

Demand Forecasting For Inventory Control

A practical framework for revenue-boosting supply chain management Next Generation Demand Management is a guidebook to next generation Demand Management, with an implementation framework that improves revenue forecasts and enhances profitability. This proven approach is structured around the four key catalysts of an efficient planning strategy: people, processes, analytics, and technology. The discussion covers the changes in behavior, skills, and integrated processes that are required for proper implementation, as well as the descriptive and predictive analytics tools and skills that make the process sustainable. Corporate culture changes require a shift in leadership focus, and this guide describes the necessary "champion" with the authority to drive adoption and stress accountability while focusing on customer excellence. Real world examples with actual data illustrate important concepts alongside case studies highlighting best-in-class as well as startup approaches. Reliable forecasts are the primary product of demand planning, a multi-step operational supply chain management process that is increasingly seen as a survival tactic in the changing marketplace. This book provides a practical framework for efficient implementation, and complete guidance toward the supplementary changes required to reap the full benefit. Learn the key principles of demand driven planning Implement new behaviors, skills, and processes Adopt scalable technology and analytics capabilities Align inventory with demand, and increase channel profitability Whether your company is a large multinational or an early startup, your revenue predictions are only as strong as your supply chain management system. Implementing a proven, more structured process can be the catalyst your company needs to overcome that one lingering obstacle between forecast and goal. Next Generation Demand Management gives you the framework for building the foundation of your growth.

This practical book covers the forecasting- and inventory control methods used in commercial, retail and manufacturing companies. Colin Lewis explains the theory and practice of current demand forecasting methods, the links between forecasts produced as a result of analysing demand data and the various methods by which this information, together with cost information on stocked items, is used to establish the controlling parameters of the most commonly used inventory control systems. The demand forecasting section of the book concentrates on the family of short-term forecasting models based on the exponentially weighted average and its many variants and also a group of medium-term forecasting models based on a time series, curve fitting approach. The inventory control sections investigate the re-order level policy and re-order cycle policy and indicate how these two processes can be operated at minimum cost while offering a high level of customer service.

Good management of inventory enables companies to improve their customer service, cash flow and profitability. 'Best Practice in Inventory Management' outlines the basic techniques, how and where to apply them, and provides advice to ensure they work to produce the desired effect in practice. The book shows how inventory management techniques can be used in a wide variety of situations, particularly in stores where the inventory can be anything from fast moving products to slow moving spares. The discussion extends across distribution warehousing and manufacturers' operations. The text is based on best theory and practice, which has been gradually developed by the inventory management profession over the years. It covers the inventory control aspects included in the courses for the DPIM, COM, DLM, CPIM and other professional and academic qualifications. Readers develop their understanding of stock control by seeing the techniques explained logically and learn how inventory structuring, individual item control, forecasting and co-ordination provide the base for logistics management. This new edition has been up-dated throughout and the final chapter, The Future - Inventory and Logistics, has been re-written to reflect the developing applications of technology and changes in focus.

This third edition, which has been fully updated and now includes improved and extended explanations, is suitable as a core textbook as well as a source book for industry practitioners. It covers traditional approaches for forecasting, lot sizing, determination of safety stocks and reorder points, KANBAN policies and Material Requirements Planning. It also includes recent advances in inventory theory, for example, new techniques for multi-echelon inventory systems and Roundy's 98 percent approximation. The book also considers methods for coordinated replenishments of different items, and various practical issues in connection with industrial implementation. Other topics covered in Inventory Control include: alternative forecasting techniques, material on different stochastic demand processes and how they can be fitted to empirical data, generalized treatment of single-echelon periodic review systems, capacity constrained lot sizing, short sections on lateral transshipments and on remanufacturing, coordination and contracts. As noted, the explanations have been improved throughout the book and the text also includes problems, with solutions in an appendix.

