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İzzet Şahin

Regenerative Inventory Systems

Operating Characteristics
and Optimization



Springer Science+Business Media, LLC

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Library of Congress Cataloging-in-Publication Data
Şahin, İzzet,
Regenerative inventory systems: operating characteristics / by İzzet Şahin.
p. cm.
Includes bibliographical references.
ISBN 978-1-4757-4256-5 ISBN 978-1-4757-4254-1 (eBook)
DOI 10.1007/978-1-4757-4254-1
1. Inventory control. 2. Renewal theory. I. Title.
TS160.S24 1989
658.7'87--dc20 89-21838

©1990 by Springer Science+Business Media New York
Originally published by Springer-Verlag New York, Inc. in 1990
Softcover reprint of the hardcover 1st edition 1990
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9 8 7 6 5 4 3 2 1
ISBN 978-1-4757-4256-5

To Murat and Tolga

Preface

This is a renewal-theoretic analysis of a class of single-item (s, S) inventory systems. Included, in a unified exposition, are both continuous and periodic review systems under fairly general random demand processes. The monograph is complete in the sense that it starts from the derivation of the time dependent and stationary distributions of basic stochastic processes related to these systems and concludes with the construction and testing of simple, distribution-free approximations for optimal control policies. However, it is rather incomplete as an account of single-item inventory systems in that it narrowly focuses on systems with full backlogging of unfilled demand and constant lead times, through what has come to be known as stationary analysis.

The level is intermediate, and the style is informal. Some prior knowledge of probability theory and inventory control is assumed on the part of the reader. Given these, the monograph is self-contained. Extensive use is made of renewal-theoretic concepts and results; these are reviewed in Chapter 2.

The text relies heavily on my previously published work on the subject. Over the years, this research has been supported by the Sci-

entific and Technical Research Council of Turkey, National Research Council of Canada (1978-79, A3074), Management Research Center of the University of Wisconsin- Milwaukee, and the National Science Foundation (ECS-8011916). I am grateful to Dr. Diptendu Sinha of the University of Notre Dame for his very substantial help in computational work and to Dr. D. J. McConalogue of the Delft University of Technology for providing us with his algorithm and software for its implementation.

A prepublication draft of the monograph was used as lecture notes for a graduate course on inventory theory at the Industrial Engineering Department of Bilkent University. I thank my students, Zeki Akbař, Cemal Akyel, Ayřen Eren, Levent Kandiller, Nureddin Kırkavak, Ceyda Oğuz and Hakan Polatođlu, for discovering a large number of errors in the text.

Many thanks, also, to James Sagovic at the University of Wisconsin-Milwaukee and Konuralp Ünyeliođlu at Bilkent University for an excellent job of typing the manuscript.

Spring, 1989
Milwaukee, Wisconsin and
Ankara, Turkey

İzzet řahin

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