## Contents

Preface

To the Student

XXV

XXV

|           | To the Instructor xxvii   |
|-----------|---|
| Chapter 1 | Introduction to Information Systems 1                                 |
|           | Key Questions 1   |
|           | Introduction to Information Systems 2                                 |
|           | Trends in Business and Management 3                                   |
|           | Blurring of Industry Boundaries 3                                     |
|           | Deregulation of Industries 4  |
|           | Faster Pace of Business 5   |
|           | Increasing Foreign Competition 5                                      |
|           | Global Business Community 5   |
|           | An Information Society 6  |
|           | Increasing Complexity of Management 6                                 |
|           | Interdependence of Organization Units 7                               |
|           | Improvement of Productivity 7   |
|           | Availability of Computers for End-Users 7                             |
|           | Recognition of Information as a Resource 8                            |
|           | What Is an Information System? 8                                      |
|           | Definition o  |
|           | What Does an Information System Do? 10                                |
|           | Does an Information System Need Computers?                            |
|           | What Types of Information Systems Exist? 13                           |
|           | Computer Information Systems 19                                       |
|           | What Is a Computer? 19  |
|           | Hardware for Data Processing 20                                       |
|           | Putting Computer Technology in Perspective 29 Why Study Information 6 |
|           | Why Study Information Systems? 29 Summary 30                          |
|           |   |
|           | Key Words 31  |
|           | Review Questions 31   |

|              | Application Problems 32  |
|--------------|--|
|              | Minicase: Showtime Theatrical Services 33  |
| MANAGEMENT I | NFORMATION SYSTEMS MODULES 35  |
| Chapter 2    | The Information Systems Vision 36  |
|              | Key Questions 36   |
|              | Why Use Information Systems? 37  |
|              | The Meaning of Vision 37   |
|              | Two Visions of the Role of Information Systems 38                                    |
|              | Types of Information Systems Benefits 40 The Value of Information Systems 40         |
|              | The Value of Information Systems 44 Information Systems as Strategic Applications 44 |
|              | The Consideration of Information Systems in Diameter Control                         |
|              | The information Systems Environment 48   |
|              | The Business Environment 48  |
|              | The Organization 49 Information Systems Architecture 50                              |
|              | Information Systems Architecture 50 Information Systems Applications 52              |
|              | The Information Systems Challenge 52   |
|              | What Is the Challenge? 52  |
|              | Why Are Information Systems a Challenge? 52  |
|              | Summary 54   |
|              | Key Words 54   |
|              | Review Questions 54  |
|              | Application Problems 55  |
| Chapter 3    | Information  |
| omaptor o    | Information and System Views 57  |
|              | Key Questions 57   |
|              | Information and System Views 58  |
|              | Information: Definition and Types 58 Types of Accounting Information 59              |
|              | Types of Management Information 50   |
|              | information Distinguished from Data 62   |
|              | The Attributes of Information 63 Information Theory 65                               |
|              | A Communication System 66  |
|              | Redundancy 67  |
|              | Information and Computer Information Systems 68                                      |

| Information Sources 68 Primary and Secondary Information 69 Problems with Information Sources 70 Elements of Systems 72 Levels of Systems 77 Control in Systems 78 Essential Control Elements 78 Feedback and Feedback Loops 79  |
|--|
| Systems in Management 80   |
| Multiple Uses of Information 81 Information Systems 81 Information Systems and Organizational Control 82   |
| The Requirements of Information Systems 82 Processing Transaction Data 83 Providing Data Reduction 83 Managing Information Delay 83 Anticipating Manager Needs 84 Handling Diverse Types of Information 85   |
| Summary 85   |
| Key Words 86   |
| Review Questions 87  |
| Application Problems 87  |
| Minicase: Midwest Enterprises, Inc. 91   |
| Minicase: Will the Real Information System Division Division System Division Division System Division Divisio |
| 92   |
| Views of the Organization: Human Resources, Management, and Organization Structure 94  |
| Key Questions 94   |
| Human Resources and Information Processing 95 Ways We Are Alike in Information Processing 95 Ways We Differ in Information Processing 107 Implications of These Differences for L. 6   |
| Implications of These Differences for Information Systems 109  |
| Management and Information Needs 111  Management Functions 111  Management Hierarchies and Information Flow 112  |
| Management Activities 114  |
| Management Theories 117 Characteristics of a Theory 117 Eras of Management Theory 118  |

