

Complete Contents

I Information Systems in the Digital Age 23

1 Business Information Systems in Your Career 24

Chapter-Opening Case:

Shortening Lines at Disney World: Technology to the Rescue 25

1.1 The Role of Information Systems in Business Today 27

How Information Systems Are Transforming Business 27
• *What's New In Management Information Systems? 28*

Interactive Session: Organizations

Running the Business from the Palm of Your Hand 30

Globalization Challenges and Opportunities: A Flattened World 31 • *Business Drivers of Information Systems 33*

1.2 Perspectives on Information Systems and Information Technology 35

What Is an Information System? 35 • *It Isn't Simply Technology: The Role of People and Organizations 37*
• *Dimensions of Information Systems 38*

1.3 Understanding Information Systems: A Business Problem-Solving Approach 40

Interactive Session: Technology

UPS Competes Globally with Information Technology 41

The Problem-Solving Approach 43 • *A Model of the Problem-Solving Process 43* • *The Role of Critical Thinking in Problem Solving 45* • *The Connection Between Business Objectives, Problems, and Solutions 46*

1.4 Information Systems and Your Career 47

How Information Systems Will Affect Business Careers 47 • *Information Systems and Your Career: Wrap-Up 50*
• *How This Book Prepares You For the Future 50*

Learning Tracks 51 • Review Summary 52 • Key Terms 53 • Review Questions 53 • Discussion Questions 54 • Hands-on MIS Projects 54

Management Decision Problems 54 • *Improving Decision Making: Using Databases to Analyze Sales Trends 54* • *Improving Decision Making: Using the*

Internet to Locate Jobs Requiring Information Systems Knowledge 55

Video Cases 55 • Collaboration and Teamwork: Creating a Web Site for Team Collaboration 55

Business Problem-Solving Case

The National Bank of Kuwait 56

2 Global E-Business and Collaboration 58

Chapter-Opening Case:

America's Cup 2010: USA Wins with Information Technology 59

2.1 Components of a Business 61

Organizing a Business: Basic Business Functions 61
Business Processes 62 • *Managing a Business and Firm Hierarchies 64* • *The Business Environment 65* • *The Role of Information Systems in a Business 66*

2.2 Types of Business Information Systems 67

Systems for Management Decision Making and Business Intelligence 67

Interactive Session: Technology

Can Airlines Solve Their Baggage Handling? 69

Systems for Linking the Enterprise 73

Interactive Session:

Organizations

Rockettheme.com, Thriving on the Web 74

Intranets and Extranets

77 • *E-Business, E-commerce, and E-Government 77*

2.3 Systems for Collaboration and Teamwork 78

What is Collaboration? 78 • *Business Benefits of Collaboration and Teamwork 79* • *Building a Collaborative Culture 79* • *Tools and Technologies for Collaboration and Teamwork 81*

2.4 The Information Systems Function in Business 87

The Information Systems Department 87 • *Information Systems Services 88*

Learning Tracks 88 • Review Summary 88 • Key Terms 89 • Review Questions 90 • Discussion Questions 91 • Hands-on MIS Projects 91

Management Decision Problems 91 • *Improving Decision Making: Using a Spreadsheet to Select Suppliers 91* • *Achieving Operational Excellence: Using Internet Software to Plan Efficient Transportation Routes 92*

Video Cases 92 • Collaboration and Teamwork:
Describing Management Decisions and Systems 92

Business Problem-Solving Case

Modernization of NTUC Income 93

3 Achieving Competitive Advantage with Information Systems 96

Chapter-Opening Case:

Verizon or AT&T: Which Digital Strategy Will Prevail? 97

3.1 Using Information Systems to Achieve Competitive Advantage 99

Porter's Competitive Forces Model 99 • Information System Strategies for Dealing with Competitive Forces 101

Interactive Session: Technology

Technology Helps Starbucks Find New Ways to Compete 104

The Internet's Impact on Competitive Advantage 106 • The Business Value Chain Model 107 • Synergies, Core Competencies, and Network-Based Strategies 109 • Disruptive Technologies: Riding the Wave 111

