

**Gerald V. Post**

# **Management Information SYSTEMS**

**SOLVING BUSINESS PROBLEMS WITH  
INFORMATION TECHNOLOGY**

**Sixth Edition**

# Management Information Systems

Solving Business Problems  
With  
Information Technology

**Version 6.0.0**

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Management Information Systems  
Solving Business Problems with Information Technology

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The cover photo shows a bicycle hill in Northern California but is a metaphor for the road to understanding information technology. It can be a fun road with scenery, climbs, and turns.

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To my parents.



## Managers and Information Technology

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Today, everyone uses computers. But does everyone use them efficiently? How many business people turn to a spreadsheet when a database would be a better tool? Do managers understand how information technology can solve business problems? As a future manager, do you know about all of the technologies that businesses are using? Can you spot a business problem and identify possible information technology solutions? Can you tell when a company is simply wasting money on technology and not solving problems?

Over the past decade, technology has changed many jobs. Competition and an economic downturn caused companies to cut costs wherever possible. In many cases, that meant reducing the number of employees. In the past few years, companies have used technology to alter and even eliminate management jobs. Twenty years ago, new college graduates could get entry-level jobs as managers, often performing relatively simple analytical tasks or summarizing data. Today, software does those jobs and generates detailed information on demand for executives.

If you want a job as a manager, you need to know how to use information technology. But it is not simply a matter of knowing how to use a word processor or spreadsheet. You need to use the technology to collaborate with other workers, to analyze data, and to find ways to improve your organization.

Continual changes in IT present two challenges: learning to use new technologies 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 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 information technology be used to improve management and make companies more efficient or better than their competitors?

## Learning Assessment

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After finishing the book, students should be able to evaluate common business problems and identify information technology solutions that could help an organization. Students should be able to explain their choices and point out potential problems or issues.

Anyone who teaches this material knows that this learning objective is difficult to meet—because of the huge number of possible issues and the flexibility required in analyzing problems. To meet the objective, smaller, and more concrete goals are presented in each chapter. Each of these is spelled out as a series of questions at the start of the chapter. By the end of each chapter, students should be able to provide intelligent answers to the various questions.

The book provides several tools to achieve its objectives. The industry cases and Reality Bytes show business problems and how organizations have attacked them. The body of the text explains the problems in more detail and focuses on the strengths and weaknesses of the various tools used to solve similar problems. The Technology Toolboxes and chapter exercises show students how to apply specific tools and concepts to solve problems.

## Organization

The organization of the text builds from basic computer concepts to teamwork and strategy. Each section and chapter is focused on how managers can use information technology to solve business problems. In particular, the first section focuses on the information technology infrastructure—the specific tools and technologies used to collect, transfer, and store data. These hardware and software tools form the building blocks of any information system.

The second section explores how IT is used to support business integration and teamwork. It begins by analyzing the importance of computer security when sharing data, and includes chapters on enterprise resource planning (ERP) systems and using the Internet for electronic business. The teamwork chapter examines the role of recent tools for collaboration and teamwork—critical concepts in today's business organizations. These tools constitute some of the most recent additions to any company's toolbox. Any manager needs to be able to use these tools to work with colleagues across the room and around the world.

The third section focuses on tools to analyze data and make decisions. As the power of computers and software increases, more tasks get transferred to the machines. To adapt and grow, managers need to move to higher-level tasks including evaluating the data, identifying strategies, and organizing new businesses.

The fourth section looks at issues directly affecting the management of information technology resources. The chapters deal with how systems are developed and the management issues of the development process. Organizing the resources, particularly centralization and decentralization are also critical topics for managers who need to resolve conflicts and determine the best ways to fit IT into an organization. The last chapter looks at broader issues of how information technology decisions affect society and how the political and social environments influence business technology decisions. Privacy, crime, jobs, and education are topics that managers need to factor into their business decisions.