In a decentralized supply chain, most of the supply chain agents may not share information due to confidentiality policies, quality of information, or different system incompatibilities. Every actor holds its own set of information and attempts to maximize its objective (minimizing costs/minimizing inventory holdings) based on the available settings. Therefore, the agents control their own activities with the objective of improving their own competitiveness, which leads them to make decisions that maximize their local performance by ignoring the other agents or even the final consumer. These decisions are myopic because they do not consider the performance of all the partners to satisfy the consumer. Demand Forecasting and Order Planning in Supply Chains and Humanitarian Logistics is a collection of innovative research that focuses on demand anticipation, forecasting, and order planning as well as humanitarian logistics to propose original solutions for existing problems. While highlighting topics including artificial intelligence, information sharing, and operations management, this book is ideally designed for supply chain managers, logistics personnel, business executives, management experts, operation industry professionals, academicians, researchers, and students who want to improve their understanding of supply chain coordination in order to be competitive in the new era of globalization.

Stock management and control is a critical element to the success and overall financial well-being of an organization. Through the application of innovative practices and technology, businesses are now able to effectively monitor their operations and manage their inventory by evaluating sales patterns and customer preferences. Optimal Inventory Control and Management Techniques explores emergent research in stock management and product control within organizations. Featuring diverse perspectives on the implementation of various optimization techniques, genetic algorithms, and datamining concepts, as well as research on big data applications for inventory management, this publication is a comprehensive reference source for practitioners, educators, and researchers in the fields of logistics, operations management, and retail management.

This remarkable volume highlights the importance of Production and Operations Management (POM) as a field of study and research contributing to substantial business and social growth. The editors emphasize how POM works with a range of systems—agriculture, disaster management, e-commerce, healthcare, hospitality, military systems, not-for-profit, retail, sports, sustainability, telecommunications, and transport—and how it contributes to the growth of each. Martin K. Starr and Sushil K. Gupta gather an international team of experts to provide researchers and students with a panoramic vision of the field. Divided into eight parts, the book presents the history of POM, and establishes the foundation upon which POM has been built while also revisiting and revitalizing topics that have long been essential. It examines the significance of processes and projects to the fundamental growth of the POM field. Critical emerging themes and new research are examined with open minds and this is followed by opportunities to interface with other business functions. Finally, the next era is discussed in ways that combine practical skill with philosophy in its analysis of POM, including traditional and nontraditional applications, before concluding with the editors' thoughts on the future of the discipline. Students of POM will find this a comprehensive, definitive resource on the state of the discipline and its future directions.

The Quantitative Supply Chain represents a novel and disruptive perspective on the optimization of supply chains. It can be seen as a refoundation of many supply chain practices, in particular regarding inventory forecasting, and has been built to make the most of the latest statistical approaches and vast computing resources that are available nowadays.

Managing intermittent demand is a challenging operation in many industries since this type of demand is difficult to forecast. This challenge makes it hard to estimate inventory levels and thus affects service levels. The purpose of this study is to examine the impact of multiple levels of data aggregation on forecasting intermittent demand, and subsequently, on inventory control performance. In particular, we propose a procedure that integrates lead-time and customer heterogeneity into the forecasting using temporal and cross-sectional aggregation. Using data from a real-world setting and simulation, our analysis revealed that when high service levels were important for the company operations, the forecasting approach using temporal aggregation that incorporates lead-time information yielded a higher level of inventory efficiency in terms of both the holding cost and the realized service level. It appeared that when forecasts using temporal aggregation were augmented with information about customer behavior, their purchase patterns might be a helpful consideration for enhancing inventory performance. These findings allow us to provide useful recommendations for improving the current forecasting procedure and inventory control to the sponsor company of this project.

Get proven guidance to build a market-driven supply chain management system Supply chain management processes have gradually shifted from a supply-driven focus to a demand-driven one in order to better synchronize demand and supply signals. Bricks Matter shows you how you can identify market risks and opportunities and translate these into winning tactics. Business cases highlight how business leaders are winning through market-driven approaches. Helps you understand how to apply the emerging world of predictive analytics for the better management of value networks Includes business cases illustrating the market-driven approach Reveals how businesses can identify market risks and translate these into supply-side tactics As companies transition from demand-driven to market-driven approach, the focus in organizations shifts from one of vertical excellence to building strong market-to-market horizontal processes. Improve revenue by increasing market share, improve profit margins, and maintain high levels of customer service with the indispensable guidance found in Bricks Matter.