3.2 Competing on a Global Scale 112

The Internet and Globalization 113 • Global Business and System Strategies 113 • Global System Configuration 114

3.3 Competing on Quality and Design 115

What Is Quality? 115 • How Information Systems Improve Quality 116

3.4 Competing on Business Processes 117

What Is Business Process Management? 118

Interactive Session: Organizations

Burton Snowboards Speeds Ahead with Nimble Business Processes 121

Learning Tracks 122 • Review Summary 122 • Key Terms 123 • Review Questions 123 • Discussion Questions 124 • Hands-on MIS Projects 124

Management Decision Problems 124 • Improving Decision Making: Using a Database to Clarify Business Strategy 125 • Improving Decision Making: Using Web Tools to Configure and Price an Automobile 125

Video Cases 126 • Collaboration and Teamwork:
Identifying Opportunities for Strategic Information Systems 126

Business Problem-Solving Case

Soundbuzz's Music Strategy for Asia-Pacific 127

II Information Technology Infrastructure 129

4 IT Infrastructure: Hardware and Software 130

Chapter-Opening Case:

BART Speeds Up with a New IT Infrastructure 131

4.1 IT Infrastructure: Computer Hardware 133

Infrastructure Components 133 • Types of Computers 135 • Storage, Input, and Output Technology 137 • Contemporary Hardware Trends 138

Interactive Session: Technology

Nordea Goes Green with IT 143

4.2 IT Infrastructure: Computer Software 145

*Operating System Software 145
Application Software and Desktop Productivity Tools 147 • Software for the Web: Java and HTML 151 • HTML5 152 • Web Services 152 • Software Trends 153*

4.3 Managing Hardware and Software Technology 155

Capacity Planning and Scalability 155 • Total Cost of Ownership (TCO) of Technology Assets 156 • Using Technology Service Providers 157 • Managing Mobile Platforms 158 • Managing Software Localization for Global Business 158

Interactive Session: People

Should You Use Your iPhone for Work? 159

Learning Tracks 161 • Review Summary 161 • Key Terms 162 • Review Questions 163 • Discussion Questions 164 • Hands-on MIS Projects 164

Management Decision Problems 164 • Improving Decision Making: Using a Spreadsheet To Evaluate Hardware and Software Options 164 • Improving Decision Making: Using Web Research to Budget for a Sales Conference 165

Video Cases 165 • Collaboration and Teamwork:
Evaluating Server and Mobile Operating Systems 165

Business Problem-Solving Case

Should Businesses Move to the Cloud? 166

5 Foundations of Business Intelligence: Databases and Information Management 168

Chapter-Opening Case:

Banco de Credito del Peru Banks on Better Data Management 169

- 5.1 The Database Approach to Data Management 171
Entities and Attributes 171 • Organizing Data in a Relational Database 172 • Establishing Relationships 173
- 5.2 Database Management Systems 175
Operations of a Relational DBMS 177 • Capabilities of Database Management Systems 179 • Object-Oriented Databases 180 • Databases in the Cloud 181
- 5.3 Using Databases to Improve Business Performance and Decision Making 181
Data Warehouses 181 • What is a Data Warehouse? 182 Tools for Business Intelligence: Multidimensional Data Analysis and Data Mining 183 • Data Mining 184

Interactive Session: People

- Asking the Customer by Asking the Database 185
Databases and the Web 187

- 5.4 Managing Data Resources 188
Establishing an Information Policy 188

Interactive Session: Organizations

- Controversy Whirls Around the Consumer Product Safety Database 189

Ensuring Data Quality 190

- Learning Tracks 192 • Review Summary 192 • Key Terms 193 • Review Questions 193 • Discussion Questions 194 • Hands-on MIS Projects 194

Management Decision Problems 194 • Achieving Operational Excellence: Building a Relational Database for Inventory Management 195 • Improving Decision Making: Searching Online Databases for Overseas Business Resources 195

