testing and sorting, and whether to outsource the collection activities to a third party. In some cases, the challenges industries face are directly analogous to existing forward-supply-chain issues, and organizations can leverage their experience in these areas. For instance, design for manufacturability in forward supply chains is related to the (reverse) issue of design for remanufacturability. Similarly, forecasting the supply of remanufacturable items is related to forecasting demand for the original items. However, many challenges are new and not clearly related to forward supply chains. For example, collecting materials from end users may present logistics challenges, such as complex vehicle-routing issues, which may lie outside businesses' core areas of expertise. In such cases, an important decision is whether to outsource collection activities to a third party. The authors describe modeling approaches for evaluating such important management decisions.

The authors use the case of Eastman Kodak as an example of the potential value of integrating reverse logistics as a core strategy. Kodak developed an integrated business model that optimizes the remanufacturing of its line of single-use cameras. This effort presented challenges at the strategic, tactical, and operational levels. For instance, at a strategic level, the design and management of new-product introductions affects the return flows if the new-product designs cannot effectively exploit the previous generation of product components. At the tactical level, Kodak had to develop a collection policy to acquire the spent cameras from film developers, while at the operational level, it had to manage its inventories of components (for example, circuit boards), which depended on the inflow of recycled components. Kodak's strategy of leveraging the recycling of its disposable cameras is one of many case studies the authors presented to motivate current research and to indicate important areas for future focus. Some other success stories the authors describe in this book concern IBM, Volkswagen, Xerox, and such industries as consumer appliances, pulp and paper, aluminum recycling, and the mail-order industry.

In the various chapters, the authors include case studies pertaining to the topic and detailed reviews of the existing literature. Perhaps more interesting is that they identify many of the gaps and important topics for further exploration. One just needs to look as far as recent issues of INFORMS journals to see the growing interest in this area. For instance, in a recent issue of *Management Science*, Savaskan et al. (2004) describe and analyze a model for closed-loop supply chains with remanufacturing. Also, a recent special edition of *Interfaces* (November–December 2003) on closed-loop supply chains points to the growing importance of models and methods for coping with these new challenges in industry. Sampling the book's bibliography reveals that most of the referenced papers were published since 1990 and more than half, since 2000. Clearly, this fast-emerging topic is gaining momentum in the OR/MS community, and the authors provide an up-to-date assessment of the literature.

The book is a compilation of independent papers that are loosely tied together and of varying quality, but by-and-large they are well written, motivate important and interesting research topics, and present valuable results. The book is essential for anyone actively pursuing research in the extended area of reverse logistics. It captures a snapshot of the current state of research and points to many interesting open problems in need of researchers' attention. It would be suitable to support a focused graduate course on the topic, and it will also be of interest to practitioners, who will appreciate the many real-world examples described in the case studies.

References

Guide, V. D. R., L. N. Van Wassenhove. 2003. Closed-loop supply chains: Practice and potential. *Interfaces* **33**(5) 3–6.

Savaskan, R. C., S. Bhattacharya, L. N. Van Wassenhove. 2004. Close-loop supply chain models with product remanufacturing. *Management Sci.* **50**(2) 239–252.

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Ghiani, Gianpaolo, Gilbert Laporte, Roberto Musmanno. 2004. *Introduction to Logistics Systems Planning and Control*. John Wiley and Sons, New York. 352 pp. $135.00.

Ghiani, Laporte, and Musmanno's *Introduction to Logistics Systems Planning and Control* is an excellent find. It provides the operational research basics of logistics without being an operational research text. It is a text based on problems and solutions in that

the authors describe the main quantitative methodology required for planning, organizing, and controlling logistics systems.

In the chapter on logistics forecasting requirements, the authors emphasize the time series extrapolation methodology and cover the elementary techniques, moving averages, the Holt method, exponential smoothing (including seasonal effects), and the decomposition approach. They mention the causal methods of forecasting, such as econometric, input-output, life-cycle analysis, computer simulation models, neural networks, and the Box-Jenkins method very briefly. This coverage adds depth of analytical understanding to the forecasting, which is not covered as concisely nor in as great detail in such texts as *Designing and Managing the Supply Chain* by Simchi-Levi et al. (2003). On the other hand, in Appendix E of *Logistics Engineering and Management* (5th ed.), Blanchard (1998) covers life-cycle analysis in alot more depth.

In Chapter 3, the authors describe the logistics-network planning processes and cover single- and double-echelon location models with single- and multicommodity examples. They discuss Lagrangian heuristic methodology and the Benders decomposition procedure for solving two-echelon multicommodity problems. In Chapter 4, the authors discuss inventory management models, beginning with the classical economic order quantity model. They go on to single stocking under deterministic time-varying demand rates and continue to complicate the model to provide a realism that gradually builds upon previous equations, for example, models with discounts (blanket and incremental quantity discounting), multicommodity models with capacity constraints, with joint costs, and then stochastic models. In this section, the authors also gradually progress from the classical newsboy problem to the most common inventory policies, such as the reorder cycle methodology. Chapter 3 of Simchi-Levi's *Designing and Managing the Supply Chain* (2nd ed.) is more readable, and his case study on risk pooling is excellent. Ghiani et al. do not cover risk analysis adequately. I wish they had included a chapter on risk analysis with mathematical formulas.

