management information systems

third edition

solving business problems with information technology

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Management Information Systems

Solving Business Problems with Information Technology

Third Edition

Gerald V. Post
University of the Pacific

David L. Anderson
Loyola University

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Preface

A Tale of Two Careers

Jack Lewis had it made. Or so he thought. A number of well-timed promotions at his Midwest publishing firm, W.C. Green, Inc., had landed him comfortably in the role of marketing director of the educational book division. Unlike many of his colleagues, Jack tried to keep up with the latest changes in information technology. He entered data into spreadsheets to create color graphs for budgets and expenses. His reports were created with professionally designed word-processing templates. The dark mahogany desk, the 180 degree view of the duck pond and the $30,000 of computer hardware and software in his office were testaments to his success. Then it happened. A competitor developed an information system that used advanced technology to deliver custom books to students on demand over the Internet. Caught without a competitive marketing strategy, sales at W.C. Green dropped dramatically. Driving home after losing his job, Jack still could not figure out what went wrong.

Julie Nilar just would not quit. She too had a marketing degree like Jack, but decided not to pursue a traditional career right out of college. A nationally ranked bicycle racer, on graduating she chose to develop her cycling skills in international competition; she dreamed of being chosen for the U.S. Women's Olympic Road Team. To pay the bills, she got a part-time job as a marketing representative for Rolling Thunder Bicycles, a small Colorado mail-order service providing custom-made bicycles to a national customer base. Because international competition kept Julie away for long periods of time, she always took her laptop with her to stay in touch with the office. No stranger to information technology, one project she developed during these long absences was a powerful database application that kept track of Rolling Thunder's suppliers, customers, and their orders. This application became a powerful tool for Rolling Thunder and one which led to greatly increased productivity for the company.

MANAGERS AND INFORMATION TECHNOLOGY

As these two contrasting scenarios demonstrate, continual improvements and advances in information (IT) are encouraging even more changes in business and society. Managers and professionals who use IT not only to present and deliver information but also to solve their business problems will reap the rewards while those who do not will be left behind to ponder what went wrong.

The last few years brought exciting changes to managers, and the future promises even more. Increased competition forces organizations to cut costs and operate with fewer managers. The growth of small businesses encourages entrepreneurs to run their own businesses and consulting firms. Continual performance improvements, expanded storage capacity, increased capabilities of software, the Internet, and wireless access affect all aspects of management.

The exponential growth of the Internet is exceeding all forecasts. The Internet holds the potential to revolutionize virtually all aspects of business. Add in the capabilities of wireless access and the business world changes again. Consumers are presented with more choices and more data. Companies have more ways to track customer actions and preferences. Investors have instant access to data around the world. Managers have more ways to communicate and share ideas. Team members can share data and work together from any location.

Continual changes in IT present two challenges: learning to use it and finding new opportunities to improve management. Most students have taken a hands-on course that teaches them how to use a computer. Many expect the introductory MIS course to be more of the same—hands-on computer usage tied to specific needs. However, there are more complex and interesting problems to be solved. Managers need to apply their knowledge of IT tools

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to solve management problems and find new opportunities to improve their organizations. The focus of this book is to investigate the more complex question: How can we use IT to improve our performance in the business environment?

ABOUT THE BOOK

Features that Focus on Solving Problems

Each chapter contains several unique features to assist in understanding the material and in applying it to analyze and solve business problems.