- Video Cases 196 • Collaboration and Teamwork: Identifying Entities and Attributes in an Online Database 196

Business Problem-Solving Case

- Lego: Combining Business Intelligence with a Flexible Information System 197

6 Telecommunications, the Internet, and Wireless Technology 200

Chapter-Opening Case:

- Hyundai Heavy Industries Creates a Wireless Shipyard 201

- 6.1 Telecommunications and Networking in Today's Business World 203
Networking and Communication Trends 203 • What Is a Computer Network? 204 • Key Digital Networking Technologies 206

- 6.2 Communications Networks 208
Signals: Digital vs. Analog 208 • Types of Networks 208 • Physical Transmission Media 210

- 6.3 The Global Internet 212
What Is the Internet? 212 • Internet Addressing and Architecture 213

Interactive Session: Organizations

- The Battle Over Net Neutrality 215
Internet Services and Communication Tools 217

Interactive Session: People

- Monitoring Employees on Networks: Unethical or Good Business? 219
The Web 222

- 6.4 The Wireless Revolution 228
Cellular Systems 229 • Wireless Computer Networks and Internet Access 229 • RFID and Wireless Sensor Networks 231

- Learning Tracks 234 • Review Summary 234 • Key Terms 235 • Review Questions 236 • Discussion Questions 237 • Hands-on MIS Projects 237

Management Decision Problems 237 • Improving Decision Making: Using Spreadsheet Software to Evaluate Wireless Services 237 • Achieving Operational Excellence: Using Web Search Engines for Business Research 238

- Video Cases 238 • Collaboration and Teamwork: Evaluating Smartphones 238

Business Problem-Solving Case

- Apple, Google, and Microsoft Battle for Your Internet Experience 239

7 Securing Information Systems 242

Chapter-Opening Case:

- You're On Facebook? Watch Out! 243

- 7.1 System Vulnerability and Abuse 245
Why Systems Are Vulnerable 245 • Malicious Software: Viruses, Worms, Trojan Horse, and Spyware 248 • Hackers and Computer Crime 250 • Identity Theft 252 • Internal Threats: Employees 254

Interactive Session: Organizations

- Stuxnet and the Changing Face of Cyberwarfare 255
Software Vulnerability 256

- 7.2 Business Value of Security and Control 257
Legal and Regulatory Requirements for Electronic Records Management 257 • Electronic Evidence and Computer Forensics 258

7.3 Establishing a Framework for Security and Control 259
Information Systems Controls 259 • Risk Assessment 259 • Security Policy 261 • Disaster Recovery Planning and Business Continuity Planning 262 • The Role of Auditing 263

7.4 Technologies and Tools for Protecting Information Resources 264
Identity Management and Authentication 264 • Firewalls, Intrusion Detection Systems, and Antivirus Software 265 • Securing Wireless Networks 267 • Encryption and Public Key Infrastructure 267 • Ensuring System Availability 269 • Security Issues for Cloud Computing and the Mobile Digital Platform 270

Interactive Session: Technology

MWEB Business: Hacked 271

Ensuring Software Quality 272

Learning Tracks 273 • Review Summary 273 • Key Terms 274 • Review Questions 274 • Discussion Questions 275 • Hands-on MIS Projects 275

Management Decision Problems 275 • Improving Decision Making: Using Spreadsheet Software to Perform a Security Risk Assessment 276 • Improving Decision Making: Evaluating Security Outsourcing Services 276

Video Cases 277 • Collaboration and Teamwork Evaluating Security Software Tools 277

Business Problem-Solving Case

Information Security Threats and Policies in Europe 277

III Key System Applications for the Digital Age 281

8 Achieving Operational Excellence and Customer Intimacy: Enterprise Applications 282

Chapter-Opening Case:

Cannondale Learns to Manage a Global Supply Chain 283

8.1 Enterprise Systems 285
What Are Enterprise Systems? 285 • Enterprise Software 286 • Business Value of Enterprise Systems 287