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 applica-

### Chapter 1: Introduction

#### Part 1: Information Technology Infrastructure

- Chapter 2: Information Technology Foundations
- Chapter 3: Networks and Telecommunications
- Chapter 4: Database Management

#### Part 2: Business Integration

- Chapter 5: Computer Security
- Chapter 6: Transactions and ERP
- Chapter 7: Electronic Business
- Chapter 8: Teamwork

#### Part 3: Decisions and Strategies

- Chapter 9: Business Decisions
- Chapter 10: Strategic Analysis
- Chapter 11: Entrepreneurship

#### Part 4: Organizing Businesses and Systems

- Chapter 12: Systems Development
- Chapter 13: Organizing MIS Resources
- Chapter 14: Information Mgt. and Society

tion of technology in various real-world organizations is presented in the end-of-chapter cases.

**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 the growing importance of wireless devices. It also discusses issues in choosing computers used in e-business such as the importance of scalability in servers.

**Chapter 3 (Networks and Telecommunications)** explains the role of networks in managing businesses. It also explains the foundations of the Internet, so students can understand how problems can arise on the Internet and why certain technologies have evolved to solve them.

**Chapter 4 (Database Management)** explains the importance of database systems in business. The focus remains on managers’ roles and uses of databases, such as querying databases and building reports.

**Chapter 5 (Computer Security)** focuses on the business problems and threats. It explains the various tools and the fact that business managers are critical in helping maintain computer security.

**Chapter 6 (Transactions and Enterprise Resource Planning)** raises the main issues in operations and transaction processing. It includes the role of accounting and HRM systems as well as supply chain management and customer relationship management, particularly payment mechanisms. The goal is to show managers how the systems are used to solve common business problems.

**Chapter 7 (Electronic Business)** describes the various ways that companies can use the Internet to extend their businesses. It includes traditional e-commerce applications, as well as Web services and mobile commerce.

**Chapter 8 (Teamwork)** explains the increasing importance of teamwork and collaboration tools. Managers need these tools in almost any business, and almost no other textbooks even

Technology Toolbox	
1	Choosing a Search Engine Finding Information on the Internet
2	Voice Input Creating Effective Charts
3	Creating Web Pages Transferring Files on the Internet
4	Building Forms in Access Creating Database Reports
5	Assigning Security Permissions Encryption
6	Selecting an ERP System Designing an EIS/Dashboard
7	Choosing Web Server Technologies Paying for Transactions
8	Collaborating with SharePoint Meeting Space and IM
9	Forecasting a Trend Browsing Data with a PivotTable
10	Locating Customers with a GIS Analyzing Businesses
11	Sending E-Mail Legally (CAN-SPAM) Creating a Business Plan
12	Creating Forms with InfoPath Programming a New Function in Excel
13	Defining E-Mail Rules Managing Projects
14	Privacy Working in a Global Environment

talk about them. Here, an entire chapter explains the problems that need to be solved and shows how the various tools support communication, collaboration, and knowledge management.

**Chapter 9 (Business Decisions)** begins with the basic importance of using analytical tools to make decisions. It then explains how basic tools help managers evaluate data, from decision support systems to data mining. Expert systems are introduced to show how computers can make more advanced decisions. Specialized tools and topics in artificial intelligence research are used to show how more intelligent software can solve even relatively complex problems.

**Chapter 10 (Strategic Analysis)** explores in detail how information systems are used to support the functional business areas to help gain a competitive advantage.

The chapter also explores how IT helps entrepreneurs create new businesses.

**Chapter 11 (Entrepreneurship)** examines how information technology is used to start new companies and manage small businesses. By definition, small businesses have few employees so it becomes critical for entrepreneurs to leverage the technology to handle the thousands of details of managing a growing 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 MIS 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.