A Perspective on Two Decades of Rapid Modeling It is an honor for me to be asked to write a foreword to the Proceedings of the 1st Rapid Modeling Conference. In 1987, when I coined the term "Rapid Modeling" to denote queuing modeling of manufacturing systems, I never imagined that two decades later there would be an international conference devoted to this topic! I am delighted to see that there will be around 40 presentations at the conference by leading researchers from around the world, and about half of these presentations are represented by written papers published in this book. I congratulate the conference organizers and program committee on the success of their efforts to hold the first ever conference on Rapid Modeling. Attendees at this conference might find it interesting to learn about the history of the term Rapid Modeling in the context it is used here. During the fall of 1986 I was invited to a meeting at the Headquarters of the Society of Manufacturing Engineers (SME) in Dearborn, Michigan. By that time I had successfully demonstrated several industry applications of queuing network models at leading manufacturers in the USA. Although in principle the use of queuing networks to model manufacturing systems was well known in the OR/MS community and many papers had been published, the actual use of such models by manufacturing professionals was almost nonexistent.

This book addresses the challenging task of demand forecasting and inventory management in retailing. It analyzes how information from point-of-sale scanner systems can be used to improve inventory decisions, and develops a data-driven approach that integrates demand forecasting and inventory management for perishable products, while taking unobservable lost sales and substitution into account in out-of-stock situations. Using linear programming, a new inventory function that reflects the causal relationship between demand and external factors such as price and weather is proposed. The book subsequently demonstrates the benefits of this new approach in numerical studies that utilize real data collected at a large European retail chain. Furthermore, the book derives an optimal inventory policy for a multi-product setting in which the decision-maker faces an aggregated service level target, and analyzes whether the decision-maker is subject to behavioral biases based on real data for bakery products.

Using data science in order to solve a problem requires a scientific mindset more than coding skills. Data Science for Supply Chain Forecasting, Second Edition contends that a true scientific method which includes experimentation, observation, and constant questioning must be applied to supply chains to achieve excellence in demand forecasting. This second edition adds more than 45 percent extra content with four new chapters including an introduction to neural networks and the forecast value added framework. Part I focuses on statistical "traditional" models, Part II, on machine learning, and the all-new Part III discusses demand forecasting process management. The various chapters focus on both forecast models and new concepts such as metrics, underfitting, overfitting, outliers, feature optimization, and external demand drivers. The book is replete with do-it-yourself sections with implementations provided in Python (and Excel for the statistical models) to show the readers how to apply these models themselves. This hands-on book, covering the entire range of forecasting—from the basics all the way to leading-edge models—will benefit supply chain practitioners, forecasters, and analysts looking to go the extra mile with demand forecasting.

This book constitutes the proceedings of the 15th IFIP TC8 International Conference on Computer Information Systems and Industrial Management, CISIM 2016, held in Vilnius, Lithuania, in September 2016. The 63 regular papers presented together with 1 invited paper and 5 keynotes in this volume were carefully reviewed and selected from about 89 submissions. The main topics covered are rough set methods for big data analytics; images, visualization, classification; optimization, tuning; scheduling in manufacturing and other applications; algorithms; decisions; intelligent distributed systems; and biometrics, identification, security. This utterly comprehensive work is thought to be the first to integrate the literature on the physics of the failure of complex systems such as hospitals, banks and transport networks. It has chapters on particular aspects of maintenance written by internationally-renowned researchers and practitioners. This book will interest maintenance engineers and managers in industry as well as researchers and graduate students in maintenance, industrial engineering and applied mathematics.

