

# Project Economics And Decision Analysis Solution Manual

Representing the first collection on the topic, this book builds from foundations to case studies, to future prospects, providing the reader with a rich and comprehensive understanding of the use of multi-criteria decision analysis (MCDA) in healthcare. The first section of the collection presents the foundations of MCDA as it is applied to healthcare decisions, providing guidance on the ethical and theoretical underpinnings of MCDA and how to select MCDA methods appropriate to different decision settings. Section two comprises a collection of case studies spanning the decision continuum, including portfolio development, benefit–risk assessment, health technology assessment, priority setting, resource optimisation, clinical practice and shared decision making. Section three explores future directions in the application of MCDA to healthcare and identifies opportunities for further research to support these.

More than any other book available, Risk Analysis in Engineering and Economics introduces the fundamental concepts, techniques, and applications of the subject in a style tailored to meet the needs of students and practitioners of engineering, science, economics, and finance. Drawing on his extensive experience in uncertainty and risk modeling and analysis, the author leads readers from the fundamental concepts through the theory, applications, and data requirements, sources, and collection. He emphasizes the practical use of the methods presented and carefully examines the limitations, advantages, and disadvantages of each. Case studies that incorporate the techniques discussed offer a practical perspective that helps readers clearly identify and solve problems encountered in practice. If you deal with decision-making under conditions of uncertainty, this book is required reading. The presentation includes more than 300 tables and figures, more than 100 examples, many case studies, and a wealth of end-of-chapter problems. Unlike the classical books on reliability and risk assessment, this book helps you relate underlying concepts to everyday applications and better prepares you to understand and use the methods of risk analysis.

Multiple Criteria Decision Analysis: State of the Art Surveys provides survey articles and references of the seminal or state-of-the-art research on MCDA. The material covered ranges from the foundations of MCDA, over various MCDA methodologies (outranking methods, multiattribute utility and value theories, non-classical approaches) to multiobjective mathematical programming, MCDA applications, and software. This vast amount of material is organized in 8 parts, with a total of 25 chapters. More than 2000 references are listed.

Public health and in health policy courses at the undergraduate and graduate level.

Project management is the art of analyzing and managing risks. Without risk, there is little need for project management. Project Risk Analysis Made Ridiculously Simple offers a step-by-step guide on how to perform project risk analysis and risk management for a wide range of readers: students, project schedulers not exposed to project risk analysis before, and to project risk experts. With this book, you will learn how to: Identify and manage risks over the course of a project Perform qualitative and quantitative risk analysis Perform project risk analysis using Monte Carlo simulations Use event chain methodology to improve project risk analysis Perform risk analysis of project portfolios. Easily recognizable real-life stories and projects provide a compelling narrative while imparting valuable information on both the theory and practice of project risk management. You will not only understand why project risk management is important to the success of their projects, but you will also know how it can be implemented in your organization and the appropriate tools to use.

Engineers often find themselves tasked with the difficult challenge of developing a design that is both technically and economically feasible. A sharply focused, how-to book, Engineering Economics and Economic Design for Process Engineers provides the tools and methods to

resolve design and economic issues. It helps you integrate technical and economic decision making, creating more profit and growth for your organization. The book puts methods that are simple, fast, and inexpensive within easy reach. Author Thane Brown sets the stage by explaining the engineer's role in the creation of economically feasible projects. He discusses the basic economics of projects — how they are funded, what kinds of investments they require, how revenues, expenses, profits, and risks are interrelated, and how cash flows into and out of a company. In the engineering economics section of the book, Brown covers topics such as present and future values, annuities, interest rates, inflation, and inflation indices. He details how to create order-of-magnitude and study grade estimates for the investments in a project and how to make study grade production cost estimates. Against this backdrop, Brown explores a unique scheme for producing an Economic Design. He demonstrates how using the Economic Design Model brings increased economic thinking and rigor into the early parts of design, the time in a project's life when its cost structure is being set and when the engineer's impact on profit is greatest. The model emphasizes three powerful new tools that help you create a comprehensive design option list. When the model is used early in a project, it can drastically lower both capital and production costs. The book's uniquely industrial focus presents topics as they would happen in a real work situation. It shows you how to combine technical and economic decision making to create economically optimum designs and increase your impact on profit and growth, and, therefore, your importance to your organization. Using these time-tested techniques, you can design processes that cost less to build and operate, and improve your company's profit.

