

*Handbook Of Operations Research In Natural Resources International Series In Operations Research Management Science*

From the Preface: Collectively, the chapters in this book address application domains including inpatient and outpatient services, public health networks, supply chain management, and resource constrained settings in developing countries. Many of the chapters provide specific examples or case studies illustrating the applications of operations research methods across the globe, including Africa, Australia, Belgium, Canada, the United Kingdom, and the United States. Chapters 1-4 review operations research methods that are most commonly applied to health care operations management including: queuing, simulation, and mathematical programming. Chapters 5-7 address challenges related to inpatient services in hospitals such as surgery, intensive care units, and hospital wards. Chapters 8-10 cover outpatient services, the fastest growing part of many health systems, and describe operations research models for primary and specialty care services, and how to plan for patient no-shows. Chapters 12 – 16 cover topics related to the broader integration of health services in the context of public health, including optimizing the location of emergency vehicles, planning for mass vaccination events, and the coordination among different parts of a health system. Chapters 17-18 address supply chain management within hospitals, with a focus on pharmaceutical supply management, and the challenges of managing inventory for nursing units. Finally, Chapters 19-20 provide examples of important and emerging research in the realm of humanitarian logistics.

Hardbound. The set of papers in this Handbook reflect the rich theory and wide range of applications of network models. Two of the most vibrant applications areas of network models are telecommunications and transportation. Several chapters explicitly model issues arising in these problem domains. Research on network models has been closely aligned with the field of computer science both in developing data structures for efficiently implementing network algorithms and in analyzing the complexity of network problems and algorithms. The basic structure underlying all network problems is a graph. Thus, historically, there have been strong ties between network models and graph theory. A companion volume in the Handbook series, entitled Network Routing, examines problems related to the movement of commodities over a network. The problems treated arise in several application areas including logistics, telecommunications, facility location, VLSI desi

This book contains eleven chapters describing some of the most recent methodological operations research developments in transportation. It is structured around the main transportation modes, and each chapter is written by a group of well-recognized researchers. Because of the major impact of operations research methods in the field of air transportation over the past forty years, it is fitting to open the book with a chapter on airline operations management. This book will prove useful to researchers, students, and practitioners in transportation and will stimulate further research in this rich and fascinating area. Volume 14 examines transport and its relationship with operations and management science 11 chapters cover the most recent research developments in transportation Focuses on main transportation modes-air travel, automobile, public transit, maritime transport, and more Applications of operations research to common functional processes. Forecasting. Accounting and finance. Marketing. Human resource management. Aggregate production planning. Inventory control. Computer and information systems. Facilities location and layout. Scheduling and sequence. Project selection, planning and control. Reliability. Maintenance and replacement. Application of operations research to selected societal and industrial systems. Urban service systems. The health services. Educational processes. Transportation systems. Military systems. Electric utilities. The process industries. The leisure industries.

A Handbook of Methods and Applications

Operations Research: Theory and Practice

Network Models

Handbook of Marketing Decision Models

Handbook of Operations Analytics Using Data Envelopment Analysis

Handbooks in Operations Research and Management Science: Transportation

*As operations research (OR) applications continue to grow and flourish in a number of decision making fields, a reference that is comprehensive, concise, and easy to read is more than a nicety, it is a necessity. This book provides a single volume overview of OR applications in practice, making it the first resource a practitioner would reach for when faced with an OR problem or application. Written by leading authorities in the field, the book covers functional and industry specific areas of OR applications. Ideally suited for practitioners in business, industry, and government, the book can also be used as a supplemental text in undergraduate or graduate OR courses.*

*Scale.References: Citations for the references used in the summary*

*Over the past thirty-five years, a substantial amount of theoretical and empirical scholarly research has been developed across the discipline domains of Transportation. This research has been synthesized into a systematic handbook that examines the scientific concepts, methods, and principles of this growing and evolving field. The Handbook of Transportation Science outlines the field of transportation as a scientific discipline that transcends transportation technology and methods. Whether by car, truck, airplane - or by a mode of transportation that has not yet been conceived - transportation obeys fundamental properties. The science of transportation defines these properties, and demonstrates how our knowledge of one mode of transportation can be used to explain the behavior of another. Transportation scientists are motivated by the desire to explain spatial interactions that result in movement of people or objects from place to place. Its methodologies draw from physics, operations research, probability and control theory.*

