PART ONE Organizations, Management, and the Networked Enterprise 1

Chapter 1 Information Systems in Global Business Today 2

Opening Case: The Grocery Store of the Future: Look at Kroger 3

1-1 How are information systems transforming business, and why are they so essential for running and managing a business today? 5

How Information Systems Are Transforming Business 6 • What's New in Management Information Systems? 7

Interactive Session: Management The Mobile Pocket Office 9

Globalization Challenges and Opportunities: A Flattened World 11 • The Emerging Digital Firm 12 • Strategic Business Objectives of Information Systems 13

1-2 What is an information system? How does it work? What are its management, organization, and technology components? Why are complementary assets essential for ensuring that information systems provide genuine value for organizations? 16

What Is an Information System? 16 • Dimensions of Information Systems 18

Interactive Session: Technology UPS Competes Globally with Information Technology 23

It Isn't Just Technology: A Business Perspective on Information Systems 24 • Complementary Assets: Organizational Capital and the Right Business Model 26

1-3 What academic disciplines are used to study information systems, and how does each contribute to an understanding of information systems? 28

Technical Approach 28 • Behavioral Approach 29 • Approach of This Text: Sociotechnical Systems 30

Review Summary 31 • Key Terms 32 • Review Questions 32 • Discussion Questions 33

Hands-On MIS Projects 33

Collaboration and Teamwork Project 34

Case Study: Are Farms Becoming Digital Firms? 34

References: 38
Chapter 2  Global E-business and Collaboration  40

Opening Case:  Enterprise Social Networking Helps ABB Innovate and Grow  41

2-1  What are business processes? How are they related to information systems?  43
Business Processes  43 • How Information Technology Improves Business Processes  45

2-2  How do systems serve the different management groups in a business, and how do systems that link the enterprise improve organizational performance?  46
Systems for Different Management Groups  46 • Systems for Linking the Enterprise  51

Interactive Session: Organizations  New Systems Help Plan International Manage Its Human Resources  52
E-business, E-commerce, and E-government  56

2-3  Why are systems for collaboration and social business so important, and what technologies do they use?  57

Interactive Session: Technology  Cisco IX5000: What State-of-the-Art Telepresence Can Do for Collaboration  63

2-4  What is the role of the information systems function in a business?  67
The Information Systems Department  68 • Organizing the Information Systems Function  69

Review Summary  70 • Key Terms  71 • Review Questions  71 • Discussion Questions  72

Hands-On MIS Projects  72
Collaboration and Teamwork Project  73

Case Study:  Social Business: Full Speed Ahead or Proceed with Caution?  34

References:  76

Chapter 3  Information Systems, Organizations, and Strategy  78

Opening Case:  Verizon or AT&T: Which Company Has the Best Digital Strategy?  79

3-1  Which features of organizations do managers need to know about to build and use information systems successfully?  81
What Is an Organization?  82 • Features of Organizations  84

3-2  What is the impact of information systems on organizations?  89
Economic Impacts  89 • Organizational and Behavioral Impacts  90

Interactive Session: Management  Can Technology Replace Managers?  92
The Internet and Organizations  94 • Implications for the Design and Understanding of Information Systems  94
3-3 How do Porter's competitive forces model, the value chain model, synergies, core competencies, and network economics help companies develop competitive strategies using information systems? 95

Porter's Competitive Forces Model 95 • Information System Strategies for Dealing with Competitive Forces 97 • The Internet's Impact on Competitive Advantage 100 • The Business Value Chain Model 101

Interactive Session: Technology Smart Products, Smart Companies 102

Synergies, Core Competencies, and Network-Based Strategies 106

3-4 What are the challenges posed by strategic information systems, and how should they be addressed? 110

Sustaining Competitive Advantage 110* Aligning IT with Business Objectives 111 • Managing Strategic Transitions 112

Review Summary 112* Key Terms 113* Review Questions 113* Discussion Questions 114

Hands-On MIS Projects 114
Collaboration and Teamwork Project 115
Case Study: Can Technology Save Sears? 116

References: 119

Chapter 4 Ethical and Social Issues in Information Systems 122

Opening Case: The Dark Side of Big Data 123

4-1 What ethical, social, and political issues are raised by information systems? 125

