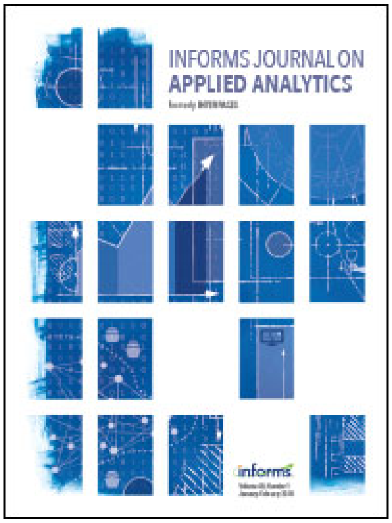

Interfaces

Book Reviews

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Book Reviews

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The range of books reviewed is wide, covering theory and applications in operations research, statistics, management science, econometrics, mathematics, computers, and information systems (no software is reviewed). In addition, we include books in other fields that emphasize technical applications. Publishers who wish to have their books reviewed should send them to Professor Benjamin Lev. We list the books received; not all books received can be reviewed because space and time are limited. Those who would like to review books are urged to send me their names, addresses, and specific areas of expertise. We commission all reviews and do not accept unsolicited book reviews. Readers are encouraged to suggest books that might be reviewed or to ask publishers to send me copies of such books.

BEENHAKKER, HENRI L. 1997, *Risk Management in Project Finance and Implementation*, Quorum Books, Westport, Connecticut, 274 pp., $69.50.

Risk Management in Project Finance and Implementation is oriented to a broad spectrum of economists, business managers, engineers, and other professionals involved in risk management. Risk management requires knowledge in a wide range of areas, from government intervention to game theory. Beenhakker's goal is to familiarize readers with a multifaceted approach to risk management, to introduce integral, interdisciplinary methods. He assumes no prior knowledge of related disciplines. The book is self-contained and modular: the chapters may be read independently. To understand the book and use its methods in practice, one needs only knowledge of secondary school mathematics. Beenhakker wants to "bridge the gap between the worlds of practice and education and thus to enhance the connection between what students learn in school and what they will need to solve real-life management problems."

In chapter 1, "Risk minimization in

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project finance," the author defines project finance as a wide range of financial structures with one common feature—financing does not depend primarily on the sponsors' credit or the value of physical assets. Project financing differs from other forms of asset financing in that the value of project assets to third parties may be negligible. The negotiations between project sponsors, lenders, and governments on financing may be especially difficult because of misconceptions and errors in assessing different factors influencing the development, operation, and interaction of interests. The author discusses the consequences of underestimating construction, development, market, financial, political, legal, and environmental risks. He lists the general issues of technical, economic, and financial feasibility, which are critical to commercial lenders. He examines the financial structure, including project phase, cofinancing, production payment/forward purchasing, leasing, and the build-operate-transfer substructure.

In chapter 2, "Interventionist governmental policies," Beenhakker discusses the influence of such policies as overvalued exchange rates, subsidies, administrative prices, and capacity controls, which normally slow economic growth and give rise to black markets, on the outcome of a project, and he makes recommendations for reducing project risk.

In chapter 3, "Quantitative treatment of risk," he introduces models of uncertainty and zero-sum matrix games and illustrates statistical and game-theoretical methods with several examples.

In chapter 4, "Hedging risk," and chapter 5, "More about hedging," the author discusses an approach to risk reduction using the derivative securities and introduces forward and future contracts. He presents examples of price calculation, including stock index and interest rate future. He discusses real-world problems related to hedging, for example, swaps, matching liabilities with assets, and hedging in interest rate futures when issuing mortgages.

In chapter 6, "Options," Beenhakker introduces options as an instrument of insurance against adverse movements in asset prices. He explains the payoff for different positions in different options by means of graphs, making the simplest case of options valuation obvious. He uses an example to explain the two-state model, which helps readers to interpret the Black-Scholes model. He analyzes an example of interest rate options. He finishes the chapter with a case that illustrates the inadequacy of a simplified analysis restricted to calculating net present value or internal rate of return. He shows that postponing action until one gets important information (hidden option) may be advantageous.

In chapter 7, "Warrants and convertibles," Beenhakker explains that warrants and convertibles are needed in lending to a risky company and reducing conflicts between bondholders and stockholders concerning risk. He illustrates the difference between warrants, convertibles, and call options with examples. He explains the formulas for valuation of warrants and convertibles and discusses the reasons for the issuing them.

In chapter 8, "The relationship between risk and return," the author introduces portfolio theory. He explains how the standard deviation of a portfolio drops as more securities are added. He discusses the capital asset-pricing model (CAPM) with respect to the efficient portfolio and introduces an alternative to CAPM, the arbitrage-pricing model. Finally, he discusses financial leverage, the cycling nature of revenue, and operating leverage.

In chapter 9, "The relationship between risk and cost of capital," Beenhakker applies discounted cash flow analysis to capital budgeting. He considers how to determine the proper discount rate in calculating present value. He bases the analysis on the concepts of schedules of marginal costs of capital and investment opportunities. Finally, he examines the effects of corporate and personal taxes and provides examples of financial distress.

The five appendixes include several tables and instructions for their use.

The book is designed to be used as a text and as a reference book. It should find a broad audience of practically oriented students and readers who look for quick access to basic principles and recipes for their use in practice. The book includes neither exercises nor problems for the homework. An instructor who uses the book as a main text will either have to prepare his or her own problems for the class or rely on a secondary text. I would recommend, for example, either Alexander and Sharpe [1989] or Sharpe, Alexander, and Baily [1995], which are also oriented to students who have not studied sophisticated mathematics. Students with good mathematical backgrounds could use Dixit and Pindyck [1994] as their secondary text.

