

Management Information Systems

Solving Business Problems with Information Technology



Gerald V. Post David L. Anderson

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*Solving Business
Problems with
Information
Technology*

GERALD V. POST

Western Kentucky University

DAVID L. ANDERSON

DePaul University

IRWIN

Chicago • Bogotá • Boston • Buenos Aires • Caracas
London • Madrid • Mexico City • Sydney • Toronto



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 testament 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 wouldn't 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, maybe to be chosen for the U.S. Women's Olympic Road Team in the year 2000. 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. As international competition kept Julie away for long periods, she always took her laptop with her to keep in touch with the office. No stranger to information technology, one project she developed during these long absences was a powerful database application which 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.

INTRODUCTION

The next few years promise to bring exciting changes to managers. 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. Continued change in Information Technology (IT) is encouraging even more changes to business and society. IT changes such as continual performance improvements, expanded storage capacity, expanded capabilities of software, and the Internet 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. 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.

Changing IT presents 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 to solve management problems and find new opportunities to improve their organizations. Hence, the focus of this book is to investigate the more complex question: How can we use IT to improve our jobs as managers?

ORGANIZATION

The text is organized into four parts to explore answers to the question of how information technology can improve management. (I) Information technology is used to improve business transactions and operations. (II) IT is fundamental in the communication and integration of data across an organization. (III) IT plays a crucial role in building models, analyzing situations and making decisions. (IV) How information systems are developed and organized.

ORGANIZATION	
Chapter 1:	Introduction
Part 1:	Personal Productivity and Business Operations
Chapter 2:	Personal Productivity
Chapter 3:	Solving Problems
Chapter 4:	Operations and Transactions
Chapter 5:	Database Management
Part 2:	Business Integration
Chapter 6:	Networks and Telecommunications
Chapter 7:	Integration of Information
Part 3:	Decisions and Models
Chapter 8:	Models and Decision Support
Chapter 9:	Decisions in Business Areas
Chapter 10:	Complex Decisions and Artificial Intelligence
Chapter 11:	Strategic Analysis
Part 4:	Designing and Managing Information Systems
Chapter 12:	Systems Development
Chapter 13:	Organizing Information System Resources
Chapter 14:	Information Management and Society

Chapter 1 (Introduction) examines the changing nature of IT, business and society. These changes highlight the need for business managers to understand how IT can be used to improve decisions, jobs, and the entire organization.

To begin, Part 1, Chapter 2 (Personal Productivity) presents a review of hardware and software that shows how managers use IT for personal tasks. Instead of simply describing technology and defining terms, the chapter focuses on advantages, disadvantages, and appropriate uses of the various hardware and software tools.

Chapter 3 (Solving Problems) discusses how to analyze and solve business problems, emphasizing the systems approach to give students experience with the subjective side of managing IT. The chapter also introduces students to business object-oriented design.

Chapter 4 (Operations and Transactions) emphasizes the importance of transaction processing systems. It presents common problems and demonstrates how IT is used to collect, process, and store quality data.

Most systems rely on databases for transaction processing, so Chapter 5 (Database Management) concludes this section. It includes hands-on applications that illustrate the use and management of databases, focusing on the importance of managers' understanding of database queries. The appendix illustrates the basic techniques of data normalization.

Part 2 covers a crucial component of MIS that is often ignored or treated lightly in other texts: communication and integration of information. Today's managers work in teams and rely on information systems to capture, transmit, and analyze information from diverse locations and in various formats.

Chapter 6 (Networks and Telecommunications) focuses on the various choices, relative merits, and costs of networks and telecommunications systems, as well as how computers can be physically connected to share data. A separate appendix explains the technical details in more depth.

Chapter 7 (Integration of Information) shows that businesses can make substantial gains through using technology to integrate the data across the company. Integration and technology can change the way business operates and improve decision-making. The chapter also discusses the challenge of combining various forms of data (text, images, sound and video) into information a manager can use.

Part 3 focuses on making decisions. It emphasizes the importance of models in management. Beginning with basic uses of models, the part examines the various IT tools available to help managers examine various aspects of making decisions.