A Model for Thinking About Ethical, Social, and Political Issues 127 • Five Moral Dimensions of the Information Age 128 • Key Technology Trends that Raise Ethical Issues 128

4-2 What specific principles for conduct can be used to guide ethical decisions? 130

Basic Concepts: Responsibility, Accountability, and Liability 131 • Ethical Analysis 132 • Candidate Ethical Principles 132 • Professional Codes of Conduct 133 • Some Real-World Ethical Dilemmas 133

4-3 Why do contemporary information systems technology and the Internet pose challenges to the protection of individual privacy and intellectual property? 134

Information Rights: Privacy and Freedom in the Internet Age 134 • Property Rights: Intellectual Property 141

4-4 How have information systems affected laws for establishing accountability and liability and the quality of everyday life? 144

Computer-Related Liability Problems 145 • System Quality: Data Quality and System Errors 146 • Quality of Life: Equity, Access, and Boundaries 146

Interactive Session: Technology Volkswagen Pollutes Its Reputation with Software to Cheat Emissions Testing 150

Health Risks: RSI, CVS, and Cognitive Decline 152

Interactive Session: Organizations Are We Relying Too Much on Computers to Think for Us? 153

Review Summary 155 • Key Terms 156 • Review Questions 156 • Discussion Questions 157
Chapter 8  Securing Information Systems  292

Opening Case:  Hackers Attack the SWIFT Global Banking Network 293

8-1  Why are information systems vulnerable to destruction, error, and abuse?  295
    Why Systems are Vulnerable  295  •  Malicious Software: Viruses, Worms, Trojan
    Horses, and Spyware  298  •  Hackers and Computer Crime  301  •  Internal
    Threats: Employees  305  •  Software Vulnerability  306

8-2  What is the business value of security and control?  307
    Legal and Regulatory Requirements for Electronic Records Management  307
    •  Electronic Evidence and Computer Forensics  308

8-3  What are the components of an organizational framework for security
    and control?  309
    Information Systems Controls  309  •  Risk Assessment  310

Interactive Session: Organizations  The Flash Crash: A New Culprit 311
    Security Policy  313  •  Disaster Recovery Planning and Business Continuity
    Planning  314  •  The Role of Auditing  315

8-4  What are the most important tools and technologies for safeguarding
    information resources?  315
    Identity Management and Authentication  316  •  Firewalls, Intrusion
    Detection Systems, and Antivirus Software  318  •  Securing Wireless
    Networks  320  •  Encryption and Public Key Infrastructure  320  •  Ensuring
    System Availability  322  •  Security Issues for Cloud Computing and the Mobile
    Digital Platform  323  •  Ensuring Software Quality  324

Interactive Session: Technology  BYOD: A Security Nightmare? 325

Review Summary  326  •  Key Terms  327  •  Review Questions  328  •  Discussion
    Questions  329

Hands-On MIS Projects  329

Collaboration and Teamwork Project  330

Case Study:  U.S. Office of Personnel Management Data Breach: No Routine
    Hack  330

References:  333
PART THREE   Key System Applications for the Digital Age  335

Chapter 9   Achieving Operational Excellence and Customer Intimacy: Enterprise Applications  336

**Opening Case:** Skullcandy Rocks with ERP in the Cloud 337

9-1 How do enterprise systems help businesses achieve operational excellence?  339

   What are Enterprise Systems?  340 • Enterprise Software  341 • Business Value of Enterprise Systems  342

9-2 How do supply chain management systems coordinate planning, production, and logistics with suppliers?  343

   The Supply Chain  343 • Information Systems and Supply Chain Management  344 • Supply Chain Management Software  345 • Global Supply Chains and the Internet  347 • Business Value of Supply Chain Management Systems  348

9-3 How do customer relationship management systems help firms achieve customer intimacy?  349

   What is Customer Relationship Management?  349

**Interactive Session: Management** Logistics and Transportation Management at LG Electronics  350

   Customer Relationship Management Software  353 • Operational and Analytical CRM  355

**Interactive Session: Organizations** Customer Relationship Management Helps Celcom Become Number One 357

   Business Value of Customer Relationship Management Systems  359

9-4 What are the challenges that enterprise applications pose, and how are enterprise applications taking advantage of new technologies?  359

   Enterprise Application Challenges  359 • Next-Generation Enterprise Applications  360