*Marketing models is a core component of the marketing discipline. The recent developments in marketing models have been incredibly fast with information technology (e.g., the Internet), online marketing (e-commerce) and customer relationship management (CRM) creating radical changes in the way companies interact with their customers. This has created completely new breeds of marketing models, but major progress has also taken place in existing types of marketing models. Handbook of Marketing Decision Models presents the state of the art in marketing decision models. The book deals with new modeling areas, such as customer relationship management, customer value and online marketing, as well as recent developments in other advertising, sales promotions, sales management, and competition are dealt with. New developments are in consumer decision models, models for return on marketing, marketing management support systems, and in special techniques such as time series and neural nets.*

*Project Scheduling*

*Handbook of OR/MS Models in Hazardous Materials Transportation*

*Operations Research and Health Care*

*Operations Research and Management Science Handbook*

*Handbook of Terminal Planning*

*The Pipeline and Hazardous Materials Safety Administration of the U.S. Department of Transportation defines hazardous materials (hazmat) as a substance or material capable of posing an unreasonable risk to health, safety, or property when transported in commerce. Hazmat accidents can result in significant impact to the population (death, injuries) and damage to the environment (destroyed or damaged buildings and infrastructure). Further, hazmat, especially explosive materials, can potentially be used by terrorists to attack civilians or to destroy critical infrastructure. This handbook provides models from Operations Research and Management Science that study various activities involving hazmat transportation: risk assessment, route planning, location decisions, evacuation planning, and emergency planning for terrorist attacks. There are two important research areas in hazmat transportation that are widely studied in the literature: risk assessment and shipment planning. In the risk assessment area, important issues include measurement of accident probabilities and consequences in hazmat transport. Example works in the risk assessment area include modeling risk probability distribution over given areas, considering hazmat types and transport modes, and environmental conditions. The first half of this handbook covers the two fields of risk assessment and shipment planning, while the second half of this handbook provides useful models and insights on other important issues including location problems for undesirable facilities, network interdiction, terrorist attack, and evacuation.*

*A handbook in the truest sense of the word, the first edition of the Operations Research Calculations Handbook quickly became an indispensable resource. While other books available tend to give detailed information about specific topics, this one contains comprehensive information and results useful for real-world problem solving. Reflecting the breadth and depth of growth in the field, the scope of the second edition has been expanded to cover several additional topics. And as with the first edition, it focuses on presenting analytical results and formulas that allow quick calculations and provide understanding of system models. See what's in the Second Edition: New chapters include Order Statistics, Traffic Flow and Delay, and Heuristic Search Methods New sections include Distance Norms, Hyper-Exponential and Hypo-Exponential Distributions Newly derived formulas and an expanded reference list Like its predecessor, the new edition of this handbook presents the analytical results and formulas needed in the scientific applications of operations research and management. It continues to provide quick calculations and insight into system performance. Presenting practical results and formulas without derivations, the material is organized by topic and offered in a concise format that allows ready-access to a wide range of results in a single volume. The field of operations research encompasses a growing number of technical areas, and uses analyses and techniques from a variety of branches of mathematics, statistics, and other scientific disciplines. And as the field continues to grow, there is an even greater need for key results to be summarized and easily accessible in one reference volume. Yet many of the important results and formulas are widely scattered among different textbooks and journals and are often hard to find in the midst of mathematical derivations. This book provides a one-stop resource for many important results and formulas needed in operations research and management science applications.*

*This handbook focuses on Data Envelopment Analysis (DEA) applications in operations analytics which are fundamental tools and techniques for improving operation functions and attaining long-term competitiveness. In fact, the handbook demonstrates that DEA can be viewed as Data Envelopment Analytics. Chapters include a review of cross-efficiency evaluation; a case study on measuring the environmental performance of OECs countries; how to select a set of performance metrics in DEA with an application to American banks; a relational network model to take the operations of individual periods into account in measuring efficiencies; how the efficient frontier methods DEA and stochastic frontier analysis (SFA) can be used synergistically; and how to integrate DEA and multidimensional scaling. In other chapters, authors construct a dynamic three-stage network DEA model; a bootstrapping based methodology to evaluate returns to scale and convexity assumptions in DEA; hybridizing DEA and cooperative games; using DEA to represent the production technology and directional distance functions to measure band performance; an input-specific Luenberger energy and environmental productivity indicator; and the issue of reference set by differentiating between the uniquely found reference set and the unary and maximal types of the reference set. Finally, additional chapters evaluate and compare the technological advancement observed in different hybrid electric vehicles (HEV) market segments over the past 15 years; radial measurement of efficiency for the production process possessing multi-components under different production technologies; issues around the use of accounting information in DEA; how to use DEA environmental assessment to establish corporate sustainability; a summary of research efforts on DEA environmental assessment applied to energy in the last 30 years; and an overview of DEA and how it can be utilized alone and with other techniques to investigate corporate environmental sustainability questions.*