| A Contingency View 121  |     |
|---|-----|
| Organization Structure and Information Systems Organization Theory 122 Concerns in Organization Design 122 Information Processing Strategies 123 Characteristics of Effective Organizations 125 | 121 |
| Summary 128   |     |
| Key Words 129   |     |
| Review Questions 129  |     |
| Application Problems 130  |     |
| Minicase: Sidekick ® 132  |     |
| Minicase: No Computer Here 133  |     |
| Computers: The Changing Frontier 136  |     |
| Key Questions 136   |     |
| General Characteristics 137 Hardware 138 Software 139 Procedures 140 People 140   |     |
| Classes of Computer Systems 144 Personal Computers 144 Midrange Computers 145 Mainframe Computers 145 Supercomputers 145 Processing Speeds 148  |     |
| Major Elements of a System 148 Example of Using a Computer in Business 150 Input/Output of Data 153   |     |
| Interaction with On-Line Systems 164 Output Devices 167 Central Processing Unit 174 Secondary Storage Devices 180 Optical Disks 188   |     |
| Overlapped Processing 191   |     |
| Channels and Buffers 193  |     |
| Summary 196   |     |
| Key Words 197   |     |
| Review Questions 198  |     |
| Application Problems 199  |     |
| Minicase: Optical Storage System 202  |     |
| = , · · · · · · · · · · · · · · · · · ·   |     |

CONTENTS ix

|           | Minicase: Standardize on One Computer 203  |
|-----------|--|
| Chapter 6 | Software for Information Systems 205   |
|           | Key Questions 205  |
|           | Why Should You Know About Orman L. O.  |
|           | Types of Computer Software 207   |
|           | Operating System Software 207  |
|           | Jobs 208   |
|           | Control Functions 208  |
|           | Service Functions 209  |
|           | Application Software 209 Acquiring Application Software 210                                |
|           | Conceptions of Duri  |
|           | The First Generation 212   |
|           | The Second Generation 214  |
|           | The Third Generation 214   |
|           | The Figh Countries 214   |
|           | The Fifth Generation 218   |
|           | Third-Generation Languages 220 FORTRAN 221   |
|           | BASIC 224  |
|           | COBOL 227  |
|           | Pascal 231   |
|           | Ada 234  |
|           | Choice of Third-Generation Programming Languages 234                                       |
|           | Fourth-Generation Languages 235  Query and Retrieval Languages 236                         |
|           | Report Generators 240  |
|           | Application Generators 242   |
|           | Decision Support Languages 250   |
|           | Personal Computer Business Software 252  |
|           | Electronic Spreadsheets 252  |
|           | Word Processing 257  |
|           | Desktop Publishing 258 Data Management 259   |
|           | Graphics 264   |
|           | Summary 265  |
|           | Key Words 267  |
|           | Review Questions 268   |
|           | Application Problems 269   |
|           | Minispee Programme C. 115  |
|           | Minicase: Programmer Certification 271  Minicase: Who Should Pay for a Software Error? 272 |