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Mingers, John and Gill, Anthony, eds. 1997, *Multi Methodology: The Theory and Practice of Combining Management Science Methodologies*, John Wiley and Sons, New York, 442 pp., $65.00.

Multimethodology, the idea of combining methodologies and techniques from different paradigms, is gradually becoming popular currency in Management Science, Operations Research, and systems circles (referred to hereafter under the collective term MS). Whereas a decade ago there was much talk about the confrontational posture adopted by the proponents of the various paradigms, and about paradigm incommensurability, today there are signs of a new ecumenical spirit in MS based upon inter-paradigm exchange. [Brocklesby 1997, p. 189]

This quotation encapsulates the main ideas found in multimethodology. The main virtue of this book is the selection of articles, which together describe the vast scope of multimethodology in MS. John Mingers from the University of Warwick and Anthony Gill of Management Consultancy Phrontis Ltd. weave together the different articles with their own contributions. All the researchers contribute their personal and specific knowledge of the subject. Sometimes, the ideas presented in the book bring to mind the well-known work by Moder and Elmaghraby [1978].

The book consists of three parts, containing 15 chapters, plus a preface and a foreword. Each chapter was written by a different author, except the first and the last chapter, which were written by Mingers. In the first chapter, Mingers presents the foremost idea of the book: multimethodology. The first part of the book, chapters 2 to 7, deals with the main problems of using multimethodology in practice. The second part, two chapters, presents the cognitive aspects of multimethodology. The last part, chapters 10 to 15, highlights the importance of the theory of multimethodology, predominantly in the perspective of science on knowledge.

The book is well planned and organized, which helps readers to assimilate the content easily. The editors introduce the problems of multimethodology research at the beginning, and subsequent chapters deal with these problems in more detail in the first chapter, the author makes a distinction between methodology and technique and sees the theoretical difficulties of multimethodology from three points of view: philosophical, cultural, and psychological.

The second chapter by Richard Ormerod is devoted to mixing methods in practice. Ormerod discusses seven applied cases to underpin this tenet. This chapter is outstanding. The author describes applications of soft and hard operations research from his own experience. The third chapter concerns combined methodology and an analysis of litigation and negotiation using game theory. The chapter includes accounts of the consultancy work of members of Strathclyde University's management science department.

The fourth chapter includes several reflections on using systems techniques. In the fifth chapter, Allenna Leonard describes a very interesting case study of a post-acquisition intervention. For her, the quest for the critical path is the paramount activity of operations research. Chapters 6 and 7 conclude the first part of the book, dealing with systems-oriented perspectives and virtual organization, respectively.

In the second part of the book, chapters 8 and 9, the authors emphasize the importance of defining paradigms in operations research. The quest for the best paradigm is the core of chapter 8. The knowledge perspective is at the heart of chapter 9. These two chapters, however, cover only the tip of the iceberg of the main problems of knowledge theory in operations research.

The last part of the book takes a theoretical outlook on multimethodology. The principal difficulty presented in these chapters is justifying the use of multimethodology, that is, what are its advantages and disadvantages. Several problems are discussed thoroughly in this part: mixing methods, the philosophical basis of multimethodology, multimethodology and critical theory, pluralism and its pragmatic facets, and so forth. The discussion of method mixtures is the topic of the final chapter.

The book is intended for readers who specialize in methodology and in operations research. In my opinion, one needs wide experience in applying MS models to benefit from reading this book. Because every chapter is written by a different author, the interested reader has a wealth of choices. The best way to take advantage of this book is to select the chapter appropriate to one's goal. Hence, it constitutes a wonderful tool for writing other books, articles, and essays in practical operations research.

The references and bibliographies at the ends of chapters are a bountiful treasure. Readers can often enrich their analyses by using ideas presented in the references. The editors responsible for the Herculean task of processing and digesting every chapter deserve our thanks for producing a masterpiece.

The book, because of its exquisite vocabulary and rich grammatical expressions, is a pleasant and interesting reading experience. I enjoyed reading this book.

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BETZ, FREDERICK 1998, *Managing Technological Innovation*, John Wiley and Sons, New York, 370 pp., $69.95.

Management of technology (MOT) has become a commonplace topic in education and research. Still researchers have not exhausted it yet. Betz's new book on the topic is a welcome addition. The book is the updated follow-up of Betz's 1987 classic, which was one of the first comprehensive books on the topic.

Betz is program officer at the National Science Foundation. This gives him insight into the current situation of many firms and industries. In his preface, Betz says the book is intended as a university textbook as well as educational reading for practitioners. He covers central concepts in the book's eight chapters and makes frequent use of case studies to highlight these concepts. The combination of theory and case studies facilitates reading and makes the book accessible to busy managers in industry. Even though several of the case studies are fairly well known, they are interesting reading, and they can serve as bases for good arguments, presentations, and discussions.

The traditional drawback of case studies in textbooks is that they provide only snapshots of a truly complicated reality. This problem is alleviated by the theoretical introduction and explanation of central concepts in each chapter. In the first chapter, Betz examines the relation of management and technology. It provides a framework for assessing management of technology and technological innovation as a business function.

As mentioned on the back cover of the book, MOT is the crossroads at which technology strategy meets business strategy to create new business opportunities. In browsing through the book's index, I wondered about the absence of such recent trends as the internet, as well as the weak presence of information technology in general as one of the major technological influences on business practices within the last decade. Environmental issues and sustainable development as constraints and challenges in technological innovation are confined to the last chapter.

While slighting trendy issues, Betz covers the history of MOT well and explains the issues well. He may not offer a truly new approach to MOT, but he has written a book very well suited for basic and introductary reading.

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