Chapter 8 (Models and Decision Support) introduces models and highlights their importance in making tactical level decisions. The chapter discusses the common uses of models in making decisions. It concludes by examining enterprise-wide models and the use of enterprise information systems to examine problems across the entire organization.

Chapter 9 (Decisions in Business Areas) integrates MIS with courses in other disciplines by examining common problems in accounting, marketing, finance, human resource management, production, and design. The basic problems are described along with the appropriate model. A hands-on version of the problem is developed using common IT tools. The application exercises encourage students to explore the models and tools in more depth. A technical appendix reviews the basic financial ratios and computations used to analyze companies. Students are encouraged to analyze the financial aspects of the cases in each chapter.

Chapter 10 (Complex Decisions and Artificial Intelligence) emphasizes the issues and problems involved in more complex decisions, decisions that involve more complex analysis, greater accuracy, or faster responses. The text then shows how basic AI techniques, including Expert Systems, can be used by managers to reach better decisions.

Chapter 11 (Strategic Analysis) examines difficult decisions—unstructured problems involving strategy. The chapter focuses on common problems in strategy (utilizing Porter's five-forces model), and explores the ways in which IT is used to help organizations gain a competitive advantage.

Part 4 discusses how information systems are designed and created. Again, the focus is on the role of managers in the development process.

Chapter 12 (Systems Development) examines basic issues in developing and implementing systems. The text emphasizes the role played by managers in helping

design new systems. It examines the various development methodologies in terms of their strengths and weaknesses so managers can help determine which method should be used to develop systems they need. The chapter also emphasizes the increasing role of end-user participation in all of the development methodologies.

Chapter 13 (Organizing Information System Resources) examines the various methods of organizing MIS resources. It focuses on the fundamental issues of centralization and decentralization. By emphasizing the strengths and weaknesses of various IT organizational schemes, managers can learn to solve organization problems and can determine how to align MIS to fit their needs.

Chapter 14 (Information Management and Society) examines the ways in which IT is changing society. It also encourages managers to think about the effects of their choices on various members of society. Basic issues include privacy, security, and ethical issues in IT related to managers, programmers, and organizations. Common methods used to provide information security are also presented.

PEDAGOGY

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 which ties to the goal and raises questions specific to that chapter; (2) the main discussion which emphasizes the application of technology and the strengths and weaknesses of various approaches; and (3) the application of the technology in various real-world organizations with end-of-chapter cases.

Each chapter contains several sections to assist in understanding the material and in applying it to solve problems and analyze business problems:

- **What you will learn in this chapter.** A series of questions that highlight the important issues.
- **Lead case.** Illustrates the problems explored in the chapter.
- **Overview.** A brief summary of the chapter's goal and outline.
- **Trends.** A section that presents the major changes, brief history, and trends that affect the topics in the chapter.
- **Reality Bytes.** Brief applications, cases and discussion that emphasize a specific point, highlight international issues, business trends, ethics, or illustrate problems and solutions in the real world.
- **Chapter summary.** A list of the chapter topics.
- **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 that 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.

- **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.
- **Discussion Issue.** A brief dialog between managers to highlight a specific topic. Most emphasize ethical issues. The discussion and related questions form a starting point for class discussions.

CHAPTER	CASE FOCUS: INDUSTRY
1	Fast Food
2	Small Business
3	Railroads
4	Retail Sales
5	Service Firms
6	Distributors and Inventory Management
7	Large-scale Manufacturing
8	Design and Marketing
9	Delivery Companies
10	Customer Service
11	Airlines
12	Government Agencies
13	Financial Institutions
14	Health Care

PRIMARY FEATURES OF THE TEXT

- All of the chapters emphasize the goal of understanding how information technology can be used to improve management. The focus is on understanding benefits and costs of technology and its application.
- The role and importance of *objects* in understanding information technology is emphasized. The object approach is bringing major changes to the application and use of technology. A firm grasp of the concepts makes it easier to use new applications; analyze business situations; and communicate with IT developers. The use and managerial importance of object-oriented technology are highlighted throughout the text.
- An emphasis on the importance of database management systems. Increasingly, managers need to retrieve data and utilize a DBMS to investigate, analyze, and communicate.
- An emphasis on the importance of communication and integration of data. Understanding information technology requires more than knowledge of basic application packages. Students need to use and understand the applications of technologies like OLE, Notes, and the Internet.
- 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 9. The application 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.
- Rolling Thunder Database. A medium-sized, 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. The database also contains data generation routines so instructors can create their own scenarios.