*A comprehensive review of behavioral operations management that puts the focus on new and trending research in the field The Handbook of Behavioral Operations offers a comprehensive resource that fills the gap in the behavioral operations management literature. This vital text highlights best practices in behavioral operations research and identifies the most current research directions and their applications. A volume in the Wiley Series in Operations Research and Management Science, this book contains contributions from an international panel of scholars from a wide variety of backgrounds who are conducting behavioral research. The handbook provides succinct tutorials on common methods used to conduct behavioral research, serves as a resource for current topics in behavioral operations research, and as a guide to the use of new research methods. The authors review the fundamental theories and offer frameworks from a psychological, systems dynamics, and behavioral economic standpoint. They provide a crucial grounding for behavioral operations as well as an entry point for new areas of behavioral research. The handbook also presents a variety of behavioral operations applications that focus on specific areas of study and includes a survey of current and future research needs. This important resource: Contains a summary of the methodological foundations and in-depth treatment of research best practices in behavioral research. Provides a comprehensive review of the research conducted over the past two decades in behavioral operations, including such classic topics as inventory management, supply chain contracting, forecasting, and competitive sourcing. Covers a wide-range of current topics and applications including supply chain risk, responsible and sustainable supply chain, health care operations, culture and trust. Connects existing bodies of behavioral operations literature with related fields, including psychology and economics. Provides a vision for future behavioral research in operations. Written for academicians within the operations management community as well as for behavioral researchers, The Handbook of Behavioral Operations offers a comprehensive resource for the study of how individuals make decisions in an operational context with contributions from experts in the field.*

*Bridging the Gap between Theory and Practice*

*Handbook on Data Envelopment Analysis*

*Operations Research Applications*

*Handbook of Production Scheduling*

*Handbook of Operations Research in Agriculture and the Agri-food Industry*

*Handbook of Risk Management in Energy Production and Trading*

This book presents healthcare logistics solutions that have been successfully implemented at a variety of healthcare facilities. In each case, a major challenge is presented, along with the solution approach and implementation steps, followed by the impact on hospital operations. Problems encountered when implementing the results in practice are also discussed. Much of the work presented is drawn from the experiences of members of the Center for Healthcare Operations Improvement and Research (CHOIR) at Twente, along with the CHOIR spin-off company, Rhythm.

Clear and effective instruction on MADM methods for students, researchers, and practitioners. A Handbook on Multi-Attribute Decision-Making Methods describes multi-attribute decision-making (MADM) methods and provides step-by-step guidelines for applying them. The authors describe the most important MADM methods and provide an assessment of their performance in solving problems across disciplines. After offering an overview of decision-making and its fundamental concepts, this book covers 20 leading MADM methods and contains an appendix on weight assignment methods. Chapters are arranged with optimal learning in mind, so you can easily engage with the content found in each chapter. Dedicated readers may go through the entire book to gain a deep understanding of MADM methods and their theoretical foundation, and others may choose to review only specific chapters. Each standalone chapter contains a brief description of prerequisite materials, methods, and mathematical concepts needed to cover its content, so you will not face any difficulty understanding single chapters. Each chapter: Describes, step-by-step, a specific MADM method, or in some cases a family of methods Contains a thorough literature review for each MADM method, supported with numerous examples of the method's implementation in various fields Provides a detailed yet concise description of each method's theoretical foundation Maps each method's philosophical basis to its corresponding mathematical framework Demonstrates how to implement each MADM method to real-world problems in a variety of disciplines In MADM methods, stakeholders' objectives are expressible through a set of often conflicting criteria, making this family of decision-making approaches relevant to a wide range of situations. A Handbook on Multi-Attribute Decision-Making Methods compiles and explains the most important methodologies in a clear and systematic manner, perfect for students and professionals whose work involves operations research and decision making.