As markets become more dynamic and competitive, companies must reconsider how they view inventory and make changes to their production and inventory systems. They must begin to think outside the classical box and develop a new paradigm of inventory management. Exploring the trend away from classical models based on economic order quantities to dependent demand systems, Inventory Management: Non-Classical Views comes as a just-in-time resource. Explore the new role of inventories in business enterprises This book discusses a new paradigm for inventory management that

is responsive to dynamic changes in the economy. It explores: Inventory systems that provide flexibility Inventory performance measures other than using cost as a means to control inventory Inventory as a contributor to customer value creation, rather than a liability The book also examines why energy and the environment are to be considered in inventory decisions, the non-classical application of inventory management in fields such as healthcare and disaster relief, and non-classical approaches to measuring the performance of inventory such as information theory, fuzzy sets, and thermodynamics. While many factors may change, one certainty is that the global economy is becoming increasingly dynamic. Planting the seeds for new research in inventory control and management, this book outlines the evolving role of inventories in business enterprises. It explores how to create inventory management as a tool for continued success regardless of market fluctuations and economic variances.

Supply chain professionals: master pioneering techniques for integrating demand and supply, and create demand forecasts that are far more accurate and useful! In *Demand and Supply Integration*, Dr. Mark Moon presents the specific design characteristics of a world-class demand forecasting management process, showing how to effectively integrate demand forecasting within a comprehensive Demand and Supply Integration (DSI) process. Writing for supply chain professionals in any business, government agency, or military procurement organization, Moon explains what DSI is, how it differs from approaches such as SandOP, and how to recognize the symptoms of failures to sufficiently integrate demand and supply. He outlines the key characteristics of successful DSI implementations, shows how to approach Demand Forecasting as a management process, and guides you through understanding, selecting, and applying the best available qualitative and quantitative forecasting techniques. You'll learn how to thoroughly reflect market intelligence in your forecasts; measure your forecasting performance; implement state-of-the-art demand forecasting systems; manage Demand Reviews, and much more. For wide audiences of supply chain, logistics, and operations management professionals at all levels, from analyst and manager to Director, Vice President, and Chief Supply Chain Officer; and for researchers and graduate students in the field.

Requirements determination is the process the Inventory Control Center Command (ICCC) uses to forecast future customer demands and to set levels of inventory to satisfy those demands. Demand forecasting is the essence of the Requirements Determination Process, which uses a forecasting model to predict demand. Then inventory models use this information to determine stock levels for every material. If forecasts and subsequent purchases are higher than actual usage, the result is excess inventory. If forecasts are lower than actual usage, the result is excessive backorders. Since excess inventory ties up money that could be used modernizing weapon systems, and since inadequate inventory can hamper critical systems as they wait for spare parts or repairs, forecasting future demands appropriately and setting inventory levels accordingly is highly important for an inventory management system. In order to determine whether alternative methodologies offer better performance, we evaluate the Turkish Navy's current forecasting model and compare it with other forecasting methodologies.

In this book . . . Nicolas Vandeput hacks his way through the maze of quantitative supply chain optimizations. This book illustrates how the quantitative optimization of 21st century supply chains should be crafted and executed. . . . Vandeput is at the forefront of a new and better way of doing supply chains, and thanks to a richly illustrated book, where every single situation gets its own illustrating code snippet, so could you. --Joannes Vermorel, CEO, Lokad Inventory Optimization argues that mathematical inventory models can only take us so far with supply chain management. In order to optimize inventory policies, we have to use probabilistic simulations. The book explains how to implement these models and simulations step-by-step, starting from simple deterministic ones to complex multi-echelon optimization. The first two parts of the book discuss classical mathematical models, their limitations and assumptions, and a quick but effective introduction to Python is provided. Part 3 contains more advanced models that will allow you to optimize your profits, estimate your lost sales and use advanced demand distributions. It also provides an explanation of how you can optimize a multi-echelon supply chain based on a simple—yet powerful—framework. Part 4 discusses inventory optimization thanks to simulations under custom discrete demand probability functions. Inventory managers, demand planners and academics interested in gaining cost-effective solutions will benefit from the "do-it-yourself" examples and Python programs included in each chapter.