# TRANSACTION PROCESSING MODULE 275

| Chapter 7    | Files and File Processing 276  |
|--------------|--|
|              | Key Questions 276  |
|              | Hierarchical Contents of Files 279  Data Items and Entities 279  Record 280  Files 282   |
|              | File Types 282 Master File 283 Transaction File 283 Sort File 284  |
|              | File Storage and Access Methods 285 Types of File Organization 285 Address Systems in Random File Organization 287 Indexed File Organization 291 |
|              | Processing Modes 295 Batch Processing 295 On-Line Processing 296 Selection of Processing Mode 298  |
|              | Real-Time Systems 300 Real-Time Processing 300 Types of Real-Time Processing 300 On-Line, Real-Time Processing 301                               |
|              | Time-Sharing Systems 302 Interactive Computing 302 Time-Sharing Characteristics 302 Evaluation of Time Sharing 303                               |
|              | Transaction Processing Procedures 303 Data Collection 304 Editing 305 Processing 306   |
|              | Reporting 311  |
|              | Summary 313  |
|              | Key Words 314  |
|              | Review Questions 314   |
|              | Application Problems 315  Minicase: Automatic Teller Machine Fraud 320   |
|              |  |
| Supplement 7 | Input Validation Techniques 321  |
|              | Examination Techniques 321 Transaction Validation 321  |

| Sequence Checks 323 Batch Totals 323 Format Checks 324 Reasonableness Checks 325 Audit Trail 325 Duplicate Processing 325   |
|---|
| Check Digits 326 Principle of Check Digits 326 Development of Check Digits 326  |
| Database Management 328   |
| Key Questions 328 Why Should You Know About Database Management? 329 What Is Database Management? 330 What Is a Database? 330 What Is the Purpose of a Database? 331 What Are the Objectives of Managing Databases? 332                                   |
| What Is a Database Management System? 337 Evolution of Database Management Systems 337 Features of Database Management Systems 341 Types of Database Management Systems 341 SQL Database Management Systems 345   |
| How Are Databases Designed? 347 Database Architectures 347 Data Description Language 353 Device Media Control Language 353 Data Manipulation Language 355 Interaction with Application Program 356  |
| How Do Data Models Influence Database Design?  Data Structures 357  Design Using Relational Data Model and SQL 362  Design Using Hierarchical Data Model 373  Design Using Network Data Model 376  Importance of Hierarchical and Network Data Models 378 |
| How Are Databases Managed? 378 Appoint a Database Administrator 378 Maintain a Data Dictionary 380 Provide for Input Validation 380 Provide for Backup 383 Provide for Security and Privacy 385 Control Concurrent Operations 386 Database Machines 387   |
| Definition 387  |

Advantages and Disadvantages 387 Relation to Computer Systems 387 Summary 388 Key Words 389 **Review Questions** 389 **Application Problems** 

390

Minicase: New York City Bus Maintenance System 395

#### Chapter 9 **Data Communications** 396

**Key Questions** 396

**Data Communications and Networks** 397

Why Should You Know About Data Communications? 397

418

**Evolution of Data Communications** 398

Components of Data Communications 399

Transmission Channels 399 Types of Transmission

405

Communications Control Unit 407

**Protocols** 409

Channel Attachments 410

Data Transmission 413

Types of Line 413

Line Configurations 413

Networks 415

The Network Concept 415

**Bus Topology** 416

Star Network 416 Ring Network

417 Communications Networks

Wide-Area Networks 418

Value-Added Networks 419

Local-Area Networks 421

Connectivity

What Is Connectivity? 424

Why Is Connectivity Important? 425 **Distributed Processing Networks** 

425 Advantages of Distributed Processing

427 Designing Distributed Systems 430

Distributed Data 430

Distributed Processing Applications 430

442

ISDN 432 Characteristics of ISDN 433 ISDN Service Levels 433 Services and Applications 433 ISDN Controversy 435 Summary 435 Key Words 436 Review Questions 437 Application Problems 438 Minicase: The New Border Wars