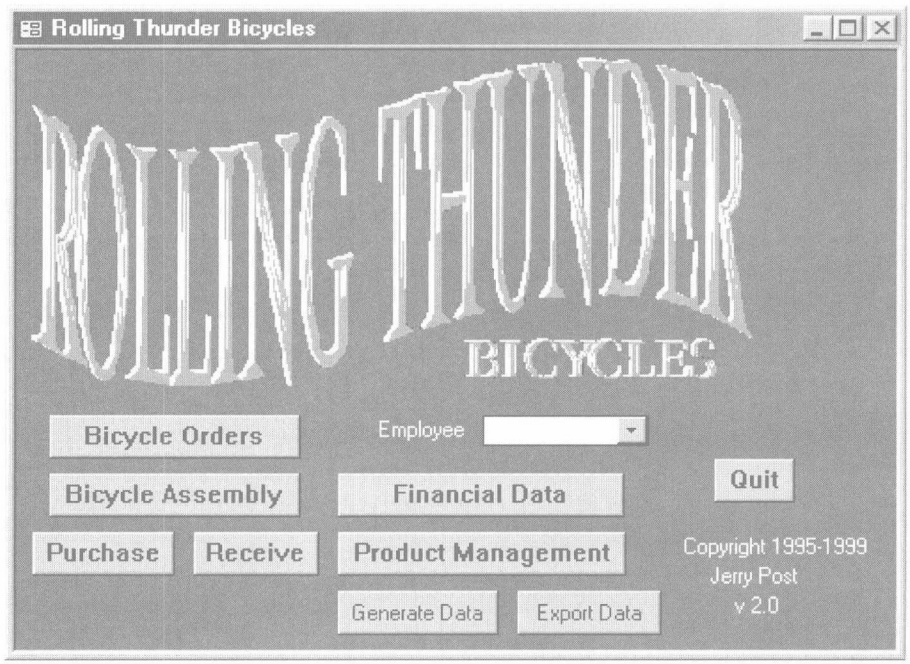
- **What You Will Learn in This Chapter.** A series of questions highlight the important issues.
- **Lead Case.** An introductory, real-world case illustrates the problems explored in the chapter.
- **Overview.** A managerial perspective of the issues and solutions covered in the chapter.
- **Trends.** Sidebar boxes that present the major changes, brief history, or trends that affect the topics in the chapter.
- **Reality Bytes.** Brief applications, mini-cases, and discussions that emphasize a specific point, highlight international issues, business trends, or ethics. They also illustrate problems and solutions in the real world.
- **Chapter Summary.** A brief synopsis of the chapter highlights—useful when reviewing for exams.
- **A Manager's View.** A short summary of how the chapter relates to managers and to the overall question of how information technology can improve management.
- **Key Words.** A list of words introduced in the chapter. A full glossary is provided at the end of the text.
- **Review Questions.** Designed as a study guide for students.
- **Exercises.** Problems that apply the knowledge learned in the chapter. Many utilize common application software to illustrate the topics.
- **Additional Reading.** References for more detailed investigation of the topics.
- **Website References.** Websites that provide discussions or links to useful topics.
- **Industry-Specific Cases.** In-depth discussion of the lead case and several other companies. Each chapter highlights a specific industry and compares different approaches to the problems faced by the firms.

Chapter	Case focus: Industry
1	Fast food
2	Entrepreneurial businesses
3	Specialty retail
4	Wholesale trade
5	Retail sales
6	Airlines
7	Automobiles
8	Computer hardware
9	Franchises
10	Travel
11	Package delivery
12	Government agencies
13	Financial services
14	Health care

- **Appendix.** A hands-on application and demonstration of using various tools to help managers solve common business problems.

Goals and Philosophy

- All of the chapters emphasize the goal of understanding how information technology can be used to improve management. The focus is on understanding the benefits and costs of technology and its application.
- Emphasis is on the importance of database management systems. Increasingly, managers need to retrieve data, utilize a DBMS to investigate, analyze, and communicate.
- Emphasis is also placed on the importance of communication, teamwork, and integration of data. Understanding information technology requires more than knowledge of basic application packages. Students need to use and understand the applications of groupware technologies.
- Students increasingly want to know how technology is used to solve problems in their chosen major/functional area. Several current applications, including hands-on exercises are highlighted in Chapter 8. The applications can be expanded to even more detail depending on the background of the students.
- In-depth cases that illustrate the use of technology. By focusing each chapter on a specific industry, students can understand and evaluate a variety of approaches. Many cases illustrate companies varying over time, so students can see the changes occurring in business and understand the evolving role and importance of information technology.
- The Rolling Thunder Database, a medium-size, detailed database application of a small business, is available on disk. Specific exercises are highlighted in each chapter. The database contains data and applications suitable for operating a small (fictional) firm. It also contains data generation routines so instructors can create their own scenarios.