INSTRUCTIONAL SUPPORT

- A test bank with true/false, multiple choice, and short answer questions is available for use with the Irwin electronic test bank software.
- 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 (version 2.0 or 7.0 [Windows '95]). 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 Irwin IS Video Library contains 14 10-12 minute videos and is available to adopters of the text.
- An Internet site for direct contact with the authors: <http://cis.coba.wku.edu/faculty/post>
- An Internet site for contact with the publisher: <http://www.Irwin.com>

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Kevin Brennan, University of Rochester

Jane M. Carey, Arizona State University—West

Drew S. Cobb, Johns Hopkins University

Virginia R. Gibson, University of Maine

Mark R. Gruskin, University of Michigan—Dearborn
William L. Harrison, Oregon State University
Thomas Hilton, Utah State University
Betsy Hoppe, Wake Forest University
James E. LaBarre, University of Wisconsin—Eau Claire
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Brief Contents

CHAPTER 1

Introduction 2

PART 1 *Personal Productivity and Business Operations* 41

CHAPTER 2

Personal Productivity 42

CHAPTER 3

Solving Problems 94

CHAPTER 4

Operations and Transactions 138

CHAPTER 5

Database Management 186

PART 2 *Business Integration* 243

CHAPTER 6

Networks and Telecommunications 244

CHAPTER 7

Integration of Information 310

PART 3 *Decisions and Models* 361

CHAPTER 8

Models and Decision Support 362

CHAPTER 9

Decisions in Business Areas 404

CHAPTER 10

Complex Decisions and Artificial Intelligence 452

CHAPTER 11

Strategic Analysis 498

PART 4 *Designing and Managing Information Systems* 553

CHAPTER 12

Systems Development 554

CHAPTER 13

Organizing Information System Resources 606

CHAPTER 14

Information Management and Society 650

Glossary G1

Organization Index O11

Subject Index SI1

Contents

CHAPTER 1

Introduction	2
Overview	4
The Expanding Role of Information Technology	4
What Is MIS?	6
Why Information Technology Is Important	8
<i>Collecting, Analyzing, and Sharing Data</i>	8
<i>Analyzing and Building Systems</i>	8
What Do Managers Do?	9
<i>Traditional Management and Observations</i>	9
<i>Making Decisions</i>	9
Business and Technology Trends	10
<i>Specialization</i>	11
<i>Management by Methodology and Franchises</i>	13
<i>Decentralization and Small Business</i>	15
<i>Temporary Workers</i>	16
<i>Internationalization</i>	17
<i>Service-Oriented Business</i>	18
Re-engineering: Altering the Rules	19
Management and Decision Levels	21
<i>Operations</i>	21
<i>Tactics</i>	22
<i>Strategy</i>	23
An Introduction to Strategy	23
Management Information System Roles	26
Summary	27
Key Words	28
Review Questions	28
Exercises	28
Additional Reading	29
Cases	31
Discussion Issue: Why Don't Computers Understand English?	38

PART 1 *Personal Productivity and Business Operations* 41

CHAPTER 2

Personal Productivity	42
Overview	44

Introduction	45
Types of Data	46
<i>Object Orientation</i>	46
<i>Numbers and Text</i>	48
<i>Pictures</i>	49
<i>Sound</i>	51
<i>Video</i>	52
<i>Multimedia</i>	53
<i>Virtual Reality</i>	55
<i>Size Complications</i>	57
Hardware Components	58
<i>Processors</i>	60
<i>Input</i>	65
<i>Output</i>	68
<i>Secondary Storage</i>	70
Operating Systems	72
<i>Multitasking</i>	72
<i>Graphical User Interface</i>	73
<i>Standardization and Compatibility</i>	75
Application Software	76
<i>Research: Databases</i>	76
<i>Analysts: Calculations</i>	77
<i>Communication: Writing</i>	77
<i>Communication: Presentation and Graphics</i>	78
<i>Communication: Voice and Mail</i>	79
<i>Organizing Resources: Calendars and Schedules</i>	80
Summary	81
Key Words	81
Review Questions	82
Exercises	82
Additional Reading	84
Cases	86
Discussion Issue: Are Graphs Misleading?	91