INFORMATION SYSTEMS MODULE 445

## **Chapter 10** Transaction Processing Systems 446

Key Questions 446

Categories of Information Systems 447

Transaction Processing Systems 447
Management Information Systems 448

Decision Support Systems 448

Why Should You Know About Transaction Processing Systems? 449

The Transaction Processing Sequence 449

Data Capture 450

Transaction Processing 451

File Maintenance 451

Reporting 451

Common Transaction Systems 452 Characteristics of Accounting Systems 453

Accounts Receivable Systems 458

Accounts Payable Systems 465 General Ledger Systems 469

Order Entry Processing Systems 472

Point-of-Sale Systems 477

Inventory Management Systems 480

Summary 483

Key Words 484

Review Questions 484

Application Problems 485

Minicase: Service Merchandise Silent Sam System 489

| Chapter 11 | Management Information Systems 491   |
|------------|--|
|            | Key Questions 491  |
|            | Why Should You Know About Management Information Systems? 492  |
|            | A Management Framework 493 An Information Systems Perspective 495 Information Flow 496 Management Information 499 Systems for Management 500         |
|            | Management Information Systems 501 Relation to Transaction Processing System 501 Support of Structured Decisions 501 Presentation of Information 503 |
|            | A Design View of Information Systems 504 Single-System View 504 Multiple-System View 506 The Role of Data 507  |
|            | Information Systems Reports 508  |
|            | Marketing Information Systems 510 Components of a Marketing Information System 510   |
|            | Material Requirements Planning Information Systems 515 Overview of Production Management 515 Material Requirements Planning 520                      |
|            | Personnel Skills Information Systems 526 System Features and Objectives 526 Personnel Data 526   |
|            | Summary 529  |
|            | Key Words 529  |
|            | Review Questions 530   |
|            | Application Problems 530   |
|            | Minicase: Using Computers to Assist in Promotion Decisions 532  Minicase: Exception Reporting 533  |
| Chapter 12 | Decision Support Systems 534   |
|            | Key Questions 534  |
|            | Why Should You Know About Decision Support Systems? 535  |
|            | Decision Support Systems? 535  Characteristics 536  Data Sources 539  Scope 539  |