Risk is everywhere - from genetically modified crops, dams, and stem-cell therapy to heartbreak, online predators, inflation, and robbery. This Very Short Introduction examines what science has learned about how people deal with risks, what we can learn through decision theory, and how we can evaluate risk in our own lives.

This textbook presents methodologies and applications associated with multiple criteria decision analysis (MCDA), especially for those students with an interest in industrial engineering. With respect to methodology, the book covers (1) problem structuring methods; (2) methods for ranking multi-dimensional deterministic outcomes including multiattribute value theory, the analytic hierarchy process, the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), and outranking techniques; (3) goal programming,; (4) methods for describing preference structures over single and multi-dimensional probabilistic outcomes (e.g., utility functions); (5) decision trees and influence diagrams; (6) methods for determining input probability distributions for decision trees, influence diagrams, and general simulation models; and (7) the use of simulation modeling for decision analysis. This textbook also offers:

- Easy to follow descriptions of how to apply a wide variety of MCDA techniques
- Specific examples involving multiple objectives and/or uncertainty/risk of interest to industrial engineers
- A section on outranking techniques ; this group of techniques, which is popular in Europe, is very rarely mentioned as a methodology for MCDA in the United States
- A chapter on simulation as a useful tool for MCDA, including ranking & selection procedures. Such material is rarely covered in courses in decision analysis
- Both material review questions and problems at the end of each chapter . Solutions to the exercises are found in the Solutions Manual which will be provided along with PowerPoint slides for each chapter. The methodologies are demonstrated through the use of applications of interest to industrial engineers, including those involving product mix optimization, supplier selection, distribution center location and transportation planning, resource allocation and scheduling of a medical clinic, staffing of a call center, quality control,

project management, production and inventory control, and so on. Specifically, industrial engineering problems are structured as classical problems in multiple criteria decision analysis, and the relevant methodologies are demonstrated.

**Petroleum Economics and Risk Analysis: A Practical Guide to E&P Investment Decision-Making, Volume 69**, is a practical guide to the economic evaluation, risk evaluation and decision analysis of oil and gas projects through all stages of the asset lifecycle, from exploration to late life opportunities. This book will help readers understand and make decisions with regard to petroleum investment, portfolio analysis, discounting, profitability indicators, decision tree analysis, reserves accounting, exploration and production (E&P) project evaluation, and E&P asset evaluation. Includes case studies and full color illustrations for practical application Arranged to reflect lifecycle structure, from exploration through to decommissioning Demonstrates industry-standard decision-making techniques as applied to petroleum investments in the oil and gas industry

**Project Economics and Decision Analysis Probabilistic Models** PennWell Books, LLC **Smart Economic Decision-Making in a Complex World** is a fresh and reality-based perspective on decision-making with significant implications for analysis, self-understanding and policy. The book examines the conditions under which smart people generate outcomes that improve their place of work, their household and society. Within this work, the curious reader will find interesting open questions on many fascinating areas of current economic debate, including, the role of realistic assumptions robust model building, understanding how and when non-neoclassical behavior is best practice, why the assumption of smart decision-makers is best to understand and explain our economies and societies, and under what conditions individuals can make the best possible choices for themselves and society at large. Additional sections cover when and how efficiency is achieved, why inefficiencies can persist, when and how consumer welfare is maximized, and what benchmarks should be used to determine efficiency and rationality. Makes the case for 'smart and rational' decision-making as a context-dependent rational process that is framed by socio-cultural environment and conditioned by institutional capacities Explains how incorporation of the 'smart' decision-maker concept into economic thought improves our understanding of how, why and when people generate certain outcomes Explores how economic efficiency can be achieved, individual preferences realized, and social welfare maximized through the use of 'smart and rational' approaches