CHAPTER 3

Solving Problems	94
Overview	95
Introduction	96
A Systems Approach	97
<i>Input, Process, Output</i>	98
<i>Divide and Conquer</i>	100

<i>Goals and Objectives</i>	100	
<i>Control and Feedback</i>	101	
<i>Diagramming Systems</i>	102	
<i>Common Systems Problems in Business</i>	107	
Object-Oriented Design	112	
<i>Properties and Functions</i>	112	
<i>Object Hierarchies</i>	113	
<i>Events</i>	114	
Asking Questions	114	
Solving Business Problems and Cases	117	
<i>Solve the Right Problem</i>	117	
<i>Choose the Right Tools</i>	117	
<i>System Division: One Step at a Time</i>	118	
<i>Making a Decision</i>	118	
<i>Consider the Consequences</i>	118	
<i>Testing: Everyone Makes Mistakes</i>	118	
<i>Implementation</i>	122	
<i>Hints for Solving Business Problems and Cases</i>	122	
Summary	125	
Key Words	125	
Review Questions	125	
Exercises	126	
Additional Reading	126	
Cases	128	
Discussion Issue: Resistance to Change	135	
CHAPTER 4		
Operations and Transactions	138	
Overview	139	
Introduction	140	
The Value and Cost of Information	142	
Decision Levels	143	
<i>Business Operations</i>	143	
<i>Tactical Management</i>	145	
<i>Strategic Management</i>	146	
Data Capture	146	
<i>Point of Sale</i>	147	
<i>Process Control</i>	150	
<i>Electronic Data Interchange (EDI)</i>	151	
Data Quality	156	
<i>Data Integrity</i>	156	
<i>Multitasking, Concurrency, and Integrity</i>	157	
<i>Data Volume</i>	158	
<i>Data Summaries</i>	160	
<i>Time</i>	160	
The Role of Accounting	160	
<i>Input and Output: Financial Data and Reports</i>	161	
<i>Purchases, Sales, Loans, and Investments</i>	162	
<i>Inventory</i>	162	
<i>The Accounting Cycle</i>	162	
<i>Process: Checks and Balances</i>	163	
Human Resources and Transaction Processing	164	
<i>Input: Data Collection</i>	164	
<i>Output: Reports</i>	166	
<i>Process: Automation</i>	166	
Summary	167	
Key Words	167	
Review Questions	168	
Exercises	168	
Additional Reading	169	
Cases	172	
Discussion Issue: Are Standards Helpful?	183	
CHAPTER 5		
Database Management	186	
Overview	188	
Introduction	188	
<i>Relational Databases</i>	191	
<i>Tables, Rows, Columns, Data Types</i>	191	
Advantages of the Database Approach	192	
<i>Problems with the Programming Approach</i>	192	
<i>The Database Management Approach</i>	194	
Queries	196	
<i>Single-Table Queries</i>	197	
<i>Computations</i>	200	
<i>Joining Multiple Tables</i>	202	
<i>Examples</i>	203	
<i>Views</i>	204	
Designing a Database	206	
<i>Data Definition</i>	207	
<i>Data Input Screens</i>	208	
<i>Reports</i>	210	
<i>Putting It Together with Menus</i>	211	
Database Administration	213	
<i>Standards and Documentation</i>	214	
<i>Testing, Backup, and Recovery</i>	215	
<i>Access Controls</i>	215	
Database and Spreadsheets	215	
<i>Data Storage versus Calculations</i>	215	
<i>Illustration</i>	216	
<i>Security and Data Integrity</i>	217	
Complex Data Types and Object-Oriented Databases	218	
<i>Text</i>	218	
<i>Pictures and Graphs</i>	219	
<i>Objects</i>	220	