CONTENTS XV

| Types of Decision Support Systems 542   |
|---|
| Features of Decision Support Systems 543 Methods 543  |
| Components 544  |
| Processing Functions 547  |
| Using a Decision Support System 549 Decision Support System Reports 550   |
| • • •   |
| Group Decision Support Systems 551  |
| Rationale for a Group Decision Support System 551 What Is a Group Decision Support System? 552  |
| Problem Clarification 556   |
| Structuring a Situation 557   |
| Brainstorming to Identify Alternatives 557  |
| Evaluation of Alternatives 558  |
| Summary 558   |
| Key Words 559   |
| Review Questions 559  |
| Application Problems 560  |
|   |
| Minicase: Executive Support Systems Put Corporate Database at Top<br>Managers' Fingertips 562   |
| Managers i ingertips 302  |
| Executive Support Systems 564   |
| Key Questions 564   |
| Executive Support Systems 565   |
| Why Should You Know About Executive Support Systems? 565  |
| Information A 1 111 to a -  |
| minormation Acquisition and OSE DA EXECUTIVES - JULY  |
| To Understand and Access Situations Quickly 566   |
| To Understand and Access Situations Quickly To Facilitate the Business of the Organization 566 567  |
| To Understand and Access Situations Quickly To Facilitate the Business of the Organization To Confront Multiple Problems Together  566  567   |
| To Understand and Access Situations Quickly To Facilitate the Business of the Organization To Confront Multiple Problems Together To Set Agendas 569 566 567 568 To Set Agendas   |
| To Understand and Access Situations Quickly To Facilitate the Business of the Organization To Confront Multiple Problems Together To Set Agendas 569 To Build Networks 569  |
| To Understand and Access Situations Quickly 566 To Facilitate the Business of the Organization 567 To Confront Multiple Problems Together 568 To Set Agendas 569 To Build Networks 569 To Maintain a Corporate View 569   |
| To Understand and Access Situations Quickly To Facilitate the Business of the Organization To Confront Multiple Problems Together To Set Agendas 569 To Build Networks 569 To Maintain a Corporate View 569 To Maintain an Industry Perspective 570   |
| To Understand and Access Situations Quickly To Facilitate the Business of the Organization To Confront Multiple Problems Together To Set Agendas To Set Agendas To Build Networks 569 To Maintain a Corporate View 569 To Maintain an Industry Perspective 570 What Is an Executive Support System? 566 567 568 568 569 569 569 569 569 569 569 569 569 570   |
| To Understand and Access Situations Quickly To Facilitate the Business of the Organization To Confront Multiple Problems Together To Set Agendas To Set Agendas To Build Networks 569 To Maintain a Corporate View 569 To Maintain an Industry Perspective 570 What Is an Executive Support System? The Features of an Executive Support System 570   |
| To Understand and Access Situations Quickly To Facilitate the Business of the Organization To Confront Multiple Problems Together To Set Agendas To Set Agendas To Build Networks 569 To Maintain a Corporate View 569 To Maintain an Industry Perspective 570 What Is an Executive Support System? 566 567 568 568 569 569 569 569 569 569 569 569 569 570   |
| To Understand and Access Situations Quickly 566 To Facilitate the Business of the Organization 567 To Confront Multiple Problems Together 568 To Set Agendas 569 To Build Networks 569 To Maintain a Corporate View 569 To Maintain an Industry Perspective 570 What Is an Executive Support System? 570 The Features of an Executive Support System 570 How Executives Use Executive Support Systems to Maintain Surveillance 576  |
| To Understand and Access Situations Quickly 566 To Facilitate the Business of the Organization 567 To Confront Multiple Problems Together 568 To Set Agendas 569 To Build Networks 569 To Maintain a Corporate View 569 To Maintain an Industry Perspective 570 What Is an Executive Support System? 570 The Features of an Executive Support System 570 How Executives Use Executive Support Systems to Maintain Surveillance 576 Reasons Executives Do Not Use Executive Support Systems 580  |
| To Understand and Access Situations Quickly 566 To Facilitate the Business of the Organization 567 To Confront Multiple Problems Together 568 To Set Agendas 569 To Build Networks 569 To Maintain a Corporate View 569 To Maintain an Industry Perspective 570 What Is an Executive Support System? 570 The Features of an Executive Support System 570 How Executives Use Executive Support Systems to Maintain Surveillance 576  |
| To Understand and Access Situations Quickly 566 To Facilitate the Business of the Organization 567 To Confront Multiple Problems Together 568 To Set Agendas 569 To Build Networks 569 To Maintain a Corporate View 569 To Maintain an Industry Perspective 570 What Is an Executive Support System? 570 The Features of an Executive Support System 570 How Executives Use Executive Support Systems to Maintain Surveillance 576 Reasons Executives Do Not Use Executive Support Systems 580 Example of a Successful Executive Support System 581 |

χvi CONTENTS Key Words 584 Review Questions 584 Application Problems 585 Chapter 14 **Expert Support Systems** 586 **Key Questions** 586 **Expert Support Systems** 587 Why Should You Know About Expert Support Systems? 587 What Is an Expert Support System? 588 Uses of Expert Support Systems When to Consider Expert Support Systems 589 Components of Expert Support Systems 591 Knowledge Base 592 Inference Engine 594 Knowledge Acquisition Subsystem 595 Explanation Facility 596 Ways to Use Expert Support Systems 596 As a Stand-Alone Tool As a Component Within an Information System 596 As the Controlling Program 598 Acquiring Expert Support Systems 598 Build In-House Using Knowledge Engineer 598 Have a Contractor Build the System 599 Purchase an Expert Support System 599 Using an Expert Support System 599 Differences Between Decision Support and Expert Support Systems 601 Summary 601 Key Words 602 **Review Questions** 602 Application Problems 603 Chapter 15 Work Group Support Systems 605 **Key Questions** 605