	<b>Case focus: Industry</b>
1	Fast Food
2	Computer Industry
3	Wholesale Suppliers
4	Pharmaceuticals
5	Professional Sports
6	Automobile Industry
7	Retail Sales
8	Package Delivery
9	Financial Services
10	Airline Industry
11	Entrepreneurship
12	Government Agencies
13	Energy Industry
14	Health Care

## Features That Focus on Solving Problems

Why do you need a textbook? You have access to the Internet and you can find millions of articles discussing technology, even online support for various software tools. You can read several online magazines about information technology—for free. Regardless of where you live, you can subscribe to manufacturer press releases and watch the technology change. You can subscribe to the Wall Street Journal and read about business, technology, governance, and host of other enlightening subjects. And yes, if you are serious about business and information technology, you should do all of these things. But you can still use a text-



book. This textbook provides a structure to the information. It teaches you how the many pieces fit together to solve business problems. It provides the context and ideas on how to analyze the millions of tidbits of data floating on the Web. Use the textbook to provide the foundation knowledge that describes the information system discipline. Then when you read new facts and see new technologies evolve, you can understand how to use them to improve your career.

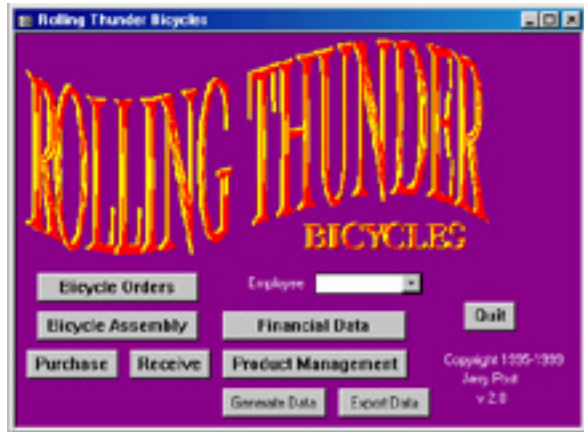
Each chapter contains several unique features to assist in understanding the material and in applying it to analyze and solve business problems. Each chapter focuses on a specific type of problem. These problems are highlighted by the introduction and demonstrated in the business cases. The text dissects the problems and explores how technology can be used to solve the 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.
- **Trends.** Sidebar boxes present the major changes, brief history, or trends that affect the topics in the chapter.
- **Reality Bytes.** Brief applications, mini-cases, and discussions emphasize a specific point and highlight international issues, business trends, or ethics. They also illustrate problems and solutions in the real world.
- **Technology Toolboxes.** A short example and description of a software tool that can be used to help managers solve specific problems. They provide a hands-on example of specific projects. Students are encouraged to follow the exercises and use the software tools to build the examples.
- **Chapter summary.** A brief synopsis of the chapter highlights—useful when reviewing for exams.
- **A Manager's View.** A short summary of how the material in the chapter applies to building applications.
- **Key Words.** A list of words introduced in the chapter. A full glossary is provided at the end of the text.
- **Website References.** Web sites that provide discussions or links to useful topics.
- **Review Questions.** Designed as a study guide of the main topics in the chapter..
- **Exercises.** Problems that apply the knowledge learned in the chapter. Many utilize common application software to illustrate the topics. Questions and Exercises marked with a checkmark icon have at basic solutions available online. Students can check their knowledge and progress by checking their work on these exercises.
- **Additional Reading.** References for more detailed investigation of the 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..

- **Rolling Thunder Bicycles Database Application.** A sample company database with integrated data for several years. Useful for demonstrating transactions, creating business queries, and analyzing data.



## 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, and utilize a DBMS to investigate, analyze and communicate.
- Emphasis is also placed on the importance of communication, teamwork, collaboration, 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.
- In-depth cases 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 that instructors can create their own scenarios.

## This Book Is Different from Other Texts

First, this book is a business text designed for an upper division or M.B.A. course, so it does not have the hundreds of step-by-step instructions to show students how to use a particular piece of software. It addresses the more difficult question of how to use information technology to solve business problems. Consequently, this text focuses on business issues first.

Second, this book is not simply a dictionary or encyclopedia that defines technology terms in one or two sentences. Students need to understand the various technology tools and see how they actually solve business problems. This book uses detailed cases to show the business problems and the technological solutions

to illustrate each chapter. It also contains in-depth explanations of various technology issues, showing their strengths and weaknesses. Where possible, these tools are also demonstrated with hands-on applications, through the accompanying databases and through the Technology Toolboxes.

