should a divisionalized business be organized? What are the pros and cons of centralization?

The various sections deal with divisional accounting, profit as a measure of divisional performance, return on investment, residual income, measures of performance, budgetary control of divisional operations, and nonprofit measures of performance. A useful bibliography is supplied.

The book is competent, and provides a valuable checklist both to the theorist and practitioner—yet it may be somewhat of a disappointment to both of them. The author indicates that he has done a careful job of checking the literature and studying the problems. However, in his attempt to address the executive audience he fails to present the various problems in decentralization, internal accounting, pricing, management, and incentive design in the clear and analytical manner of a good operations-research study. On the other hand, the examples may be even too institution-free for many executives. Decentralization involves deep general

principles and detailed institutional applications. It is very hard to write a book doing justice to both.

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Books Received

- RUSSELL L. ACKOFF AND MAURICE W. SASIENI, *Fundamentals of Operations Research*, John Wiley & Sons, New York, N. Y., 1968, 467 pages, \$10.50.
- DAVID J. BARTHOLOMEW, *Stochastic Models for Social Processes*, John Wiley & Sons, Inc., New York, N. Y., 1967, 287 pages, \$9.50.
- FRANK M. BASS, CHARLES W. KING, AND EDGAR A. PESSEMIER, editors, *Applications of the Sciences in Marketing Management*, John Wiley & Sons, New York, N. Y., 1968, 472 pages, \$11.50. Sixteen commissioned papers presented at a symposium on 11–15 July 1966 at the Herman C. Krannert Graduate School of Industrial Administration at Purdue University.
- PETR BECKMANN, *Introduction to Elementary Queuing Theory and Telephone Traffic*, The Golem Press, Box 1342, Boulder, Colorado 80302, 1968, 144 pages, \$4.25 or \$3.00 (paper).
- GEORGE J. BRABB, *Introduction to Quantitative Management*, Holt, Rinehart and Winston, New York, N. Y., 1968, 592 pages, \$12.50.
- H. BÜHLMANN, H. LOEFFEL, AND E. NIEVERGELT, *Einführung in die Theorie und Praxis der Entscheidung bei Unsicherheit*, Springer-Verlag, Berlin, West Germany, 1967, 129 pages, \$3.00.
- M. G. BULMER, *Principles of Statistics, Second Edition*, The MIT Press, Cambridge, Mass., 1967, 260 pages, \$7.50.
- CAMBRIDGE CONSULTANTS (TRAINING) LIMITED, *A Programmed Introduction to Critical Path Methods*, Pergamon Press Ltd., Headington Hill Hall, Oxford, England, 1967, 66 pages, 15 shillings.
- ROGER P. DENNEY, JR., editor, *Innovation and Enterprise: Proceedings of the 18th Annual AIIE Conference (1967)*, American Institute of Industrial Engineers, 345 East 47th Street, New York, N. Y., 10017, 1967, 335 pages, \$11.75.
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- D. W. DUKE-WILLIAMS, *Improved Technical Training by HATRA*, Pergamon Press Ltd., Headington Hill Hall, Oxford, England, 1967, 38 pages, 10 shillings. HATRA is the acronym for the Hosiery and Allied Trades Research Association.
- P. ERDÖS AND G. KATONA, *Theory of Graphs*, Academic Press, New York, N. Y., 1968, 370 pages, \$11.00. Proceedings of a colloquium held 5–9 September 1966 at Tihany, Hungary; there were 35 papers.
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