Review Summary  362 • Key Terms  363 • Review Questions  363 • Discussion Questions  364

Hands-On MIS Projects  364

Collaboration and Teamwork Project  365

**Case Study:** How Supply Chain Management Problems Killed Target Canada 366

References:  369

Chapter 10   E-commerce: Digital Markets, Digital Goods  370

**Opening Case:** Uber Digitally Disrupts the Taxi Industry 371

10-1 What are the unique features of e-commerce, digital markets, and digital goods?  373

   E-commerce Today  374 • The New E-commerce: Social, Mobile, Local  375
   • Why E-commerce is Different  377 • Key Concepts in E-commerce: Digital Markets and Digital Goods in a Global Marketplace  380
10-2 What are the principal e-commerce business and revenue models? 384
Types of E-commerce 384 • E-commerce Business Models 384 • E-commerce Revenue Models 387

10-3 How has e-commerce transformed marketing? 389
Behavioral Targeting 390 • Social E-Commerce and Social Network Marketing 394
Interactive Session: Technology Getting Social with Customers 396

10-4 How has e-commerce affected business-to-business transactions? 398
Electronic Data Interchange (EDI) 398 • New Ways of B2B Buying and Selling 399

10-5 What is the role of m-commerce in business, and what are the most important m-commerce applications? 401
Location-Based Services and Applications 402

Interactive Session: Organizations Can Instacart Deliver? 403
Other Mobile Commerce Services 405

10-6 What issues must be addressed when building an e-commerce presence? 405
Develop an E-Commerce Presence Map 406 • Develop a Timeline: Milestones 407

Review Summary 407 • Key Terms 408 • Review Questions 409 • Discussion Questions 409

Hands-On MIS Projects 409
Collaboration and Teamwork Project 410
Case Study: Walmart and Amazon Duke It Out for E-commerce Supremacy 411

References: 414

Chapter 11 Managing Knowledge 416

Opening Case: Cadillac Creates Virtual Dealerships 417
11-1 What is the role of knowledge management systems in business? 419
Important Dimensions of Knowledge 420 • The Knowledge Management Value Chain 421 • Types of Knowledge Management Systems 424

11-2 What types of systems are used for enterprise-wide knowledge management, and how do they provide value for businesses? 425
Enterprise Content Management Systems 425

Interactive Session: Organizations ECM in the Cloud Empowers New Zealand Department of Conservation 426
Locating and Sharing Expertise 428 • Learning Management Systems 428

11-3 What are the major types of knowledge work systems, and how do they provide value for firms? 429
Knowledge Workers and Knowledge Work 429 • Requirements of Knowledge Work Systems 429 • Examples of Knowledge Work Systems 430

11-4 What are the business benefits of using intelligent techniques for knowledge management? 432
Capturing Knowledge: Expert Systems 432
Chapter 12 Enhancing Decision Making 452

**Opening Case:** Can Big Data Analytics Help People Find Love? 453

12-1 What are the different types of decisions, and how does the decision-making process work? 455
   Business Value of Improved Decision Making 455 • Types of Decisions 455 • The Decision-Making Process 457

12-2 How do information systems support the activities of managers and management decision making? 458
   Managerial Roles 458 • Real-World Decision Making 460 • High-Velocity Automated Decision Making 461

12-3 How do business intelligence and business analytics support decision making? 462
   What is Business Intelligence? 462 • The Business Intelligence Environment 463 • Business Intelligence and Analytics Capabilities 464

**Interactive Session: Technology** The Tension Between Technology and Human Decision Makers 467
   Management Strategies for Developing BI and BA Capabilities 469

**Interactive Session: Management** Data Drive Starbucks Location Decisions 470

12-4 How do different decision-making constituencies in an organization use business intelligence, and what is the role of information systems in helping people working in a group make decisions more efficiently? 472
   Decision Support for Operational And Middle Management 472 • Decision Support for Senior Management: Balanced Scorecard and Enterprise Performance Management Methods 475 • Group Decision-Support Systems (GDSS) 476

Review Summary 477 • Key Terms 478 • Review Questions 478 • Discussion Questions 479