Master data analysis, modeling, and spreadsheet use with **BUSINESS ANALYTICS: DATA ANALYSIS AND DECISION MAKING, 6E!** Popular with students, instructors, and practitioners, this quantitative methods text delivers the tools to succeed with its proven teach-by-example approach, user-friendly writing style, and complete Excel 2016 integration. It is also compatible with Excel 2013, 2010, and 2007. Completely rewritten, Chapter 17, Data Mining, and Chapter 18, Importing Data into Excel, include increased emphasis on the tools commonly included under the Business Analytics umbrella -- including Microsoft Excel's "Power BI" suite. In addition, up-to-date problem sets and cases provide realistic examples to show the relevance of the material. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This books presents general principles and methodologies of quantitative risk analysis;

provides theory and practice of how to evaluate health, transport and education projects and describes how to assess the environmental impact of projects. It looks at how the tools of cost benefit analysis can be applied from the point of view of the private sector, public sector, bankers, and the country as a whole. It encourages analysts to answer a number of key questions that are likely to increase success rather than simply describing techniques. This book is aimed at all concerned with resource allocation and is presented in an accessible fashion. It is required reading at World Bank Institute courses.

**Decision Analysis for Petroleum Exploration** By Paul D. Newendorp

Engineers seek solutions to problems, and the economic viability of each potential solution is normally considered along with the technical merits. This is typically true for the petroleum sector, which includes the global processes of exploration, production, refining, and transportation. Decisions on an investment in any oil or gas field development are made on the basis of its value, which is judged by a combination of a number of economic indicators.

**Economic Analysis of Oil and Gas Engineering Operations** focuses on economic treatment of petroleum engineering operations and serves as a helpful resource for making practical and profitable decisions in oil and gas field development. Reflects major changes over the past decade or so in the oil and gas industry Provides thorough coverage of the use of economic analysis techniques in decision-making in petroleum-related projects Features real-world cases and applications of economic analysis of various engineering problems encountered in petroleum operations Includes principles applicable to other engineering disciplines This work will be of value to practicing engineers and industry professionals, managers, and executives working in the petroleum industry who have the responsibility of planning and decision-making, as well as advanced students in petroleum and chemical engineering studying engineering economics, petroleum economics and policy, project evaluation, and plant design.

It will be useful for those experienced and senior professionals who are charged with authorizing and controlling projects. Recommended. P.F. Rad, Choice Building on the seminal work of Bent Flyvbjerg, this book is a collection of expert contributions that will prove essential to anyone wanting to understand why mega-projects go wrong and how they can be made to work better. Professor Sir Peter Hall, University College London, UK This book offers a refreshing and fascinating look at mega-projects from the perspective of public evaluation and planning. With the changing role of the public sector in planning and implementing large-scale projects and a subsequent strong emergence of private public modes of operation, mega-projects have become a problematic phenomenon. This volume is a major source of information and reference. It provides the reader with unique insights and caveats in mega-projects planning. Peter Nijkamp, VU University Amsterdam, The Netherlands This book enlarges the understanding of decision-making on mega-projects and suggest

recommendations for a more effective, efficient and democratic approach. Authors from different scientific disciplines address various aspects of the decision-making process, such as management characteristics and cost benefit analysis, planning and innovation and competition and institutions. The subject matter is highly diverse, but certain questions remain at the forefront. For example, how do we deal with protracted preparation processes, how do we tackle risks and uncertainties, and how can we best divide the risks and responsibilities among the private and public players throughout the different phases of the project?

