

Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets, 6e

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Detailed List of New Features

A New Section Describes the Relationship Between Analytics and Management. Recent years have seen an exciting analytics revolution as the business world has come to recognize the key role that analytics can play in managerial decision making. A new Section 1.3 fully describes the close relationship between analytics and management science.

A New Section on the Role of Robust Optimization in What-If Analysis. The goal of robust optimization is to find a solution for a model that is virtually guaranteed to remain feasible and near optimal for all plausible combinations of the actual values for the parameters of the model. A new Section 5.7 describes this key tool for performing what-if analysis for linear programming models.

A New Section on Chance Constraints. Constraints in a model usually are fully required to be satisfied, but occasionally constraints arise that actually have a little flexibility. Chance constraints provide a way of dealing with such constraints that actually can be violated a little bit without serious complications. A new Section 5.8 describes the role of chance constraints and how to implement them.

A Thorough Updating Throughout the Book. Given that the writing of the first edition occurred approximately 20 years ago, it is inevitable that some of that writing now is somewhat outdated. Even though the descriptions of management science techniques may still be accurate, the numbers and other details describing their application in certain problems, cases, and examples may now seem quite obsolete. Wage standards have changed. Prices have changed. Technologies have changed. Dates have changed. Although we did some updating with each new edition, we made a special effort this time to thoroughly update numbers and other details as needed to reflect conditions in 2017.

Additional Links to Articles that Describe Dramatic Real Applications. The fifth edition included 28 application vignettes that described in a few paragraphs how an actual application of management science had a powerful effect on a company or organization by using techniques like those being studied in that portion of the book. The current edition adds five more vignettes based on recent applications (while deleting seven outdated ones) and also updates the information in nine of the

other vignettes. We continue the practice of adding a link to the journal articles that fully describe these applications (except that the vignette for Chapter 1 doesn't require a link), through a special arrangement with the Institute for Operations Research and the Management Sciences (INFORMS®). Thus, the instructor now can motivate his or her lectures by having the students delve into real applications that dramatically demonstrate the relevance of the material being covered in the lectures. The end-of-chapter problems also include an assignment after reading each of these articles.

We continue to be excited about this partnership with INFORMS, our field's preeminent professional society, to provide a link to each of these articles describing spectacular applications of management science. INFORMS is a learned professional society for students, academics, and practitioners in analytics, operations research, and management science. Information about INFORMS journals, meetings, job bank, scholarships, awards, and teaching materials is available at www.informs.org.

A Word-by-Word Review to Further Increase Clarity in Each Chapter. A hallmark of each edition has been a particularly heavy use of certain techniques to maximize the clarity of the material: use cases to bring the material to life, divide sections into smaller subsections, use short paragraphs, use bullet points, set off special conclusions, use italics or boldface to highlight key points, add margin notes, never assume too much about understanding preceding material, etc. However, we have doubled down with this approach in the current edition by using a word-by-word review of each chapter to further increase clarity while also taking into special account the input provided by reviewers and others.

New to the 6th edition, Connect includes SmartBook(R), instructor resources, and student resources. For access, visit connect.mheducation.com or contact your McGraw-Hill sales representative.

SmartBook(R) Proven to help students improve grades and study more efficiently, SmartBook contains the same content within the print book, but actively tailors that content to the needs of the individual. SmartBook's adaptive technology provides precise, personalized instruction on what the student should do next, guiding the student to master and remember key concepts, targeting gaps in knowledge and offering customized feedback, and driving the student toward comprehension and retention of the subject matter. Available on desktops and tablets, SmartBook puts learning at the student's fingertips—anywhere, anytime.

Instructor Resources The Instructor's Edition within Connect is password-protected and a convenient place for instructors to access course supplements that include nine supplements to chapters in the print book and seven supplementary chapters. Resources for professors include the complete solutions to all problems and cases, PowerPoint slides which include both lecture materials for nearly every chapter and nearly all the figures (including all the spreadsheets) in the book, and an expanded Test Bank. The test bank contains almost 1,000 multiple-choice and true-false questions, all tagged according to learning objective, topic, level of difficulty, Bloom's taxonomy and AACSB category for filtering and reporting, and is delivered in the following ways:

- as a Connect assignment for online testing and automatic grading; can be used for actual exams or assigned as quizzes or practice;
- in TestGen, a desktop test generator and editing application for instructors to provide printed tests that can incorporate both McGraw-Hill's and instructors' questions;
- as Word files, with both question-only and answer files.

Student Resources As described above, SmartBook provides a powerful tool to students for personalized instruction. Connect also provides access to other course supplements of interest to students. However,

for the convenience of students, we also are providing the website, www.mhhe.com/Hillier6e, to provide the full range of resources of interest to students. In addition to providing access to supplementary text material (both supplements to book chapters and additional chapters), this website provides solutions to the "solved problems" (additional examples) that are included at the end of each chapter. For each spreadsheet example in the book, a live spreadsheet that shows the formulation and solution for the example also is provided in the website for easy reference and for use as a template. (At the end of each chapter, the page entitled "Learning Aids for This Chapter" lists the Excel files and other resources that are relevant for that chapter.) Information about accessing the book's software is provided. In addition, the website includes a tutorial with sample test questions (different from those in the instructor's test bank) for self-testing quizzes on the various chapters. It also provides access to the INFORMS articles cited in the application vignettes as well as updates about the book, including errata.

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