Changes to the Third Edition

1. **The Internet and e-business.** In many ways, e-business is just another aspect of MIS in business, but the Internet has brought some new technologies to managers. Consequently, a large portion of the text has been rewritten to emphasize the role and importance of the Internet in business. E-business represents more than just e-commerce. The text has also been reorganized to present topics in a sequence that is necessary for e-business. For example, the topic of networks has been moved to Chapter 3, followed by computer security issues in Chapter 4, and transactions in Chapter 5. It is relatively important to cover security issues early in the book because of the recurring importance of security in e-business.

   Chapter 11 is new and describes issues in e-business, m-commerce, and entrepreneurship. Because of the innovations in e-business, entrepreneurs create many of the businesses, so students are interested in the details of starting and growing a business. These chapters cover the issues in organizing and managing an Internet-based business.

2. **Impact on society.** Chapter 14 has an expanded discussion of how IT issues are affecting society. In particular, the role of the government in business, the Internet, privacy, and protection raise many questions. Students need to be aware of the issues to become effective citizens in the new world.

3. **Systems design.** Coverage of systems design has been consolidated into Chapter 12. The discussion has been consolidated, but it is still important. Managers need to understand the issues involved in developing systems and managing the MIS departments.

4. **New cases and Reality Bytes.** All of the chapter cases and most of the Reality Bytes examples have been replaced or rewritten.

5. **Application appendixes.** Every chapter has an application appendix that examines a hands-on topic. These appendixes provide a new level of instruction, enabling the instructor to focus on hands-on applications that are relevant to the specific chapters. Each appendix has sample applications and a set of exercises that illustrate the topic. The exercises can also be combined with the Rolling Thunder Bicycle case—providing a small, but realistic illustration of decision making and management in a real-world environment. The topics can be covered in class, in a lab, or given as assignments. PowerPoint slides and the sample application files are all available on the Instructor CD-ROM. Some of the appendixes from the second edition have been moved to the website.

Chapter	Appendix
1	Finding information
2	Displaying data
3	Creating Web pages
4	Encrypting e-mail
5	Accounting review
6	Building forms in access
7	Interactive online meetings
8	Forecasting
9	E-mail rules
10	Solving business problems and cases
11	Creating a business plan
12	Visual basic
13	Project management

Organization of the Text

The text is organized into four sections to explore answers to the question of how information technology can improve management.

- **Part One.** Information technology is used to improve business transactions and operations.
- **Part Two.** IT is fundamental to business integration.
- **Part Three.** IT plays a crucial role in analyzing situations and making decisions.
- **Part Four.** IT raises new issues and possibilities in organizing businesses and information resources, and creates new effects and changes in society.

The organization of the text is based on two features. First, each chapter emphasizes the goal of the text: applying information technology to improve management and organizations. Second, the text is organized so that it begins with concepts familiar to the students and builds on them.

Each chapter is organized in a common format: (1) the introduction ties to the goal and raises questions specific to that chapter; (2) the main discussion emphasizes the application of technology and the strengths and weaknesses of various approaches; and (3) the application of technology in various real-world organizations with end-of-chapter cases.

Organization

Part One: Business Operations
Chapter 1: Introduction
Chapter 2: Information Technology Foundations
Chapter 3: Networks and Telecommunications
Chapter 4: Security, Privacy, and Anonymity
Chapter 5: Transactions and Electronic Commerce
Part Two: Business Integration
Chapter 6: Database Management
Chapter 7: Integration of Information
Part Three: Decisions and Analysis
Chapter 8: Models and Decision Support
Chapter 9: Complex Decisions and Expert Systems
Chapter 10: Strategic Analysis
Part Four: Organizing Businesses and Systems
Chapter 11: Electronic Business and Entrepreneurship
Chapter 12: Systems Development
Chapter 13: Organizing Information System Resources
Chapter 14:Information Management and Society

Chapter 1 (Introduction) remains an introduction to MIS and provides an explanation of the goals—emphasizing the text's focus on how technology can help managers perform their jobs and improve the companies they manage.