The Economic Order Quantity (EOQ) inventory model first appeared in 1913, and in its centennial, it is still one of the most important inventory models. Despite the abundance of both classical and new research results, there was (until now) no comprehensive reference source that provides the state-of-the-art findings on both theoretical and applied research on the EOQ and its related models. This edited handbook puts together all these interesting works and the respective insights into an edited volume. The handbook contains papers which explore both the deterministic and the stochastic EOQ-model based problems and applications. It is organized into three parts: Part I presents three papers that provide an introduction and review of various EOQ related models. Part II includes four technical analyses on single-echelon EOQ-model based inventory problems. Part III consists of five papers on applications of the EOQ model for multi-echelon supply chain inventory analysis.

How do policy makers and managers square the circle of increasing demand and expectations for the delivery and quality of services against a backdrop of reduced public funding from government and philanthropists? Leaders, executives and managers are increasingly focusing on service operations improvement. In terms of research, public services are immature within the discipline of operations management, and existing knowledge is limited to government departments and large bureaucratic institutions. Drawing on a range of theory and frameworks, this book develops the research agenda, and knowledge and understanding in public service operations management, addressing the most pressing dilemmas faced by leaders, executives and operations managers in the public services environment. It offers a new empirical analysis of the impact of contextual factors, including the migration of planning systems founded on MRP/ERP and the adoption of industrial based improvement practices such as TQM, lean thinking and Six Sigma. This will be of interest to researchers, educators and advanced students in public management, service operations management, health service management and public policy studies.

Handbooks in Operations Research and Management Science

Handbook of Operations Research: Models and applications

Handbook of Newsvendor Problems

Handbook of Healthcare Logistics

Marketing

Operations Research Methodologies

Hardbound. The Handbook of Finance is a primary reference work for financial economics and financial modeling students, faculty and practitioners. The expository treatments are suitable for masters and PhD students, with discussions leading from first principles to current research, with reference to important research works in the area. The Handbook is intended to be a synopsis of the current state of various aspects of the theory of financial economics and its application to important financial problems. The coverage consists of thirty-three chapters written by leading experts in the field. The contributions are in two broad categories: capital markets and corporate finance.

This book concentrates on real-world production scheduling in factories and industrial settings. It includes industry case studies that use innovative techniques as well as academic research results that can be used to improve production scheduling. Its purpose is to present scheduling principles, advanced tools, and examples of innovative scheduling systems to persons who could use this information to improve their own production scheduling.

The chapters of this Handbook volume cover nine main topics that are representative of recent theoretical and algorithmic developments in the field. In addition to the nine papers that present the state of the art, there is an article on the early history of the field. The handbook will be a useful reference to experts in the field as well as students and others who want to learn about discrete optimization.

A ONE-OF-A-KIND GUIDE TO THE BEST PRACTICES IN DECISION ANALYSIS Decision analysis provides powerful tools for addressing complex decisions that involve uncertainty and multiple objectives, yet most training materials on the subject overlook the soft skills that are essential for success in the field. This unique resource fills this gap in the decision analysis literature and features both soft personal/interpersonal skills and the hard technical skills involving mathematics and modeling. Readers will learn how to identify and overcome the numerous challenges of decision making, choose the appropriate decision process, lead and manage teams, and create value for their organization. Performing modeling analysis, assessing risk, and implementing decisions are also addressed throughout. Additional features include: Key insights gleaned from decision analysis applications and behavioral decision analysis research Integrated coverage of the techniques of single- and multiple-objective decision analysis Multiple qualitative and quantitative techniques presented for each key decision analysis task Three substantive real-world case studies illustrating diverse strategies for dealing with the challenges of decision making Extensive references for mathematical proofs and advanced topics The Handbook of Decision Analysis is an essential reference for academics and practitioners in various fields including business, operations research, engineering, and science. The book also serves as a supplement for courses at the upper-undergraduate and graduate levels.

Handbooks in Operations Research and Management Science: Simulation

Finance

Handbook of Decision Analysis

Handbook of EOQ Inventory Problems

Models, Extensions and Applications

Handbook of Operations Research and Management Science in Higher Education

This book 'Operations Research: Theory and Practice' provides various concepts, theoretical and practical knowledge and develops the techno-managerial skills in the field of engineering. All the angles and approaches of operations applicable to both industrial and institutional needs are presented. It also provides an insight into the historical development of Operations Research. Examples and problems from usual situations that occur in industries are presented wherever necessary. Please note: Taylor & Francis does not distribute the Hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka.