Commercial Databases	221	
<i>Advantages</i>	222	
<i>External versus Internal Data</i>	222	
Database Search Strategies	223	
Summary	225	
Key Words	225	
Review Questions	225	
Exercises	226	
Additional Reading	227	
Cases	229	
Discussion Issue: Who Should Control Corporate Data?	234	
Appendix: Data Normalization	236	
<i>Introduction</i>	236	
<i>Notation</i>	237	
<i>First Normal Form</i>	238	
<i>Second Normal Form</i>	239	
<i>Third Normal Form</i>	240	
<i>Checking Your Work</i>	241	
 PART 2 Business Integration	 243	
 CHAPTER 6		
Networks and Telecommunications	244	
Overview	245	
Introduction	246	
<i>Sharing Data</i>	248	
<i>Sharing Hardware</i>	257	
<i>Sharing Software</i>	258	
<i>Voice and Video Communication</i>	259	
Components of a Network	259	
<i>Computers</i>	260	
<i>Media</i>	262	
<i>Connection Devices</i>	268	
<i>Software</i>	269	
Client-Server and Peer-to-Peer LANs	269	
<i>Client-Server</i>	269	
<i>Peer-to-Peer</i>	270	
Enterprise Networks	271	
Standards	272	
<i>The Need for Standards</i>	272	
<i>A Changing Environment</i>	272	
Object Orientation	273	
New Telephone Services	274	
The Internet	275	
<i>Internet Mail</i>	276	
<i>Access to Data on the Internet</i>	277	
<i>Locating Data on the Internet</i>	280	
<i>Security Concerns on the Internet</i>	282	
<i>Business on the Internet</i>	282	
Global Telecommunications	284	
<i>Technical Problems</i>	284	
<i>Legal and Political Complications</i>	285	
<i>Cultural Issues</i>	286	
<i>Comment</i>	286	
Summary	287	
Key Words	287	
Review Questions	287	
Exercises	288	
Additional Reading	289	
Cases	291	
Discussion Issue: International Data Flows	302	
Appendix: Technical Definitions	304	
<i>Introduction</i>	304	
<i>Direct Connections</i>	304	
<i>Switched Networks</i>	304	
<i>Shared-Media Networks</i>	305	
<i>Choosing Network Designs</i>	307	
<i>ISO Reference Model</i>	307	
 CHAPTER 7		
Integration of Information	310	
Overview	312	
Introduction	313	
Integration in Business	316	
Static and Dynamic Integration	319	
Integration over Networks	322	
Workgroup Integration	323	
<i>Communication</i>	324	
<i>Compound Documents</i>	324	
<i>Databases</i>	325	
<i>Applications</i>	326	
<i>Workgroup Example</i>	327	
<i>Problems with Sharing Documents</i>	329	
Integrating with Legacy Systems:		
A Data Warehouse	330	
<i>Building a Data Warehouse</i>	330	
<i>Limitations of a Data Warehouse</i>	330	
Open Systems: Integration with Different Systems	332	
<i>Hardware</i>	332	
<i>Software</i>	333	
<i>Open Standards</i>	334	
<i>Management Issues</i>	334	
Group Decisions	335	
<i>Features of a GDSS</i>	336	
<i>Limitations of a GDSS</i>	337	
Software to Support Integration	337	
<i>Spreadsheets</i>	338	