## E-Book Edition

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When Congress holds hearings about them you know that textbook prices have become absurd. Simply applying the concepts in this subject and textbook it is clear that e-books are the only viable answer. With this approach, prices are reasonable and students can download the book anywhere in the world, 24-hours a day. More important, students can keep the textbook for future reference. Yes, some people still like paper. If you truly believe you prefer paper, go ahead and print your own personal copy. But, before you kill a tree, check out the new tablet PCs and the Sony e-book Reader or Kindle DX using the e-Ink technology.

## Changes to the Sixth Edition

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### Updates

The sixth edition keeps the same overall structure as the fifth edition. All chapters were revised and updated. The early chapters have more accurate and up-to-date descriptions, along with more figures describing the new technologies. All of the data charts have been updated to the most current data. All examples are illustrated with Office 2010 tools. There is a greater discussion of online tools. Almost all of the Reality Bytes are new, and all cases have been updated with a few new ones added. The data for Rolling Thunder has been improved and updated and extended through 2011 to provide more realistic analyses. About one-third to one-half of the exercises have been replaced or rewritten.

Newer topics have been added, including extensible business report language, computer forensics, virtual machines, near-field communications, telepresence, augmented reality, e-discovery, bandwidth hogs, and search engine optimization.

A new section on cloud computing was added to each chapter. Cloud computing has been around for a few years, but more options and tools are available and it is becoming popular, so managers need to understand the strengths and weaknesses of cloud computing. With the continued emphasis on mobile computing using smartphones and tablets, cloud computing becomes more important.

### Focus on Business Problems

MIS is a business class, so students need to begin with the business perspective and then see how technology can solve the problems. The chapters emphasize this focus by beginning with a series of questions. Specific, real-world cases highlight aspects of these problems so that students see the problems in context. Almost all of the main cases have been replaced or updated. The chapter then addresses the questions and demonstrates how technology can be used to solve the problems. Each chapter begins with a set of questions that will be addressed—providing students with a direct learning objective. The questions also serve to increase student curiosity, by raising issues that they are not likely to have considered before. Several chapters have been restructured and the overall book has been reorganized to emphasize the business focus.

## Technology Toolboxes

More details of technologies have been added. The goal is to build a stronger bridge between the underlying technologies and hands-on tools to business applications and strategies. Students should be encouraged to understand the technical as well as the business issues, and they should at least experiment with the technologies in the book. Chapters 2 and 3 include more technical details in particular.

## Collaboration and Teamwork

Some of the biggest changes in software and technology in the last few years have been designed to improve collaboration and teamwork. It is critical that managers be able to use these tools, and they are not taught in typical introductory tools courses. This text covers these tools in Chapter 8 and uses Technology Toolboxes to demonstrate the basic features. In addition, each chapter contains teamwork exercises designed for collaboration by a group of students. Ideally, students would be able to use the collaboration tools while participating in these exercises.

## New Cases and Reality Bytes

Most of the chapter cases and Reality Bytes examples have been replaced or rewritten. The book contains over 100 new Reality Bytes cases. All of the end-of-chapter industry cases have been updated and are tied to the specific problems in each chapter.

## Instructional Support

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Instructors have access to the following resources for course presentation and management. All the instructor supplements were created by the author, 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.
- Lecture notes 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 online. 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 book's Web site at [JerryPost.com](http://JerryPost.com) provides resources for instructors and students using the text.

## The Online System

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To students, the most important change in the fifth and sixth edition is placing everything online. The main reason for this move is cost. The main textbook was rewritten and expanded. The costs and student prices for the print book was out of line. Electronically, it is possible to make the books available for an almost trivial fee.

E-books provide additional benefits, including advanced search capabilities. Students can also set bookmarks and highlight sections. More importantly, they get to keep the books, instead of being forced to sell them back at the end of the term. Database application development is an important topic, and the examples, comments, and tips in the books will be valuable to students throughout their careers.