Chapter 2 (Information Technology Foundations) reviews the basic issues in personal productivity and hardware and software. It emphasizes recent issues such as handheld PDAs and tablet computers. It also discusses issues in choosing computers used in e-business such as the importance of scalability in servers.

The network chapter is now **Chapter 3 (Networks and Telecommunicatons).** To discuss e-business and the Internet, students need to understand networks and the major structure of how the Internet works.

Chapter 4 (Security, Privacy, and Anonymity) is a new chapter that contains an expanded discussion of computer security. Security is a natural expansion of transactions. The topics are also important to understanding the technologies and business relationships of the Web.

Chapter 5 (Transactions and Electronic Commerce) raises the main issues in operations and transaction processing. In addition to the traditional issues, new sections discuss the important transaction elements that arise in e-business. It also examines risk elements and explains how e-commerce changes relationships between businesses and customers.

Chapter 6 (Database Management) is relatively unchanged and explains the importance of database systems in business. New sections illustrate the use of databases in creating interactive Web businesses.

Chapter 7 (Integration of Information) explains the importance of integrating data and systems. It contains an expanded discussion of ERP systems. It also illustrates using the Internet to integrate and share data, including a presentation of Microsoft's XP integration using SharePoint services.

Chapter 8 (Models and Decision Support) describes the methods of analyzing data and creating decision support systems. It contains an expanded discussion of data mining (and its importance in e-business), as well as a discussion of digital dashboards for constantly monitoring the health of the business.

Chapter 9 (Complex Decisions and Expert Systems) explains the increasing use of expert systems, including the importance of expert systems in e-business to provide personalized service and support.

Chapter 10 (Strategic Analysis) presents the issues in strategy, maintaining its focus on using IT to gain a competitive advantage.

Chapter 11 (Electronic Business and Entrepreneurship) is a new chapter that explores the details of e-business options and how to establish them. It covers Internet marketing as well as various methods of building and hosting e-business sites. An important aspect of the chapter is an evaluation of the dot-com failures and the lessons for future e-businesses. The entrepreneurship section summarizes the basic issues in starting a business. It also examines the role of entrepreneurship within an existing business. Both are important topics in establishing the new roles of e-business.

Chapter 12 (Systems Development) looks at systems design and various development alternatives. It examines the challenges faced in developing software and the continuing movement to commercial off-the-shelf software.

Chapter 13 (Organizing Information System Resources) looks at the issues involved in the organization and management of MIS resources. In examining MIS roles, it also presents job opportunities. The chapter discusses how wireless, intranets, and Web services are having important effects on the structure and management of IT resources.

Chapter 14 (Information Management and Society) is an expanded discussion of the impact of IT on society—particularly the effects of the Internet. It investigates the issue of privacy versus business, social, and governmental needs. It examines the potential changes in a global society that is increasingly linked online.

Instructor Resources

An Instructor CD-ROM is available to adopters and offers the following resources for course presentation and management. All the instructor supplements were created by the authors, except the test bank:

- Instructor's Manual includes answers to all end-of-chapter review questions, exercises, and teaching notes for the industry-specific cases. Teaching tips and ties to the PowerPoint slides are included for each chapter.
- A test bank contains true/false, multiple choice, and short answer questions, as well as mini-cases.
- Computerized/Network Testing with Brownstone Diploma software is fully networkable for LAN test administration, but tests can also be printed for standard paper delivery or posted to a website for student access.