<i>Word Processors and Desktop Publishing Software</i>	339
<i>Database Reports</i>	340
<i>Guidelines for Integrating Data</i>	342
Integrating Data with Windows	342
<i>Clipboard and Linking Data</i>	343
<i>Sequential Binding of Documents</i>	343
Summary	344
Key Words	345
Review Questions	345
Exercises	345
Additional Reading	346
Cases	348
Discussion Issue: Telecommuting	358
PART 3 Decisions and Models	361
CHAPTER 8	
Models and Decision Support	362
Overview	364
Introduction	364
Decisions	366
Biases in Decisions	366
<i>Acquisition/Input</i>	367
<i>Processing</i>	367
<i>Output</i>	367
<i>Feedback</i>	367
<i>Models and Information Systems</i>	367
Introduction to Models	369
<i>Physical</i>	369
<i>Process</i>	369
<i>Business Modeling</i>	372
Why Build Models?	372
<i>Understanding the Process</i>	373
<i>Optimization</i>	374
<i>Prediction</i>	374
<i>Simulation or "What-If" Scenarios</i>	376
Decision Support Systems: Database, Model, Output	377
Building Models	379
<i>Assumptions</i>	379
<i>Identifying Input and Output Variables</i>	379
<i>Processes and Equations</i>	380
<i>Software</i>	381
Limitations of Models	385
<i>Model Complexity</i>	385
<i>Cost of Building Models</i>	385
<i>Errors in Models</i>	385
A Business Model: Enterprise Information Systems	386
<i>Description of an EIS</i>	387
<i>How Does an EIS Work?</i>	387
<i>Advantages of an EIS</i>	388
<i>Limitations of an EIS</i>	389
Summary	390
Key Words	390
Review Questions	391
Exercises	391
Additional Reading	392
Cases	393
Discussion Issue: Employee Privacy	401
CHAPTER 9	
Decisions in Business Areas	404
Overview	405
Introduction	406
Accounting	407
<i>Transaction Processing and Tactical Management</i>	407
<i>Control Systems</i>	408
<i>Strategic Support</i>	409
<i>Example</i>	410
Finance	411
<i>Investments</i>	411
<i>Corporate Finance</i>	414
<i>Example</i>	414
Marketing	417
<i>Research and Forecasting</i>	417
<i>Customer Service</i>	419
<i>Example</i>	420
Human Resources Management	422
<i>Employee Records</i>	422
<i>Performance Evaluations</i>	423
<i>Example</i>	423
Production and Design	424
<i>Process Control</i>	426
<i>Inventories, MRP, CIM, and JIT</i>	426
<i>Product Design</i>	430
<i>Example</i>	430
Geographic Information Systems	432
<i>Maps and Location Data</i>	433
<i>Example</i>	434
Summary	436
Key Words	437
Review Questions	437
Exercises	437
Additional Reading	439
Cases	441
Discussion Issue: Simulation	446
Appendix: Financial Definitions	448

<i>Basic Accounting Reports</i>	448
<i>Financial Ratio Calculations</i>	450
<i>Interpretation</i>	451