Presenting a state-of-the-art overview, based on experiences and visions of authors from Europe and North America, this unique book will be of interest to practitioners of large-scale project management, politicians, public officials and private organisations involved in mega-project decision-making. It will also appeal to researchers, consultants and students dealing with substantial engineering projects, complex systems, project management and transport



infrastructure.

The tools needed to make a better, more informed decision. Decision analysis (DA) is the logic of making a decision using quantitative models of the decider's factual and value judgments. DA is already widely used in business, government, medicine, economics, law, and science. However, most resources present only the logic and models rather than demonstrating how these methods can be effectively applied to the real world. This book offers an innovative approach to decision analysis by focusing on decision-making tools that can be utilized immediately to make better, more informed decisions. It uses no mathematics beyond arithmetic. Examining how deciders think about their choices, this book provides problem-solving techniques that not only reflect sound modeling but also meet other essential requirements: they build on the thinking and knowledge that deciders already possess; they provide knowledge in a form that people are able and willing to provide; they produce results that the decider can use; and they are based on intimate and continuous interactions with the decider. The methods outlined in this text take into account such factors as the use, the user, the organization, available data, and subjective knowledge. Replete with exercises, case studies, and observations from the author's own extensive consulting experience, the book quickly engages readers and enables them to master decision analysis by doing rather than by simply reading. Using familiar situations, it demonstrates how to handle knowledge as it unfolds in the real world. A term project is presented in the final chapter, in which readers can select an actual decision-making problem and apply their newfound tools to prepare a recommendation. A sample report is provided in the appendix. Beginning with qualitative structuring, the text advances to sophisticated quantitative skills that can be applied in both public and private enterprise, including:

- Modeling decision-making under conditions of uncertainty or multiple objectives
- Risk analysis and assessment
- Communicating and justifying controversial decisions
- Personal life choices and political judgments
- Adapting decision aid to organizations

The book's broad applicability makes it an excellent resource for any organization or as a textbook for decision-making courses in a variety of fields, including public policy, business management, systems engineering and general education. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Since the first edition of this book published, Bayesian networks have become even more important for applications in a vast array of fields. This second edition includes new material on influence diagrams, learning from data, value of information, cybersecurity, debunking bad statistics, and much more. Focusing on practical real-world problem-solving and model building, as opposed to algorithms and theory, it explains how to incorporate knowledge with data to develop and use (Bayesian) causal models of risk that provide more powerful insights and better decision making than is possible from purely data-driven solutions. Features

- Provides all tools necessary to build and run realistic Bayesian network models
- Supplies extensive example models based on real risk assessment problems in a wide range of application domains provided; for example, finance, safety, systems reliability, law, forensics, cybersecurity and more
- Introduces all necessary mathematics, probability, and statistics as needed
- Establishes the basics of probability, risk, and building and using Bayesian network models, before going into the detailed applications

A dedicated website contains exercises and worked solutions for all chapters along with numerous other resources. The AgenaRisk software contains a model library with executable versions of all of the models in the book. Lecture slides are freely available to accredited academic teachers adopting the book on their course.

By framing issues, identifying risks, eliciting stakeholder preferences, and suggesting alternative approaches, decision analysts can offer workable solutions in domains such as the environment, health and medicine, engineering and operations research, and public policy.

This book reviews and extends the material typically presented in introductory texts. Not a single book covers the broad scope of decision analysis at this advanced level. It will be a valuable resource for academics and students in decision analysis as well as decision analysts and managers