Product proliferation has become a common phenomenon. Most companies now offer hundreds, if not thousands, of stock keeping units (SKUs) in order to compete in the market place. Companies with expanding product and service varieties face with problems of obtaining accurate demand forecasts, controlling production and inventory costs, and providing high quality and good delivery performance for the customers. Marketing managers often advocate widening product lines for increasing revenue and market share. However, the breadth of product line can also decrease the efficiency of manufacturing processes and distribution systems. Thus firms must weigh the benefits of product variety against its cost in order to determine the optimal level of product variety to offer to their customers. Academics and practitioners are interested in several fundamental questions about product variety. For instance, why do companies extend their product lines? Do consumers care about product variety? Will a brand with more variety enjoy higher market share? How should product variety be measured? How can a company exploit its product and process design to deliver a higher level of product variety quickly and cheaply? What should the level of product variety be and what should the price of each of the product variants be? What kind of 'challenges would a company face in offering a high level of product variety and how can these obstacles be overcome? The solutions to these questions span multiple functions and disciplines.

This book presents some of the most important papers published in Palgrave's *Journal of Operational Research* relating to the use of System Dynamics (SD) in the context of Operational Research (OR). Giving the reader an in-depth understanding of significant features of the research area which have grown over the last 20 years: applications in the

management field; methodologies; policies at industry level; and healthcare, this book is an invaluable read for those who do not have any prior expertise in the field. Split into four parts, the collection covers the broad use of SD in the field of management, focuses on the use of modelling in supply chains and at industry level, and presents an analysis of the use of SD in its most promising area, healthcare. Not only does this work provide a detailed overview of the field of SD, but it will also offer vital insights into potential research avenues for the future considering the use of SD as a soft OR and hard OR method.

Modern information technology has created new possibilities for more sophisticated and efficient control of supply chains. Most organizations can reduce their material flow costs substantially. Inventory control techniques are very important components in this development process. A thorough understanding of relevant inventory models is a prerequisite for successful implementation. I hope that this book will be a useful tool in acquiring such an understanding. Nearly ten years ago I wrote a Swedish book on inventory control. This previous book has been used in courses in production and inventory control at several Swedish engineering schools and has also been appreciated by many practitioners in the field. Positive reactions from many readers have occasionally made me contemplate writing a new book in English on the same subject. Encouraging support of this idea from the Kluwer Editors Fred Hillier and Gary Folven finally convinced me to go ahead with the project. The result is this new book, which in many ways differs from its Swedish predecessor. Some differences are due to recent developments in inventory control. Furthermore, this new book is in a sense more theoretical. In particular, it is to a larger extent focused on creating a good basic understanding of different possible approaches when analyzing inventory models.

Remove built-in supply chain weak points to more effectively balance supply and demand Demand-Driven Inventory Optimization and Replenishment shows how companies can support supply chain metrics and business initiatives by removing the weak points built into their inventory systems. Beginning with a thorough examination of Just in Time, Efficient Consumer Response, and Collaborative Forecasting, Planning, and Replenishment, this book walks you through the mathematical shortcuts set up in your management system that prevent you from attaining supply chain excellence. This expanded second edition includes new coverage of inventory performance, business verticals, business initiatives, and metrics, alongside case studies that illustrate how optimized inventory and replenishment delivers results across retail, high-tech, men's clothing, and food sectors. Inventory optimization allows you to avoid out-of-stock situations without impacting the bottom line with excessive inventory maintenance. By keeping just the right amount of inventory on hand, your company is better able to meet demand without sacrificing the cost-effectiveness of other supply chain strategies. The trick, however, is determining "just the right amount"—and this book provides the background and practical guidance you need to do just that. Examine the major supply chain strategies of the last 30 years Remove the shortcuts that prohibit supply chain excellence Optimize your supply/demand balance in any vertical Overcome systemic weaknesses to strengthen the bottom line Inventory optimization is benefitting companies around the world, as exemplified here by case studies involving Matas, PWT, Wistron, and Amway. When inefficiencies are built into the system, it's only smart business to identify and remove them—and implement a new streamlined process that runs like a well-oiled machine. Demand-Driven Inventory Optimization and Replenishment is an essential resource for exceptional supply chain management.