This book presents an overview of the risks involved in modern electricity production, delivery and trading, including technical risk in production, transportation and delivery, operational risk for the system operators, market risks for traders, and political and economic risk in strategic management. Using decision making under uncertainty as a methodological background, the book is divided into four parts, with Part I focusing on energy markets, particularly electricity markets. Topics include a nontechnical overview of energy markets, basic price models for energy commodity prices, and modeling approaches for electricity price processes. Part II looks at optimal decisions in managing energy systems, including hydropower dispatch models, cutting plane algorithms and applications, and dynamic programming; hydro-thermal production; renewable; stochastic investments and operational optimization models for natural gas transport; decision making in operating electricity networks; and investment in extending energy production systems. Part III looks at pricing, including electricity swing options and the pricing of derivatives with volume control. Part IV looks at long-term and political risks, including energy systems under aspects of climate change, and catastrophic operational risks, particularly risks from terrorism. Container Terminals (CT) operate as central nodes in worldwide hub-and-spoke networks and link ocean-going vessels with smaller feeder vessels as well as with inbound and outbound hinterland transportation systems using road, rail, or inland waterways. Transcontinental container flows has gained appreciably over the last five decades -- throughput figures of CT reached new records, frequently with double-digit annual growth rates. Stimulated by throughput requirements and stronger competition between CTs in the same region or serving a similar hinterland, respectively, cost efficiency and throughput capabilities become more and more important. Nowadays, both terminal capacity and costs have to be regarded as key indicators for CT competitiveness. In respect of growth, this handbook focuses on planning activities being aimed at "order of magnitude improvements" in terminal performance and economic viability. On the one hand the book is intended to provide readership with technological and organizational CT basic planning. On the other hand this book offers methodical assistance for fundamental dimensioning of CT in terms of 'technique', 'organization' or 'man'. The former primarily considers comprehensive information about container handling technologies representing the state of art for present terminal operations, while the latter refers to methodological support comprising in particular quantitative solutions and modeling techniques for strategic terminal decisions as well as straightforward design guidelines. The handbook includes a contribution which gives an overview of strategic planning problems at CT and introduces the contributions of the volume with regard to their relationship in this field. Moreover, each paper contains a section or paragraph that describes the impact of findings on the author(s) for problem-solving in long-term planning of CT (as an application domain). The handbook intends to provide solutions and insights that are valuable for both practitioners in industry who need effective planning approaches to overcome problems at the terminal design/development and researchers who would like to inform themselves about the state of the art in methodology of strategic terminal planning or be inspired by new ideas. That is to say, the handbook is addressed to terminal planners in practice and to students of maritime courses of study and (application oriented) researchers in the maritime field.

A single source guide to operations research (OR) techniques, this book covers emerging OR methodologies in a clear, concise, and unified manner. Building a bridge between theory and practice, it begins with coverage of fundamental models and methods such as linear, nonlinear, integer, and dynamic programming, networks, simulation, queuing, inventory, stochastic processes, and decision analysis. The book then explores emerging techniques including multiple criteria optimization, meta heuristics, robust optimization, and, finally, large scale networks. Each chapter gives an overview of a particular methodology, illustrates successful applications, and provides references to computer software availability.

Handbook of Military and Defense Operations Research

Handbook of Operations Research in Natural Resources

Manager's Guide to Operations Management

Multi-item Measurement Scales and Objective Items

A Handbook on Multi-Attribute Decision-Making Methods

Handbook of Transportation Science

This handbook covers various areas of Higher Education (HE) in which operations research/management science (OR/MS) techniques are used. Key examples include: international comparisons, university rankings, and rating academic efficiency with Data Envelopment Analysis (DEA); formulating academic strategy with balanced scorecard; budgeting and planning with linear and quadratic models; student forecasting; E-learning evaluation; faculty evaluation with questionnaires and multivariate statistics; marketing for HE; analytic and educational simulation; academic information systems; technology transfer with systems analysis; and examination timetabling. Overviews, case studies and findings on advanced OR/MS applications in various functional areas of HE are included.