The authors cover two general topics: basic engineering economics and risk analysis in this text. Within the topic of engineering economics are discussions on the time value of money and interest relationships. These interest relationships are used to define certain project criteria that are used by engineers and project managers to select the best economic choice among several alternatives. Projects examined will include both income- and service-producing investments. The effects of escalation, inflation, and taxes on the economic analysis of alternatives are discussed. Risk analysis incorporates the concepts of probability and statistics in the evaluation of alternatives. This allows management to determine the probability of success or failure of the project. Two types of sensitivity analyses are presented. The first is referred to as the range approach while the second uses probabilistic concepts to determine a measure of the risk involved. The authors have designed the text to assist individuals to prepare to successfully complete the economics portions of the Fundamentals of Engineering Exam. Table of Contents: Introduction / Interest and the Time Value of Money / Project Evaluation Methods / Service Producing Investments / Income Producing Investments / Determination of Project Cash Flow / Financial Leverage / Basic Statistics and Probability / Sensitivity Analysis

Portfolio Decision Analysis: Improved Methods for Resource Allocation provides an extensive, up-to-date coverage of decision analytic methods which help firms and public organizations allocate resources to 'lumpy' investment opportunities while explicitly recognizing relevant financial and non-financial evaluation criteria and the presence of alternative investment opportunities. In particular, it discusses the evolution of these methods, presents new methodological advances and illustrates their use across several application domains. The book offers a many-faceted treatment of portfolio decision analysis (PDA). Among other things, it (i) synthesizes the state-of-play in PDA, (ii) describes novel methodologies, (iii) fosters the deployment of these methodologies, and (iv) contributes to the strengthening of research on PDA. Portfolio problems are widely regarded as the single most important application context of decision analysis, and, with its extensive and unique coverage of these problems, this book is a much-needed addition to the literature. The book also presents innovative treatments of new methodological approaches and their uses in applications. The intended audience consists of practitioners and researchers who wish to gain a good understanding of portfolio decision analysis and insights into how PDA methods can be leveraged in different application contexts. The book can also be employed in courses at the post-graduate level.

This book presents an introduction to MCDA followed by more detailed chapters about each of the leading methods used in this field. Comparison of methods and software is also featured to enable readers to choose the most appropriate method needed in their research. Worked examples as well as the software featured in the book are available on an accompanying website.

Confronting Climate Uncertainty in Water Resources Planning and Project Design describes an approach to facing two fundamental and unavoidable issues brought about by climate change uncertainty in water resources planning and project design. The first is a risk assessment problem. The second relates to risk management. This book provides background on the risks relevant in water systems planning, the different approaches to scenario definition in water system planning, and an introduction to the decision-scaling methodology upon which the decision tree is based. The decision tree is described as a scientifically defensible, repeatable, direct and clear method for demonstrating the robustness of a project to climate change. While applicable to all water resources projects, it allocates effort to projects in a way

that is consistent with their potential sensitivity to climate risk. The process was designed to be hierarchical, with different stages or phases of analysis triggered based on the findings of the previous phase. An application example is provided followed by a descriptions of some of the tools available for decision making under uncertainty and methods available for climate risk management. The tool was designed for the World Bank but can be applicable in other scenarios where similar challenges arise.

Taking advantage of the many specialists visiting Spain prior to the INFORMS Meeting in Barcelona, hold from July 14th to July 17th 1997, we organized a work shop on Decision Analysis Applications at the Real Academia de Ciencias, Madrid, Spain, from July 11th to 12th 1997, under the sponsorship of de the Instituto Espaia. This workshop had a precedent in the International Conference Decision Making: Towards the 21st Century also held at the Real Academia de Ciencias in 1993. The idea of organizing an event, this time devoted to applications of Decision Analysis, was due to Prof. Sixto Rfos, who some four years ago, sponsored and encouraged by the Royal Academy of Sciences, was the creator of an Interdisciplinary Working Group on Decision Analysis -formed with researchers from within and outside this Academy- which has been active since then, organizing periodical meetings, and whose last project has turned out into this Workshop. The workshop turned out to be an stimulating opportunity for communicating and discussing the enormous variety of applications of Decision Sciences. In this volume we have included most of the invited papers and a selection of refereed contributed papers. Due to the varied nature of the applications, we have grouped them into five groups ending, as way of an epilog, with a paper by Sarin which contains important insights and refections on the nature of Decision Analysis in public and private sectors.