CHAPTER 10

Complex Decisions and Artificial Intelligence 452

Overview 454

Introduction 455

Specialized Problems: Complex, Repetitive Decisions 457

Diagnostic Problems 458

Speedy Decisions 460

Consistency 461

Training 462

Decision Support Systems and Expert Systems 463

Building Expert Systems 465

Knowledge Base 466

Knowledge Engineers 469

Creating an ES 470

Reasoning 472

Limitations of Expert Systems 473

Management Issues of Expert Systems 474

Additional Specialized Problems 475

Pattern Recognition and Neural Networks 475

Machine Vision 477

Voice and Speech Recognition 478

Language Comprehension 480

Speed and Massively Parallel Computers 480

Robotics and Motion 481

Statistics, Uncertainty, and Fuzzy Logic 482

DSS, ES, and AI 483

Machine Intelligence 484

Object Orientation 484

Summary 487

Key Words 487

Review Questions 487

Exercises 488

Additional Reading 488

Cases 491

Discussion Issue: Who Owns Knowledge? 497

CHAPTER 11

Strategic Analysis 498

Overview 500

Introduction 500

The Competitive Environment 503

External Agents 504

Customers 504

Suppliers 506

Rivals, New Entrants, and Substitutes 506

Government Regulations 508

IS Techniques to Gain Competitive Advantage 508

Barriers to Entry 509

Distribution Channels 511

Switching Costs 512

Lower Production Costs 512

Product Differentiation and New Products 513

Quality Management 514

The Value Chain 515

The Search for Innovation 517

Research 518

Engineering and Design 518

Manufacturing 519

Logistics and Supply 520

Marketing 520

Sales and Order Management 520

Service 521

Management 521

Costs and Dangers of Strategies 521

High Capital Costs 522

When the Competition Follows 523

Changing Industry 525

Sharing Data 525

Government Intervention 526

Operations, Tactics, Strategy 528

Summary 529

Key Words 529

Review Questions 529

Exercises 530

Additional Reading 530

Cases 533

Discussion Issue: Strategy or Power 549

PART 4 Designing and Maintaining Information Systems 553

CHAPTER 12

Systems Development 554

Overview 556

Introduction 556

Early Methods 559

Individual Programming 559

Top-Down and Bottom-Up Design 560

Systems Development Life Cycle 561

The Need for Control 561

Introduction to SDLC 563

Feasibility and Planning 564

<i>Systems Analysis</i>	565	<i>Peer-to-Peer Systems</i>	631
<i>Systems Design</i>	567	Object Orientation	631
<i>Systems Implementation</i>	568	Change and Outsourcing	632
<i>Maintenance</i>	573	Summary	636
<i>Evaluation</i>	574	Key Words	636
<i>Strengths and Weaknesses of SDLC</i>	576	Review Questions	637
CASE Tools: Can Technology Help MIS?	577	Exercises	637
Prototyping and Rapid Application Development (RAD)	578	Additional Reading	637
Developing Systems Requires Teamwork	581	Cases	639
<i>Joint Application Development (JAD)</i>	581	Discussion Issue: Outsourcing	647
<i>Collaborative Development Technologies</i>	582	CHAPTER 14	
Object-Oriented and Event-Driven Development	583	Information Management and Society	650
End-User Development	585	Overview	652
When to Call for Help	587	Introduction	652
Combining Methodologies	588	Individuals	654
Purchasing Commercial Software	589	<i>Privacy</i>	654
Summary	590	<i>Dehumanization</i>	659
Key Words	590	Jobs	659
Review Questions	591	<i>Loss of Jobs</i>	659
Exercises	591	<i>Physical Disabilities</i>	661
Additional Reading	592	<i>Telecommuting</i>	661
Cases	594	Education and Training	663
Discussion Issue: Users versus Developers	604	Government	663
CHAPTER 13		Social Interactions	664
Organizing Information System Resources	606	<i>Social Group Legitimacy</i>	664
Overview	608	<i>Access to Technology</i>	664
Introduction	608	<i>E-mail Freedom</i>	665
Managing the Information Systems Function	610	<i>Liability and Control of Data</i>	666
MIS Roles	611	<i>Transactions and Money</i>	666
<i>Hardware Administration</i>	611	Threats to Information	667
<i>Software Support</i>	612	<i>Employees</i>	668
<i>Access to Corporate Data</i>	613	<i>Consultants</i>	670
<i>Software Development</i>	614	<i>Business Partnerships</i>	670
<i>Support for End-User Development</i>	614	<i>Outsiders</i>	670
<i>Corporate Computing Standards</i>	615	<i>Personal Computers and Viruses</i>	670
<i>Data and Database Administration</i>	617	Computer Security	673
<i>Advocacy Role</i>	617	<i>Manual and Electronic Information</i>	673
MIS Jobs	618	<i>Backup Protection</i>	673
Centralization and Decentralization	620	<i>User Identification</i>	675
<i>Hardware</i>	621	<i>Access Control</i>	677
<i>Software and Data</i>	623	<i>Alternative Security Measures</i>	677
<i>Personnel</i>	625	<i>Encryption</i>	678
Client-Server Solutions	626	<i>Encryption, Privacy, and Public Needs</i>	680
<i>Hardware</i>	628	Responsibility and Ethics	681
<i>Software and Data</i>	630	<i>Users</i>	681
<i>Personnel</i>	630	<i>Programmers and Developers</i>	682
		<i>Companies</i>	683
		<i>Governments</i>	684

Summary	685
Key Words	686
Review Questions	686
Exercises	686
Additional Reading	689
Cases	689

Discussion Issue: Security Limits?	699
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<i>Glossary</i>	<i>G1</i>
<i>Organization Index</i>	<i>OI1</i>
<i>Subject Index</i>	<i>SI1</i>