Hands-On MIS Projects 479
Collaboration and Teamwork Project 479

**Case Study:** GE Bets on the Internet of Things and Big Data Analytics 480

References: 484
# PART FOUR  Building and Managing Systems  485

## Chapter 13  Building Information Systems  486

**Opening Case:** Angostura Builds a Mobile Sales System 487

13-1 How does building new systems produce organizational change? 489
   Systems Development and Organizational Change 489 • Business Process Redesign 491

13-2 What are the core activities in the systems development process? 494
   Systems Analysis 495 • Systems Design 496 • Completing the Systems Development Process 497

13-3 What are the principal methodologies for modeling and designing systems? 500
   Structured Methodologies 500 • Object-Oriented Development 502 • Computer-Aided Software Engineering 504

13-4 What are alternative methods for building information systems? 504
   Traditional Systems Life Cycle 505 • Prototyping 506 • End-User Development 507 • Application Software Packages, Software Services, and Outsourcing 508

**Interactive Session: Organizations**  Fujitsu Selects a SaaS Solution to Simplify the Sales Process 509

13-5 What are new approaches for system building in the digital firm era? 512
   Rapid Application Development (RAD), Agile Development, and DevOps 513 • Component-Based Development and Web Services 514 • Mobile Application Development: Designing for A Multiscreen World 514

**Interactive Session: Technology**  Developing Mobile Apps: What's Different 516

**Review Summary** 517 • Key Terms 519 • Review Questions 519 • Discussion Questions 520

### Hands-On MIS Projects 520

- Collaboration and Teamwork Project 521

### Case Study:  ConAgra's Recipe for a Better Human Resources System 522

### References: 525

## Chapter 14  Managing Projects  526

**Opening Case:** Intuit Counts on Project Management 527

14-1 What are the objectives of project management, and why is it so essential in developing information systems? 529
   Runaway Projects and System Failure 529 • Project Management Objectives 530

14-2 What methods can be used for selecting and evaluating information systems projects and aligning them with the firm's business goals? 531
   Management Structure for Information Systems Projects 531 • Linking Systems Projects to The Business Plan 532 • Information Requirements and Key Performance Indicators 534 • Portfolio Analysis 534 • Scoring Models 535

14-3 How can firms assess the business value of information systems? 536
   Information System Costs and Benefits 536 • Capital Budgeting for Information Systems 537 • Limitations of Financial Models 538
Chapter 14: Managing Information Systems Projects

14-4 What are the principal risk factors in information systems projects, and how can they be managed? 538

Dimensions of Project Risk 538 • Change Management and the Concept of Implementation 539

Interactive Session: Management Can the National Health Service Go Paperless? 540

Controlling Risk Factors 543

Interactive Session: Organizations Snohomish County Public Utility District Implements a New Human Resources System 547

Designing for the Organization 549 • Project Management Software Tools 549

Review Summary 550 • Key Terms 551 • Review Questions 551 • Discussion Questions 552

Hands-On MIS Projects 552

Collaboration and Teamwork Project 553

Case Study: The Philly311 Project: The City of Brotherly Love Turns Problems into Opportunities 553

References: 557

Chapter 15: Managing Global Systems 560

Opening Case: Dunlop Aircraft Tyres Takes Off Worldwide with Customer Relationship Management 561

15-1 What major factors are driving the internationalization of business? 563

Developing an International Information Systems Architecture 564 • The Global Environment: Business Drivers and Challenges 565 • State of the Art 568

15-2 What are the alternative strategies for developing global businesses? 569

Global Strategies and Business Organization 569 • Global Systems to Fit the Strategy 570 • Reorganizing the Business 571

15-3 What are the challenges posed by global information systems and management solutions for these challenges? 572

A Typical Scenario: Disorganization on a Global Scale 572 • Global Systems Strategy 573 • The Management Solution: Implementation 575

15-4 What are the issues and technical alternatives to be considered when developing international information systems? 576

Computing Platforms and Systems Integration 577 • Connectivity 577

Interactive Session: Organizations Indian E-commerce: Obstacles to Opportunity 579

Software Localization 580

Interactive Session: Management Steelcase Designs Goes for Global Talent Management 581

Review Summary 583 • Key Terms 584 • Review Questions 584 • Discussion Questions 584

Hands-On MIS Projects 585

Collaboration and Teamwork Project 586

Case Study: Crocs Clammers to Global Efficiency 586

References: 590