This book develops a whole strategy for decision-making, with the full participation of the decision-maker and utilizing continuous feedback. It introduces the use of the very well-known and proven methodology, linear programming, but specially adapted for this purpose. For this, it incorporates a method to include subjective concepts, as well as the possibility of working with many different and even contradictory objectives. The book is liberally populated with diverse case studies to illustrate the concepts. This practical guide will be of interest to anyone undertaking analysis and decision-making, on both simple and complex projects, and who is looking for a strategy to organize, classify, and evaluate the large amount of information required to make an informed decision. The strategy includes methods to analyze the results and extract conclusions from them.

The economics background investors need to interpret global economic news distilled to the essential elements: A tool of choice for investment decision-makers. Written by a distinguished academics and practitioners selected and guided by CFA Institute, the world's largest association of finance professionals, Economics for Investment Decision Makers is unique in presenting microeconomics and macroeconomics with relevance to investors and investment analysts constantly in mind. The selection of fundamental topics is comprehensive, while coverage of topics such as international trade, foreign exchange markets, and currency exchange rate forecasting reflects global perspectives of pressing investor importance. Concise, plain-English introduction useful to investors and investment analysts Relevant to security analysis, industry analysis, country analysis, portfolio management, and capital market strategy Understand economic news and what it means All concepts defined and simply explained, no prior background in economics assumed Abundant examples and illustrations Global markets perspective

In this new second edition, M. A. Mian has expanded and updated the first volume of Project Economics and Decision Analysis by incorporating new advancements and clarifying concepts to facilitate their understanding. New to the second edition of Project Economics and Decision Analysis, Volume 1 is a section on netback pricing and indexed netback pricing. Additionally,

the new edition expands the weighted average cost of capital (WACC) concept for better comprehension and to recognize its weakness in practice. The concept of unit technical cost, also known as long-run marginal cost (LRMC), has been expanded as well to aid with its calculation and application.

Decision analysis has become widely recognized as an important process for translating science into management actions. With climate change and other systemic threats as driving forces in creating environmental and engineering problems, there is a great need for understanding decision making frameworks through a case-study based approach. Management of environmental and engineering projects is often complicated and multidisciplinary in scope and nature, thus issues that arise can be difficult to solve analytically. *Multi-Criteria Decision Analysis: Case Studies in Engineering and the Environment* provides detailed description of MCDA methods and tools and illustrates their applications through case studies focused on sustainability and system engineering applications. New in the Second Edition: Addresses current and emerging environmental and engineering problems Includes seven new case studies to illustrate different management situations applicable at the international level Builds on real case studies from recent and relevant environmental and engineering management experience Describes advanced MCDA techniques and extensions used by practitioners Provides corresponding decision models implemented using the DECERNS software package Gives a more holistic approach to teaching MCDA methodology with a focus on sustainable solutions and adoption of new technologies, including nanotechnology and synthetic biology Given the novelty and inherent applicability of this decision-making framework to the environmental and engineering fields, a greater number of teaching tools for this topic need to be made available. This book provides those teaching tools, covering the breadth of the applications of MCDA methodologies with clear explanations of the MCDA process. The case studies are implemented in the DECERNS software package, allowing readers to experiment and explore and to understand the full process by which environmental managers assess these problems. This book is a great resource for professionals and students seeking to learn decision analysis techniques and apply similar frameworks to environmental and engineering projects

This book provides a comprehensive set of instructions and examples of how to perform a cost-benefit analysis (CBA) of a health intervention, with a particular focus on the use of stated preference survey methods to identify consumer preference data and the use of recent developments in cost-effectiveness analysis within a CBA framework.

*Decision Analysis for Management Judgment* is unique in its breadth of coverage of decision analysis methods. It covers both the psychological problems that are associated with unaided managerial decision making and the decision analysis methods designed to overcome them. It is presented and explained in a clear, straightforward manner without using mathematical notation. This latest edition has been fully revised and updated and includes a number of changes to reflect the latest developments in the field.

