

prices. The book may also interest those with a flair for unconventional applications of OR/MS tools.

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KIRKWOOD, CRAIG W. 1997, *Strategic Decision Making: Multiobjective Decision Analysis with Spreadsheets*, Duxbury Press, Belmont, California, 345 pp., \$36.00.

The substantial benefits of multiobjective decision analysis have probably not yet been fully exploited in the marketplace. Managers may have a hard time deciphering the theory to find applicable methods. To compound the problem, they may think it is necessary to purchase specialized software to do the required computations. In *Strategic Decision Making*, Craig Kirkwood presents methods to overcome these obstacles in a straightforward, easy-to-understand way, and he describes how to apply them using widely available spreadsheet software.

The book can be used as an introductory text; the only prerequisite for much of the material presented is an understanding of elementary algebra. This is not a text for those wishing to get an advanced understanding of multiobjective decision analysis, because the mathematical proofs and details are kept to a minimum. It is for students and managers who want to get a good hands-on understanding of the methods that can help them make better decisions. It would be very appropriate for executive MBA or executive education courses. The book is self contained and devoted to decisions with multiple objectives. Kirkwood walks you through the

entire decision-making process chapter by chapter with a generous number of spreadsheet applications. He stresses that complete understanding of the theory is not necessary to master the methods. For readers interested in some of the theory behind the methods, he includes a reference section in each section filled with relevant research articles.

He also denotes the concluding chapter of the book to multiattribute preference theory. *Strategic Decision Making* could complement Robert T. Clemen's [1996] text *Making Hard Decisions: An Introduction to Decision Analysis*; it puts greater emphasis on decisions with multiple attributes. The book could also be used as the primary text for a course devoted entirely to multiobjective decision analysis.

The text is divided into five parts. In the first three chapters, Kirkwood guides the decision maker through the formulation of the problem. In Chapter four, he deals with evaluating alternatives with multiple objectives under certainty; in the next three chapters (five through seven), he extends the method to include cases with uncertainty. He denotes chapter eight to constrained resource allocation decisions with multiple objectives. In the final chapter, he presents the theory that motivated the methods. The appendices are filled with relevant applications and supplemental material.

The author has structured the text for maximum comprehension. He progresses through the decision-making process smoothly, building on each chapter and tackling problems as they surface. The book is very easy to read and understand. The notation is kept to a minimum, and

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BOOK REVIEWS

the explanations are clear and concise. Kirkwood does not deluge readers with terminology but rather walks them through the material, giving them an intuitive understanding of the concepts.

Overall, *Strategic Decision Making* is an excellent text for those who want an introduction to the powerful tools of multiobjective decision analysis. Kirkwood's main contribution in this text is to explicitly demonstrate how to use these tools and methods on a spreadsheet. Computer literacy is now necessary in the marketplace; this text gives managers an opportunity to incorporate decision analysis methods in spreadsheet-supported decisions to an extent that was previously unachievable.

Reference

Clemen, Robert T. 1996, *Making Hard Decisions: An Introduction to Decision Analysis*, second edition, Duxbury Press, Belmont, California.

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SCHONBERGER, RICHARD J. 1996, *World Class Manufacturing: The Next Decade*, Free Press, New York, 275 pp., \$30.00.

In *World Class Manufacturing: The Next Decade*, Schonberger goes beyond the accepted financial ratios customarily used to measure the success of companies. He redefines excellence in manufacturing companies, using two measures: inventory turnover and customer satisfaction. According to Schonberger, these two benchmark measures are good predictors of companies' success in the next decade and beyond. He argues convincingly that financial ratios, the accepted mantra of ana-

lysts, are the wrong measures because some managers tend to manipulate these numbers. His 16 management principles, similar to those of Edward Deming, are customer focused, employee driven, data based, broadly effective, robust and enduring. Further, he reveals that during the last 45 years, while financial ratios have had their ups and downs, industrial ascendancy and decline moved in tandem with inventory turnover. Schonberger argues that the renewal of manufacturing began in the mid-1970s and that industrial resurgence will continue as long as an infusion of new ideas continues to feed the renewal of manufacturing.

The author outlines 16 customer-focused principles and uses a scoring criterion (1:low to 5:high) mainly for manufacturing companies but equally applicable, he says, to service companies as well. These are the 16 principles: team up with customers; use customer best-practice information; continue rapid improvement in what all customers want; involve frontliners in change and strategic planning; cut to the few best components, operators, and suppliers; cut flow time and distance, start-up, and changeover times; operate close to the customer's rate of use or demand; continually train everybody for new roles; expand the variety of rewards, recognition, and pay; continually reduce variation and mishaps; have front-line teams record and own the process data at the workplace; control root causes to cut internal transactions and reporting; align performance measures with customer wants; improve present capacity before acquiring new equipment and automation; seek simple, flexible, movable, low-cost equipment in multiples; and promote,