Characteristics of Work Group Support Systems 607

What Is a Work Group Support System? 607

Integration of Technologies 609

Work Group Support Systems 607

Integration of Technologies 609

CONTENTS

xvii

| Benefits of Work Group Support Systems 611  |
|---|
| Electronic Data Interchange 611   |
| Characteristics of EDI 611  |
| Benefits 612  |
| Elements of EDI 614   |
| Word Processing 616   |
| Terminology 616   |
| Types of Word Processing Systems 616  |
| Major Functions of Word Processing 617  |
| An Example of Word Processing 620   |
| Word Processing and Work Group Computing 622  |
| Image Processing 623  |
| Digitized Document Storage and Transmission 624   |
| Document Facsimile Communication 625  |
| Electronic Publishing 626   |
| Voice Processing 628  |
| Voice Output 628  |
| Voice Input 630   |
| Voice Messaging 630   |
| Videoconferencing 631   |
| Computer Conferencing 631   |
| The Power of Computer Conferencing  Methods of Computer Conferencing  631  632            |
| Methods of Computer Conferencing 632  Videotex 632  |
| B 10  |
|   |
| What Functions Do Personal Support Systems Provide? 633<br>How Are the Services Used? 634 |
| Summary 636   |
|   |
| Key Words 637   |
| Review Questions 637  |
| Application Problems 638  |
| Minicase: Voice Messaging—An In-Office Tool 641   |
|   |
|   |

## INFORMATION SYSTEMS MANAGEMENT MODULE 643

# Chapter 16 Information Systems Planning and Development 644 Key Questions 644 Why Should You Know About Information Systems Development? 645 Information Systems Planning 646 Identifying Needs 646

|               | Planning for Systems Development 651 Generic Views of Information Systems Planning 653 Information Systems Planning Methods 656 Critical Success Factors 656 Business Systems Planning (BSP) 660 Computer Architecture Strategic Plan 665 Linkage Analysis Planning 669 Information Systems Development 671 The Systems Development Life Cycle Method 672 The Prototyping Method 679 Summary 683 Key Words 684 Review Questions 684 Application Problems 685 Minicase: Prototyping—The Only Way to Build Systems? 686 Minicase: Information Systems Application 1686 |
|---------------|--|
|               | Minicase: Information Systems Apprenticeship? 687  |
| Supplement 16 | Cost/Benefit Analysis for Information Systems 689  Cost Analysis 689  Benefit Analysis 690  Methods of Economic Evaluation 692  Accounting Methods 692  Quantitative Methods 695  Subjective Estimation 696  |
| Chapter 17    | Tools and Methods for Developing Information Systems 698  Key Questions 698  Why Should You Know About Information Systems Development Tools and Techniques? 699  Tools for Developing Information Systems 700  Types of Tools 700  Purpose of Tools 700  Structured Analysis Method 701  Structured Analysis 701  Requirements Statement Using Structured Analysis 701  Levels of Analysis 702  Data Dictionary of Data Stores 703  Designing Information Systems 704  Steps in the Design Process 705  |

| Supplement 17A | Techniques for Gathering Requirements Data                          | 744  |
|----------------|---|------|
|                | Minicase: Graphics Don't Tell the Whole Story?                      | 743  |
|                | Application Problems 736  |      |
|                | Review Questions 735  |      |
|                | Key Words 735   |      |
|                | Summary 734   |      |
|                | Activities Automated 729 What CASE Tools Do 729                     |      |
|                | Benefits of CASE Tools 727  |      |
|                | Meaning of CASE 727   |      |
|                | CASE Tools 727  |      |
|                | Developing Computer Processing Runs 723 Flowcharting the System 723 |      |
|                | Procedure Specification 722   |      |
|                | Record Content and Organization 721 File Specification 722          |      |
|                | Data Specifications 720   |      |
|                | Volume and Frequency of Output 719                                  | , ., |
|                | Computation and Data Manipulation Requirements                      | 719  |
|                | Processing Design 719   |      |
|                | Input Record Content and Organization 717 Input File Volume 718     |      |
|                | Actions to Specify in On-Line Systems 715                           |      |
|                | Input and On-Line Systems 714                                       |      |
|                | Layout 710 Input Design 714   |      |
|                | Media 709   |      |
|                | Form 708  |      |
|                | Content 708   |      |
|                | Output Design 705 Rationale 706                                     |      |
|                | Out. 1 D : 705  |      |