In two volumes, this new edition presents the state of the art in Multiple Criteria Decision Analysis (MCDA). Reflecting the explosive growth in the field seen during the last several years, the editors not only present surveys of the foundations of MCDA, but look as well at many new areas and new applications. Individual chapter authors are among the most prestigious names in MCDA research, and combined their chapters bring the field completely up to date. Part



I of the book considers the history and current state of MCDA, with surveys that cover the early history of MCDA and an overview that discusses the “pre-theoretical” assumptions of MCDA. Part II then presents the foundations of MCDA, with individual chapters that provide a very exhaustive review of preference modeling, along with a chapter devoted to the axiomatic basis of the different models that multiple criteria preferences. Part III looks at outranking methods, with three chapters that consider the ELECTRE methods, PROMETHEE methods, and a look at the rich literature of other outranking methods. Part IV, on Multiattribute Utility and Value Theories (MAUT), presents chapters on the fundamentals of this approach, the very well known UTA methods, the Analytic Hierarchy Process (AHP) and its more recent extension, the Analytic Network Process (ANP), as well as a chapter on MACBETH (Measuring Attractiveness by a Categorical Based Evaluation Technique). Part V looks at Non-Classical MCDA Approaches, with chapters on risk and uncertainty in MCDA, the decision rule approach to MCDA, the fuzzy integral approach, the verbal decision methods, and a tentative assessment of the role of fuzzy sets in decision analysis. Part VI, on Multiobjective Optimization, contains chapters on recent developments of vector and set optimization, the state of the art in continuous multiobjective programming, multiobjective combinatorial optimization, fuzzy multicriteria optimization, a review of the field of goal programming, interactive methods for solving multiobjective optimization problems, and relationships between MCDA and evolutionary multiobjective optimization (EMO). Part VII, on Applications, selects some of the most significant areas, including contributions of MCDA in finance, energy planning problems, telecommunication network planning and design, sustainable development, and portfolio analysis. Finally, Part VIII, on MCDM software, presents well known MCDA software packages.

This comprehensive two-volume set provides all the necessary concepts of capital investment evaluation, capital budgeting, and decision analysis. Mian takes the reader step-by-step through the decision making process, providing comprehensive coverage of all decision analysis tools currently available while outlining how investment decisions are made under different stages of risk. Further, he focuses on practical application, using a straightforward approach with solved 'real-life' examples and solutions, end-of-chapter problems, and illustrations throughout the book.

In Volume 2: Probabilistic Models, author M. A. Mian presents the concepts of decision analysis, incorporating risk and uncertainty as applied to capital investments. In the expanded and updated second edition of Volume 2, Mian integrates new advancements and clarifies concepts to facilitate their understanding. Each topic is introduced, followed by a brief discussion related to its application in practice and a solved example. Includes a companion CD with applications, spreadsheets, and tables that expand the practical application of the book's material.

Engineering has changed dramatically in the last century. With modern computing systems, instantaneous communication, elimination of low/mid management, increased complexity, and extremely efficient supply chains, all have dramatically affected the responsibilities of engineers at all levels. The future will require cost effective systems that are more secure, interconnected, software centric, and complex. Employees at all levels need to be able to develop accurate cost estimates based upon defensible cost analysis. It is under this backdrop that this book is being written. By presenting the methods, processes, and tools needed to conduct cost analysis, estimation, and management of complex systems, this textbook is the next step beyond basic engineering economics. Features Focuses on systems life cycle costing Includes materials beyond basic engineering economics, such as simulation-based costing Presents cost estimating, analysis, and management from a total ownership cost perspective Offers numerous real-life examples Provides excel based textbook/problems Offers PowerPoint slides, Solutions Manual, and author website with downloadable excel solutions, etc.

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