Current and former professional staff of the Population Council have updated the Handbook for Family Planning Operations Research Design. They assume that readers of the handbook already know terms and concepts of research design and statistics and have some field research experience. The primary objective of the manual is to provide guidance to health and family planning researchers to develop and write a detailed operations research proposal. In fact, it can be and has been used in workshops on research proposal writing. It also serves as a means for program administrators and managers to understand the workings of operations research and the application of research findings for improving service delivery. The authors draw from their field experiences from Asia, Africa, and Latin America. The handbook begins with a definition of operations research, its objectives, different types of operations research, and its design. It guides readers on how to identify, define, and justify the research problem. Further it helps them to choose a strategy to solve the problem. It next covers objectives and hypotheses of the research. The handbook makes the readers aware of the need to describe the proposed intervention and to define variables and terms. It spends a considerable number of pages on study design including the different types of designs. It also provides guidance on sampling and data collection. The handbook gives detailed guidance on data tabulation and analysis. It also stresses the need to disseminate and use the research findings. It encourages researchers to list limitations of the study, resources, and facilities. It also addresses the preparation of appendixes, title page, and abstract.

Here is the first systematic handbook treatment of quantitative modeling natural resource problems, their allocated efficient use, and societal and economic impact. Andrés Weintraub is the very top person in Natural Resource research. He has selected co-editors who are at the top of the sub-fields in natural resources: agriculture, fisheries, forestry, and mining. The book covers these areas with contributions from researchers on, among others, modeling natural resource problems, quantifying data, and developing algorithms.

Operations Research and Management Science HandbookCRC Press

Handbook of Healthcare Operations Management

Handbooks in Operations Research and Management Science: Financial Engineering

The Handbook of Behavioral Operations

Handbook of Metrics for Research in Operations Management

A research handbook

Standard algorithms and methods with examples

This handbook covers DEA topics that are extensively used and solidly based. The purpose of the handbook is to (1) describe and elucidate the state of the field and (2), where appropriate, extend the frontier of DEA research. It defines the state-of-the-art of DEA methodology and its uses. This handbook is intended to represent a milestone in the progression of DEA. Written by experts, who are generally major contributors to the topics to be covered, it includes a comprehensive review and discussion of basic DEA models, which, in the present issue, are extensions to the basic DEA methods, and a collection of DEA applications in the areas of banking, engineering, health care, and services. The handbook's chapters are organized into two categories: (i) basic DEA models, concepts, and their extensions, and (ii) DEA applications. First edition contributors have returned to update their work. The second edition includes updated versions of selected first edition chapters. New chapters have been added on: different approaches with no need for a priori choices of weights (called "multipliers") that reflect meaningful trade-offs, construction of static and dynamic DEA technologies, slacks-based model and its extensions, DEA models for DMUs that have internal structures network DEA that can be used for measuring supply chain operations, Selection of DEA applications in the service sector with a focus on building a conceptual framework, research design and interpreting results.

Our objectives in writing Project Scheduling: A Research Handbook are threefold: (1) Provide a unified scheme for classifying the numerous project scheduling problems occurring in practice and studied in the literature; (2) Provide a unified and up-to-date treatment of the state-of-the-art procedures developed for their solution; (3) Alert the reader to various important problems that are still in need of considerable research effort. Project Scheduling: A Research Handbook has been divided into four parts. Part I consists of three chapters on the scope and relevance of project scheduling, on the nature of project scheduling, and finally on the introduction of a unified scheme that will be used in subsequent chapters for the identification and classification of the project scheduling problems studied in this book. Part II focuses on the time analysis of project networks. Part III carries the discussion further into the crucial topic of scheduling under scarce resources. Part IV deals with robust scheduling and stochastic scheduling issues. Numerous tables and figures are used throughout the book to enhance the clarity and effectiveness of the discussions. For the interested and motivated reader, the problems at the end of each chapter should be considered as an integral part of the presentation.

The scope of this book is Operations Research methods in Agriculture and a thorough discussion of derived applications in the Agri-food industry. The book summarizes current research and practice in this area and illustrates the development of useful approaches to deal with actual problems arising in the agriculture sector and the agri-food industry. This book is intended to collect in one volume high quality chapters on Methods and Applications in Agriculture and Agri-food industry considering both theoretical issues and application results. Methods applied to problems in agriculture and the agri-food industry include, but are not restricted to, the following themes: Dynamic programming Multi-criteria decision methods Markov decision processes Linear programming Stochastic programming Parameter estimation and knowledge acquisition Learning from data Simulation Descriptive and normative decision tree techniques, including: agent modelling and simulation, and state of the art surveys Each chapter includes some standard and traditional methodology but also some recent research advances. All the applications presented in the chapters have been inspired and motivated by the demands from the agriculture and food production areas.