This book describes the methods used to forecast the demands at inventory holding locations. The methods are proven, practical and doable for most applications, and pertain to demand patterns that are horizontal, trending, seasonal, promotion and multi-sku. The forecasting methods include regression, moving averages, discounting, smoothing, two-stage forecasts, dampening forecasts, advance demand forecasts, initial forecasts, all time forecasts, top-down, bottom-up, raw and integer forecasts. Also described are demand history, demand profile, forecast error, coefficient of variation, forecast sensitivity and filtering outliers. The book shows how the forecasts with the standard normal, partial normal and truncated normal distributions are used to generate the safety stock for the availability and the percent fill customer service methods. The material presents topics that people want and should know in the work place. The presentation is easy to read for students and practitioners; there is little need to delve into difficult mathematical relationships, and numerical examples are presented throughout to guide the reader on applications. Practitioners will be able to apply the methods learned to the systems in their locations, and the typical worker will want the book on their bookshelf for reference. The potential market is vast. It includes everyone in professional organizations like APICS, DSI and INFORMS; MBA graduates, people in industry, and students in management science, business and industrial engineering.

This book explains supply chain management (SCM) using the strategy–structure–process–performance (SSPP) framework. Utilizing this well-known framework of contingency theory in the areas of strategic management and organizational design, SCM is firmly positioned among management theories. The author specifically proposes a theoretical foundation of SCM that will be relevant to such areas as operations management, logistics management, purchasing management, and marketing. Both the static and dynamic sides of SCM are reported. On the static side, supply chain strategies are divided into three patterns: efficiency-oriented, responsiveness-oriented, and the hybrid efficiency- and responsiveness-oriented pattern. For each strategy, suitable internal and external supply chain structures and processes are proposed. On the dynamic side, the big issue is to overcome performance trade-offs. Based on theories of organizational change, process change, and dynamic capabilities, the book presents a model of supply chain process change. On structure, the focus is on the role of an SCM steering department. Illustrative cases are included from such diverse industries as automobiles (Toyota and Nissan), personal computers (Fujitsu), office equipment (Ricoh), air-conditioning (Daikin), tobacco (Japan Tobacco), chemicals and cosmetics (Kao), and casual fashion (Fast Retailing and Inditex). The strategy and organization of SCM is systematically presented on the basis of the SSPP framework. In particular, the relationships among three management elements—strategy, structure, and process—can be identified in an SCM context. From many of the cases contained in this volume, there emerges an understanding of how to analyze the success and failure factors of SCM using the SSPP framework. In addition, the reader sees not only the static side SCM such as process operation but also its dynamic side such as process innovation and process improvement.

Distribution logistics have been strongly affected by recent economic trends: globalization of markets, deregulation of the European freight traffic, a growing part of just-in-time deliveries and both increased competition and strategic cooperation between all parties involved. The book covers in a systematic way the strategic, tactical and operational planning of distribution systems and processes. It gives an overview of the relevant quantitative models and techniques as well as of applications in industry presented through numerous case studies. Researchers and practitioners will thus equally benefit from this volume.

INTERMITTENT DEMAND FORECASTING The first text to focus on the methods and approaches of intermittent, rather than fast, demand forecasting Intermittent Demand Forecasting is for anyone who is interested in improving forecasts of intermittent demand products, and enhancing the management of inventories. Whether you are a practitioner, at the sharp end of demand planning, a software designer, a student, an academic teaching operational research or operations management courses, or a researcher in this field, we hope that the book will inspire you to rethink demand forecasting. If you do so, then you can contribute towards significant economic and environmental benefits. No prior knowledge of intermittent demand forecasting or inventory management is assumed in this book. The key formulae are accompanied by worked examples to show how they can be implemented in practice. For those wishing to understand the theory in more depth, technical notes are provided at the end of each chapter, as well as an extensive and up-to-date collection of references for further study. Software developments are reviewed, to give an appreciation of the current state of the art in commercial and open source software. "Intermittent