8.2 Supply Chain Management Systems 288
The Supply Chain 288 • Information Systems and Supply Chain Management 289 • Supply Chain

Management Software 291 • Global Supply Chains and the Internet 292

Interactive Session: Organizations

DP World Takes Port Management to the Next Level with RFID 293

Business Value of Supply Chain Management Systems 295

8.3 Customer Relationship Management Systems 295
What Is Customer Relationship Management? 296 • Customer Relationship Management Software 297 • Operational and Analytical CRM 299 • Business Value of Customer Relationship Management Systems 300

8.4 Enterprise Applications: New Opportunities and Challenges 300
Enterprise Applications Challenges 301 • Next-Generation Enterprise Applications 302

Interactive Session: Organizations

Customer Relationship Management Heads to the Cloud 303

Learning Tracks 304 • Review Summary 305 • Key Terms 306 • Review Questions 306 • Discussion Questions 307 • Hands-on MIS Projects 307

Management Decision Problems 307 • Improving Decision Making: Using Database Software to Manage Customer Service Requests 307 • Achieving Operational Excellence: Evaluating Supply Chain Management Services 308

Video Cases 308 • Collaboration and Teamwork Analyzing Enterprise Application Vendors 308

Business Problem-Solving Case

Summit Electric Lights Up with a New ERP System 309

9 E-commerce: Digital Markets, Digital Goods 312

Chapter-Opening Case:

Groupon's Business Model: Social and Local 313

9.1 E-commerce and the Internet 315
E-commerce Today 315 • Why E-commerce Is Different 318 • Key Concepts in E-commerce: Digital Markets and Digital Goods in a Global Marketplace 320

9.2 E-commerce: Business and Technology 323

Types of E-commerce 323 • E-commerce Business Models 324 • E-commerce Revenue Models 326

Interactive Session: Organizations

Location-based Marketing and Advertising 327

Web 2.0, Social Networking, and the Wisdom of Crowds 329 • E-commerce Marketing 330 • B2B E-commerce: New Efficiencies and Relationships 335

Interactive Session: People

Social Commerce Creates New Customer Relationships 336

9.3 The Mobile Digital Platform and Mobile E-commerce 339

M-commerce Services and Application 340

9.4 Building an E-commerce Presence 342

Pieces of the Site-Building Puzzle 342 • Business Objectives, System Functionality, and Information Requirements 342 • Building the Web Site: In-House Versus Outsourcing 343

Learning Tracks 345 • Review Summary 345 • Key Terms 346 • Review Questions 347 • Discussion Questions 347 • *Hands-on MIS Projects 348*
Management Decision Problems 348 • Improving Decision Making: Using Spreadsheet Software to Analyze a Dot-Com Business 348 • Achieving Operational Excellence: Evaluating E-commerce Hosting Services 348

Video Cases 349 • Collaboration and Teamwork: Performing a Competitive Analysis of E-commerce Sites 349

Business Problem-Solving Case

To Pay or Not to Pay: Zagat's Dilemma 349

10 Improving Decision Making and Managing Knowledge 352

Chapter-Opening Case:

What to Sell? What Price to Charge? Ask the Data 353

10.1 Decision Making and Information Systems 355
Business Value of Improved Decision Making 355 • Types of Decisions 355 • The Decision-Making Process 357 • Quality of Decisions and Decision Making 358

10.2 Business Intelligence in the Enterprise 369
What is Business Intelligence? 358 • The Business Intelligence Environment 359 • Business Intelligence

and Analytics Capabilities 360 • Business Intelligence Users 362 • Group Decision-Support Systems 365 •

Interactive Session: People

Colgate-Palmolive Keeps Managers Smiling with Executive Dashboards 366

10.3 Intelligent Systems for Decision Support 368
Expert Systems 368 • Case-Based Reasoning 369 • Fuzzy Logic Systems 370 • Neural Networks 371 • Genetic Algorithms 372 • Intelligent Agents 373