Hardbound. Leading marketing scientists, with an MS/OR orientation, present in this book a state-of-the-art review of their area of expertise. The wide range of material spans the marketing discipline and represents excellent coverage of both what is known and what problem-areas present themselves as ripe for further development. The articles are written with a technically sophisticated reader in mind, but not necessarily an expert in marketing. The authors provide a discussion of the motivation - the behavioral foundations or key assumptions - leading to the development of the important models or methods in each area. While not primarily a text, the book provides an excellent foundation for advanced students in marketing. MS/OR professionals, both academic and practitioner alike, will appreciate the impact that the MS/OR approach has had in the marketing area. Finally, the book provides must reading for marketing scientists, academics and practitioners.

Handbook for Family Planning Operations Research Design

Operations Research Calculations Handbook, Second Edition

Stochastic and Deterministic Models and Applications

Methods and Applications

Operations Research

Public Service Operations Management

The remarkable growth of financial markets over the past decades has been accompanied by an equally remarkable explosion in financial engineering, the interdisciplinary field focusing on applications of mathematical and statistical modeling and computational technology to problems in the financial services industry. The goals of financial engineering research are to develop empirically realistic stochastic models describing dynamics of financial risk variables, such as asset prices, foreign exchange rates, and interest rates, and to develop analytical, computational and statistical methods and tools to implement the models and employ them to design and evaluate financial products and processes to manage risk and to meet financial goals. This handbook describes the latest developments in this rapidly evolving field in the areas of modeling and pricing financial derivatives, building models of interest rates and credit risk, pricing and hedging in incomplete markets, risk management, and portfolio optimization. Leading researchers in each of these areas provide their perspective on the state of the art in terms of analysis, computation, and practical relevance. The authors describe essential results to date, fundamental methods and tools, as well as new views of the existing literature, opportunities, and challenges for future research.

As a fundamental problem in stochastic inventory control, the newsvendor problem has been studied since the 18th century in the economic literature, and has been widely used to analyze supply chains in fashion and seasonal product industries. Since the 1950s, the newsvendor problem has been extensively studied in operations research and extended to model a variety of real-life problems. The simplest and most elementary version of the newsvendor problem is an optimal stocking problem in which a newsvendor needs to decide how many newspapers to order for future demand, where the future demand is uncertain and follows a stationary distribution. Research in this area has greatly increased over the last few years, and now the Handbook of Newsvendor Problems: Models, Extensions and Applications captures the state of the art. The handbook consists of two sections -- Models and Extensions, and Applications. Each section includes many interesting works in the respective domain. Section I presents papers on topics like the multi-product newsvendor problems; the newsvendor problem with law invariant coherent measures of risk; a Copula approach to inventory pooling problems with newsvendor products; repeated newsvendor games with transshipments; cooperative newsvendor games; an economic interpretation for the price-setting newsvendor problem; newsvendor models with alternative risk preferences within expected utility theory and prospect theory frameworks; and newsvendor problems with VaR and CVaR consideration. Section II presents papers on such topics as a two-period newsvendor problem for closed-loop supply chain analysis; the remanufacturing newsvendor problem; inventory centralization in a newsvendor setting when shortage costs differ; production planning on an unreliable machine for multiple items; analysis of the newsvendor problem under carbon emissions policies; optimal decisions of the manufacturer and distributor in a fresh product supply chain involving long distance transportation; a newsvendor perspective on profit target setting for multiple divisions; and a portfolio approach to multi-product newsvendor problem with budget constraint. This well-balanced handbook presents a wealth of theoretical results from different perspectives. With contributions from many of the leading researchers in the field, the Handbook of Newsvendor Problems: Models, Extensions and Applications is a timely addition to the literature and consolidates all the new and exciting works related to the newsvendor problem into one high quality source.

In both rich and poor nations, public resources for health care are inadequate to meet demand. Policy makers and health care providers must determine how to provide the most effective health care to citizens using the limited resources that are available. This chapter describes current and future challenges in the delivery of health care, and outlines the role that operations research (OR) models can play in helping to solve those problems. The chapter concludes with an overview of this book - its intended audience, the areas covered, and a description of the subsequent chapters. KEY WORDS Health care delivery, Health care planning HEALTH CARE DELIVERY: PROBLEMS AND CHALLENGES 3 1.1 WORLDWIDE HEALTH: THE PAST 50 YEARS Human health has improved significantly in the last 50 years. In 1950, global life expectancy was 46 years [1]. That figure rose to 61 years by 1980 and to 67 years by 1998 [2]. Much of these gains occurred in low- and middle-income countries, and were due in large part to improved nutrition and sanitation, medical innovations, and improvements in public health infrastructure.