demand forecasting may seem like a specialized area but actually is at the center of sustainability efforts to consume less and to waste less. Boylan and Syntetos have done a superb job in showing how improvements in inventory management are pivotal in achieving this. Their book covers both the theory and practice of intermittent demand forecasting and my prediction is that it will fast become the bible of the field.” —Spyros Makridakis, Professor, University of Nicosia, and Director, Institute for the Future and the Makridakis Open Forecasting Center (MOFC). “We have been able to support our clients by adopting many of the ideas discussed in this excellent book, and implementing them in our software. I am sure that these ideas will be equally helpful for other supply chain software vendors and for companies wanting to update and upgrade their capabilities in forecasting and inventory management.” —Suresh Acharya, VP, Research and Development, Blue Yonder. “As product variants proliferate and the pace of business quickens, more and more items have intermittent demand. Boylan and Syntetos have long been leaders in extending forecasting and inventory methods to accommodate this new reality. Their book gathers and clarifies decades of research in this area, and explains how practitioners can exploit this knowledge to make their operations more efficient and effective.” —Thomas R. Willemain, Professor Emeritus, Rensselaer Polytechnic Institute.

Stock management and control is a critical element to the success and overall financial well-being of an organization. Through the application of innovative practices and technology, businesses are now able to effectively monitor their operations and manage their inventory by evaluating sales patterns and customer preferences. The Handbook of Research on Promoting Business Process Improvement Through Inventory Control Techniques is a critical scholarly resource that examines optimization techniques, data mining concepts, and genetic algorithms to manage inventory control. Featuring coverage on a broad range of topics such as logistics and supply chain management, stochastic inventory modelling, and inventory management in healthcare, this book is geared towards academicians, practitioners, and researchers seeking various research methods to get optimal ordering policy.

Master and apply both the technical and behavioral skills you need to succeed in any inventory management role or function! Now, there's an authoritative and comprehensive guide to best-practice inventory management in any organization. Authored by world-class experts in collaboration with the Council of Supply Chain Management Professionals (CSCMP), this text illuminates planning, organizing, controlling, directing, motivating and coordinating all the activities used to efficiently control product flow. The Definitive Guide to Inventory Management covers long-term strategic decisions; mid-term tactical decisions; and even short-term operational decisions. Topics discussed include: Basic inventory management goals, roles, concepts, purposes, and terminology Key inventory management elements, processes, and interactions Principles/strategies for establishing efficient and effective inventory flows Using technology in inventory planning and management New approaches to inventory reduction: postponement, vendor-managed inventories, cross-docking, and quick response systems Trade-offs between inventory and transportation costs, including carrying costs Requirements and challenges of global inventory management Best practices, metrics, and frameworks for assessing inventory management performance technologies for smart and sustainable environemnet

Inventory Analytics provides a comprehensive and accessible introduction to the theory and practice of inventory control – a significant research area central to supply chain planning. The book outlines the foundations of inventory systems and surveys prescriptive analytics models for deterministic inventory control. It further discusses predictive analytics techniques for demand forecasting in inventory control and also examines prescriptive analytics models for stochastic inventory control. Inventory Analytics is the first book of its kind to adopt a practicable, Python-driven approach to illustrating theories and concepts via computational examples, with each model covered in the book accompanied by its Python code. Originating as a collection of self-contained lectures, Inventory Analytics will be an indispensable resource for practitioners, researchers, teachers, and students alike.

With the pressure of time-based competition increasing, and customers demanding faster service, availability of service parts becomes a critical component of manufacturing and servicing operations. Service Parts Management first focuses on intermittent demand forecasting and then on the management of service parts inventories. It guides researchers and practitioners in finding better management solutions to their problems and is both an excellent reference for key concepts and a leading resource for further research. Demand forecasting techniques are presented for parametric and nonparametric approaches, and multi echelon cases and inventory pooling are also considered. Inventory control is examined in the continuous and periodic review cases, while the following are all examined in the context of forecasting: • error measures, • distributional assumptions, and • decision trees. Service Parts Management provides the reader with an overview and a detailed treatment of the current state of the research available on the forecasting and inventory management of items with intermittent demand. It is a comprehensive review of service parts management and provides a starting point for researchers, postgraduate students, and anyone interested in forecasting or managing inventory.

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