- Lecture notes and overheads are available as slide shows in Microsoft PowerPoint format. The slides contain all of the figures along with additional notes. The slides are organized into lectures and can be rearranged to suit individual preferences.
- Several databases and exercises are available on disk. The instructor can add new data, modify the exercises, or use them to expand on the discussion in the text.
- The Rolling Thunder database application is available in Microsoft Access format. It is a self-contained application that illustrates many of the concepts and enables students to examine any facet of operating a small company. The *Instructor's Manual* includes further guidance on how to incorporate this innovative tool into your course.

The McGraw-Hill/Irwin Information Systems Video Library contains 14 10- to 12-minute videos on numerous companies demonstrating the use of a variety of IT facets, such as intranets, multimedia, computer-based training systems, and concepts like client-server computing and business process re-engineering. It is available free to adopters.

Digital Solutions

- Website/OLC—The book's website at *www.mhhe.com/post* provides resources for instructors and students using the text. The Online Learning Center (OLC) builds on the book's pedagogy and features with self-assessment quizzes, key words, and glossary of terms, additional PowerPoint slides, and Web links.
- Pageout/Pageout Lite—our Course website Development Center, Pageout, offers a syllabus page, website address, online Learning Center content, online quizzing, gradebook, discussion forum, and student Web page creation. Pageout Lite, a scaled-down version of Pageout, offers three templates for posting your own material online and instantly converts it to HTML.

Packaging Options

McGraw-Hill/Irwin has a huge selection of IT products that can be packaged with this text to meet the needs of your course—three different application software series of manuals and CDs on the Microsoft Office suite, Internet Explorer and Netscape products, programming languages, and Internet literacy. For more about our discount options, contact your local McGraw-Hill/Irwin sales representative or visit our website at www.mhhe.com/it.

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Thad Crews
Western Kentucky University

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Pi-Sheng Deng
California State University, Stanislaus

Evan W. Duggan
The University of Alabama

Jerry Fjermestad
New Jersey Institute of Technology

Zbigniew J. Gackowski
California State University, Stanislaus

Paul Keller
University of Maryland University College

Barin Nag
Towson University

Robert D. Wilson
California State University—San Bernadino

John E. Powell
University of South Dakota

Joseph Otto
California State University

Surrender Reddy
Saginaw Valley State University

Rene Reitsma
St. Francis Xavier University

Steve Robischon
University of Idaho

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University of Texas—Dallas

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University of Colorado, Colorado Springs

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About the Authors

Jerry Post

University of the Pacific

Dr. Post is a professor of information systems at the University of the Pacific's School of Business. Jerry holds a Ph.D. in economics and statistics from Iowa State University. He earned his post doctorate from Indiana University's Graduate School of Business and earned a B.A. in mathematics and economics from University of Wisconsin—Eau Claire. Jerry has worked as a freelance programmer and software designer for various companies. Jerry has published numerous papers that explore security, systems development, and evaluation issues in MIS. He is also the author of *Database Management Systems: Designing and Building Business Applications.* When he is not tied to the keyboard, he can be found riding one of his bikes.

David L. Anderson

Loyola University

Dr. Anderson is an assistant professor of information systems and operations management in the Graduate School of Business at Loyola University. He received his law degree from the George Washington University in Washington, DC, and is a member of the Ohio, District of Columbia, federal, and U.S. Supreme Court Bars. David earned his MBA from the University of Michigan in Ann Arbor. He received his master of science degree in computer science from Northwestern University in Evanston, Illinois. David earned his doctorate in educational administration from Harvard University in Cambridge, Massachusetts.

David has served as a lead technology analyst at a major provider of health care insurance in the greater Chicago metropolitan area. Previous to this position, he served as a project management specialist at Hewitt Associates, a strategic technology planner at ISSC/IBM Corporation, a corporate information access planner at the Continental Bank, and a senior consultant at Andersen Consulting (now Accenture) in Chicago.

David is also the author of *Managing Information Systems: Using Cases within an Industry Context to Solve Business Problems with Information Technology* and, with James Pannabecker, *Guide to Financial Privacy: Regulatory Impact on Technology.*

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