This Handbook is a collection of chapters on key issues in the design and analysis of computer simulation experiments on models of stochastic systems. The chapters are tightly focused and written by experts in each area. For the purpose of this volume "simulation refers to the analysis of stochastic processes through the generation of sample paths (realization) of the processes. Attention focuses on design and analysis issues and the goal of this volume is to survey the concepts, principles, tools and techniques that underlie the theory and practice of stochastic simulation design and analysis. Emphasis is placed on the ideas and methods that are likely to remain an intrinsic part of the foundation of the field for the foreseeable future. The chapters provide up-to-date references for both the simulation researcher and the advanced simulation user, but they do not constitute an introductory level 'how to' guide. Computer scientists, financial analysts, industrial engineers, management scientists, operations researchers and many other professionals use stochastic simulation to design, understand and improve communications, financial, manufacturing, logistics, and service systems. A theme that runs throughout these diverse applications is the need to evaluate system performance in the face of uncertainty, including uncertainty in user load, interest rates, demand for product, availability of goods, cost of transportation and equipment failures. \* Tightly focused chapters written by experts \* Surveys concepts, principles, tools, and techniques that underlie the theory and practice of stochastic simulation design and analysis \* Provides an up-to-date reference for both simulation researchers and advanced simulation users

Operations research handbook

Discrete Optimization

A Research Handbook

Operations Research (OR) began as an interdisciplinary activity to solve complex military problems during World War II. Utilizing principles from mathematics, engineering, business, computer science, economics, and statistics, OR has developed into a full fledged academic discipline with practical application in business, industry, government and military. Currently regarded as a body of established mathematical models and methods essential to solving complicated management issues, OR provides quantitative analysis of problems from which managers can make objective decisions. Operations Research and Management Science (OR/MS) methodologies continue to flourish in numerous decision making fields. Featuring a mix of international authors, Operations Research and Management Science Handbook combines OR/MS models, methods, and applications into one comprehensive, yet concise volume. The first resource to reach for when confronting OR/MS difficulties, this text - Provides a single source guide in OR/MS Bridges theory and practice Covers all topics relevant to OR/MS Offers a quick reference guide for students, researchers and practitioners Contains unified and up-to-date coverage designed and edited with non-experts in mind Discusses software availability for all OR/MS techniques Includes contributions from a mix of domestic and international experts The 26 chapters in the handbook are divided into two parts. Part I contains 14 chapters that cover the fundamental OR/MS models and methods. Each chapter gives an overview of a particular OR/MS model, its solution methods and illustrates successful applications. Part II of the handbook contains 11 chapters discussing the OR/MS applications in specific areas. They include airlines, e-commerce, energy systems, finance, military, production systems, project management, quality control, reliability, supply chain management and water resources. Part II ends with a chapter on the future of OR/MS applications.

The secrets to improving operations while maintaining the highest quality How do you operate at maximum efficiency with minimum cost? Manager's Guide to Operations Management addresses one of the most pressing business issues of our time by offering easy-to-implement advice on creating the most effective, streamlined operations possible. This quick-reference guide explains how to: Improve your production processes Boost quality using the Six Sigma approach Manage supply chains and inventory Forecast, plan, and schedule efficiently With Manager's Guide to Operations Management, you have the tools you need to ensure a smooth, steady work flow while producing products and services of the highest quality--the secret to business success.

Operations research (OR) is a core discipline in military and defense management. Coming to the forefront initially during World War II, OR provided critical contributions to logistics, supply chains, and strategic simulation, while enabling superior decision-making for Allied forces. OR has grown to include analytics and many applications, including artificial intelligence, cybersecurity, and big data, and is the cornerstone of management science in manufacturing, marketing, telecommunications, and many other fields. The Handbook of Military and Defense Operations Research presents the voices leading OR and analytics to new heights in security through research, practical applications, case studies, and lessons learned in the field. Features Applies the experiences of educators and practitioners working in the field Employs the latest technology developments in case studies and applications Identifies best practices unique to the military, security, and national defense problem space Highlights similarities and dichotomies between analyses and trends that are unique to military, security, and defense problems