## Overview of Methods for Gathering Requirements Data

744 Methods 745

**Evaluation of Techniques** 752

### **Supplement 17B** Software Engineering and Development 753

**Program Modularity** 753 Module Concept 754 Benefits of Modular Programming

755

Program Design and Construction 755 Top-Down Design 755 Program Construction 758 Structured Programming 758 Structured Design Methods 760 Warnier-Orr Method 760 Structured Box Charts 761 HIPO 762 Summary 763

### Chapter 18 End-User Development of Information Systems 764

**Key Questions** 764

Why Should You Know About End-User Development of Information Systems? 765

Overview of End-User Computing 766 Rationale 766

Role of End-User Computing 768

Characteristics of Suitable Applications

769 The Information Center 770

Purpose of the Center

Relation of Center Staff to Staff of Information Systems Development 771

Division of Responsibility 771 Training by Center Staff 771

The Center as Source of Information *77*1

The Center as Management Tool

Hands-On Access

Information Center Tools 773 Personnel Requirements 774

Managing End-User Computing 775

Shared Responsibilities 775

Risks of End-User Computing 778

Avoiding the Risks

End-User Computing in Perspective 781 Rise of the Help Desk

781 **Developments Affecting Information Centers** 781

Reaching the Help Desk 783

Summary 783

**Key Words** 784

**Review Questions** 784

CONTENTS

816

826

Application Problems 785 Minicase: Funny Trash 787 Implementing Information Systems 788 Key Questions 788 Preparing for Systems Implementation 790 System Testing 790 Operator Training 790 User Training 792 Strategies for Conversion 793 Conversion Tasks Means of Conversion 794 Postimplementation Review 795 Application Impact Methods for Assessing Application Impact 796 Organizational Aspects of Information Systems Implementation 800 Introduction of Change 801 Reasons for Resistance 802 Forms of Resistance 807 Avoiding Resistance 808 Summary 810 Key Words 811 Review Questions 811

Chapter 20 The Impact of Information Systems on Corporate Strategy 818

Application Problems

Chapter 19

Key Questions 818 Why Should You Know About Corporate Strategy? 819 The Challenge to Management The Strategic Use of Information Systems 820 Using Strategy to Provide Competitive Advantage 821 What Is a Strategy? 822 Corporate Strategy 822 Generic Strategies 822

812 Minicase: Changeover Delays for Internal Revenue Service

**Evaluating the Strategic Use of Information Systems** 

Assessing Information Systems Portfolios 827 Using Portfolio Assessment 828 **Five Competitive Forces** 829 The Value Chain Components of the Value Chain 830 Linkage and the Value Chain 832 **Exploiting Value Chain Linkages** 832 The Impact of Information Systems 833 Effects on Customer Relations Effects on Competitors 835 **Effects on Products** 838 Effects on Suppliers 840 Selecting a Strategy 840 Requirements for Following a Low-Cost Strategy 841 Requirements for Following a Product Differentiation Strategy 842 Summary 842 Key Words 843 **Review Questions** 843 Application Problems 844 Minicase: Delta Productivity 846

# Chapter 21 Information Systems in the Future 847

**Key Questions** 847 Why Should You Know About the Future of Information Systems? 848 Trends in Information Systems Technology General Trends in Information Systems Technology 848 **Changing Computer Economics** 849 851 Product Life Cycle Improved Chip Performance 852 Storage 853 Uses of Information Technology 853 Growth of Information Utility 856 Future Information Systems Applications More Hands-On Technology 856 857 Widespread Image Processing 857 Information Systems as a Strategic Tool 857 Applications Replacement Robotics and Computer-Integrated Manufacturing Enterprisewide Information Systems Planning 858 Expert Systems and Artificial Intelligence 859