In discussing the topic of designing and operating warehouses, the authors begin with stacking and space allocation solutions and then cover operational decisions, such as batch formations, and order-picking routing-and-packing alternatives.

Of particular interest to me was the separation the authors (all operations researchers) gave to long- and short-haul transportation problems. They devoted separate chapters to these distinctively different systems. In discussing long-haul freight transportation problems, they included traffic-assignment flow formulation problems as well as freight-terminal design and operation issues. The short-haul freight-transportation problems included node routing and scheduling problems as well as the arc-routing problems of the Chinese postman and the rural postman. They also included the mathematics of optimal deliveries that combine routing and resupply decisions. These models underlie the very popular vendor-managed inventory (VMI) decisions.

The book ends with a chapter of case studies. The authors' aim was to link theory to practice in logistics-management planning and control by providing case studies. The case studies are interesting and match the theoretical models well.

The book will be particularly useful for undergraduate students learning the foundation theories of logistic systems. It will give them a solid understanding of the analytical tools available to reduce costs and improve service in logistics systems. The book fills a gap in logistics text material in that it covers location modeling, inventory-management models, transportation models, and warehouse operation models in easy-to-understand mathematical explanations. The authors provide the central problems of each element of logistical planning and then describe the models and solution algorithms in clear terms. They cover each part of logistics planning with the problems and solutions that form the foundation of the computer-assisted decision-making solutions that logistic managers use every day. This is why the book is such a brilliant find. Finally students of logistics have a text that provides the foundation formulas targeted solely to logistics management.

This text is an excellent resource for logistics and supply-chain-management students. It should be used for a core foundation subject for every undergraduate logistics degree. It is an introductory text on logistical decision making, and I think it is ideal for

second-year, tertiary-level students. Students would require good knowledge of high school mathematics and basic knowledge of operations research, quantitative statistics, and supply-chain networks. After studying this text, students will be able to understand the bases of computer-aided decision-making solutions. They will also have learned how companies have used different techniques. The extensive case studies and applications in the final chapter are interesting and insightful, and they present complex real-life logistics decision problems. They illustrate the use of the quantitative methods covered in the preceding chapters.

Any graduate course that assigns this text and Blanchard's *Logistics Engineering and Management* would provide students with a very good introductory depth of knowledge of the logistics field.

The authors' goal in writing this book was to present quantitative methods for students and practitioners of logistics and supply-chain management. They have achieved this goal. The chief attraction of the book is its level of focus, its clarity, and the simplicity of the presentation of the mathematical models. Thank you for a much-needed text!

References

Blanchard, B. S. 1998. *Logistics Engineering and Management*, 5th ed. Prentice Hall International Series in Industrial and Systems Engineering. Prentice Hall, Englewood Cliffs, NJ.

Simchi-Levi, D., P. Kaminsky, E. Simchi-Levi. 2003. *Designing and Managing the Supply Chain*, 2nd ed. Irwin, McGraw-Hill, New York.

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Koutsoukis, Nikitas-Spiros, Gautam Mitra. 2003. *Decision Modelling and Information Systems: The Information Value Chain*. Kluwer Academic Publishers, Dordrecht, The Netherlands. 366 pp. $135.00.

Modern business enterprises are being driven by information technology (IT) that plays a critical role in enabling different business units to communicate and to coordinate their operations. As the implementation of advanced IT technologies matures and the business environment gets more dynamic and complicated, businesses increasingly need to develop decision support systems on top of IT technologies. Supply-chain-related information systems have a huge impact on an enterprise's performance, and unfortunately, businesses sometimes fail to adapt these information systems. Why? One reason is that when businesses adapt information systems to suit business environments, they do not capture the associated business practices properly as decision models. Decision models help managers to make decisions by capturing the business's practices and logic. Information systems enable an enterprise to automatically collect data to input to decision models and to produce outputs. IT implementations without a comprehensive understanding of the relevant business logic results in unsuccessful outcomes. Even in small-scale business environments, integrating information systems and decision models is difficult and important. In large corporations, integrating decision models and information systems is very challenging because of the number of organizations involved and the resulting impact on the corporation. In their preface, Koutsoukis and Mitra say, "Taking into consideration the traditional DSS framework and at the same time drawing parallels with recent advances in organization theory, decision modeling and information systems, it becomes clear that decision support has progressively extended its scope, and has repositioned itself as the pivotal aspect of contemporary decision making" (p. ii). The authors focus on addressing this issue, that is, the significance of integrating decision models with information systems in a corporation in which different organizations interact with each other.

The authors provide a good overview of decision support frameworks in which decision modeling and information systems are tightly coupled to deal with the challenges of a dynamic business environment. It consists of 18 chapters grouped into four parts. In the first two parts, the authors cover the fundamentals of decision support by introducing concepts and taxonomies; models for decision making (which they classify as descriptive, normative, and prescriptive); data mining for decision support; and information systems for decision support, such as management information systems (MISs), decision support systems (DSSs), and executive information systems (EISs). In particular, operations research