10.4 Systems for Managing Knowledge 374

Interactive Session: Technology

Albassami's Job Is Not Feasible Without IT 375

Enterprise-Wide Knowledge Management Systems 376 • Knowledge Work Systems 379

Learning Tracks 381 • Review Summary 381 • Key Terms 383 • Review Questions 383 • Discussion Questions 384 • Hands-on MIS Projects 384

Management Decision Problems 384 • Improving Decision Making: Using Pivot Tables to Analyze Sales Data 385 • Improving Decision Making: Using Intelligent Agents for Comparison Shopping 385

Video Cases 385 • Collaboration and Teamwork Designing a University GDSS 385

Business Problem-Solving Case

Knowledge Management and Collaboration at Tata Consulting Services 386

IV Building and Managing Systems 389

11 Building Information Systems and Managing Projects 390

Chapter-Opening Case:

A New Ordering System for Girl Scout Cookies 391

11.1 Problem Solving and Systems Development 393
Defining and Understanding the Problem 394 • Developing Alternative Solutions 395 • Evaluating and Choosing Solutions 395 • Implementing the Solution 395

11.2 Alternative Systems-Building Approaches 398
Traditional Systems Development Lifecycle 398 • Prototyping 399

Interactive Session: People

Honam Petrochemical's Quest for Better Management Reports 400

End-User Development 401 • Purchasing Solutions: Application Software Packages and Outsourcing 402 • Mobile Application Development 404 • Rapid Application Development for E-business 405

11.3 Modeling and Designing Systems 405

Structured Methodologies 405

Interactive Session: Technology

DST Systems Scores with Scrum and Application Lifecycle Management 406

Object-Oriented Development 408 • Computer-Aided Software Engineering (CASE) 410

11.4 Project Management 410

Project Management Objectives 410 • Selecting Projects: Making the Business Case for a New System 411 • Managing Project Risk and System-Related Change 413 • Managing Projects on a Global Scale 417

Learning Tracks 419 • Review Summary 420 • Key Terms 421 • Review Questions 421 • Discussion Questions 422 • Hands-on MIS Projects 422

Management Decision Problems 422 • Improving Decision Making: Using Database Software to Design a Customer System for Auto Sales 423 • Achieving Operational Excellence: Analyzing Web Site Design and Information Requirements 423

Video Cases 423 • Collaboration and Teamwork: Preparing Web Site Design Specification 423

Business Problem-Solving Case

JetBlue and WestJet: A Tale of Two IS Projects 424

12 Ethical and Social Issues in Information Systems 426

Chapter-Opening Case:

Behavioral Targeting: Your Privacy Is the Target 427

12.1 Understanding Ethical and Social Issues Related to Systems 430

A Model for Thinking about Ethical, Social, and Political Issues 431 • Five Moral Dimensions of the Information Age 432 • Key Technology Trends that Raise Ethical Issues 433

12.2 Ethics in an Information Society 435

Basic Concepts: Responsibility, Accountability, and Liability 435 • Ethical Analysis 436 • Candidate Ethical Principles 436 • Professional Codes of

Conduct 437 • Some Real-World Ethical Dilemmas 437

12.3 The Moral Dimensions of Information Systems 438

Information Rights: Privacy and Freedom in the Internet Age 438

Interactive Session: Technology

Life on the Grid: iPhone Becomes iTrack 445

Property Rights: Intellectual Property 446 • Accountability, Liability, and Control 449 • System Quality: Data Quality and System Errors 450 • Quality of Life: Equity, Access, and Boundaries 451

Interactive Session: People

Monitoring in the Workplace 456

Learning Tracks 455 • Review Summary 458 • Key Terms 458 • Review Questions 459 • Discussion Questions 459 • Hands-on MIS Projects 459

Management Decision Problems 459 • Achieving Operational Excellence: Creating a Simple Blog 460 • Improving Decision Making: Using Internet Newsgroups for Online Market Research 460

Video Cases 461 • Collaboration and Teamwork: Developing a Corporate Ethics Code 461

Business Problem-Solving Case

When Radiation Therapy Kills 461