Contents

Part I  Introduction to E-Commerce and E-Marketplaces

1  Overview of Electronic Commerce ................................................ 3
Opening Case: How Starbucks Is Changing to a Digital and Social Enterprise .... 4
1.1  Electronic Commerce: Definitions and Concepts .......................... 7
Defining Electronic Commerce ......................................................... 7
Defining e-Business ..................................................................... 7
Major EC Concepts ..................................................................... 7
Electronic Markets and Networks .................................................... 8
1.2  The Electronic Commerce Field: Growth, Content, Classification, and a Brief History .............................................................. 8
The Content and Framework of e-Commerce ...................................... 8
An EC Framework .................................................................... 9
Classification of EC by the Nature of the Transactions and the Relationships Among Participants .............................................................. 9
A Brief History of EC .................................................................. 12
Case 1.1: EC Application Net-a-Porter: Dress for Success .................. 13
The Opportunity ........................................................................ 13
The Solution ............................................................................. 13
The Results. ............................................................................... 14
1.3  Drivers and Benefits of e-Commerce .......................................... 15
The Drivers of e-Commerce ............................................................ 15
The Benefits of e-Commerce ............................................................ 15
1.4  Social Computing and Commerce ............................................. 17
Social Computing ....................................................................... 17
Web 2.0 .................................................................................... 17
Social Media ............................................................................ 17
Social Networks and Social Networking Services ................................ 18
Enterprise Social Networks ............................................................. 18
The Major Tools of Web 2.0 ............................................................ 20
1.5  The Digital and Social Worlds: Economy, Enterprises, and Society .... 20
The Digital Economy .................................................................... 20
The Digital Enterprise .................................................................. 21
The Social Business (Enterprise) .................................................... 22
The Digital Revolution and Society ................................................ 23
Some Impacts of the Digital and Social Worlds ............................... 24
1.6  Electronic Commerce Business Models ..................................... 25
The Structure and Properties of Business Models ............................ 26
Typical EC Business Models ........................................................... 28
Classification of Business Models in e-Commerce ............................ 28
### Table of Contents

1.7 The Limitations, Impacts, and the Future of e-Commerce ........................................ 29
   The Limitations and Barriers of EC ................................................................. 29
   Why Study e-Commerce? .................................................................................. 30
   The Future of EC ............................................................................................... 30

1.8 Overview of This Book ................................................................................... 31
   Part I: Introduction to e-Commerce and e-Marketplaces ..................................... 31
   Part II: EC Applications ..................................................................................... 31
   Part III: Emerging EC Delivery Platforms ......................................................... 31
   Part IV: EC Support Services ............................................................................... 32
   Part V: EC Strategy and Implementation ............................................................ 32
   Online Mini Tutorials ......................................................................................... 32

Managerial Issues ............................................................................................... 33
Summary ............................................................................................................... 33
Closing Case: e-Commerce at the National Football League (NFL) ....................... 36
References ............................................................................................................ 38

2 E-Commerce: Mechanisms, Platforms, and Tools ............................................. 41
   Opening Case: Pinterest: A New Kid on the E-Commerce Block ....................... 42
   2.1 Electronic Commerce Mechanisms: An Overview ......................................... 44
      EC Activities and Support Mechanisms .......................................................... 44
      The Online Purchasing Process ...................................................................... 44
   2.2 E-Marketplaces ............................................................................................ 44
      Electronic Markets .......................................................................................... 45
      The Components and Participants in E-Marketplaces .................................... 46
      Disintermediation and Reintermediation ......................................................... 47
   Case 2.1: EC Application Blue Nile Inc.: Change and Adaptation in the Online Jewelry Industry ................................................................. 47
      Changing the Industry ...................................................................................... 47
      Adapting to the Market .................................................................................... 47
      Types of E-Marketplaces ................................................................................ 48
   2.3 Customer Shopping Mechanisms: Webstores, Malls, and Portals .................. 49
      Webstores ......................................................................................................... 49
      Electronic Malls ............................................................................................... 49
      Web (Information) Portals ............................................................................... 49
      The Roles and Value of Intermediaries in E-Marketplaces .............................. 51
   2.4 Merchant Solutions: Electronic Catalogs, Search Engines, and Shopping Carts ................................................................. 51
      Electronic Catalogs .......................................................................................... 51
      EC Search Activities, Types, and Engines ....................................................... 52
      Shopping Carts ................................................................................................. 53
   2.5 Auctions, Bartering, and Negotiating Online ................................................ 54
      Definition and Characteristics ........................................................................ 54
      Dynamic Pricing .............................................................................................. 54
      Traditional Auctions Versus E-Auctions ......................................................... 54
      Types of Auctions ............................................................................................ 55
      Benefits of E-Auctions .................................................................................... 56
      Limitations of E-Auctions .............................................................................. 57
      Online Bartering ............................................................................................... 57
      Online Negotiating .......................................................................................... 58
   2.6 Virtual Communities and Social Networks .................................................... 58
      Characteristics of Traditional Online Communities and Their Classification ................................. 58
      Social Networking Service (Sites) ................................................................... 59
      Business-Oriented Public Social Networks .................................................... 60
Case 2.2: EC Application Craigslist: The Ultimate Online-Classified Community 61
Concerns About Craigslist 61
Private (or Enterprise) Social Networks 62
Business Models and Services Related to Social Networking 62
Mobile Social Commerce 62
Mobile Social Networking 62
Recent Innovative Tools and Platforms for Social Networking 63
2.7 Emerging EC Platforms: Augmented Reality and Crowdsourcing 64
Augmented Reality 64
Crowdsourcing 65
2.8 The Future: Web 3.0, Web 4.0, and Web 5.0 67
The Technological Environment 69
Managerial Issues 69
Summary 70
Closing Case: Driving Customer Engagement with Augmented Reality at Tesco 74
References 75

Part II E-Commerce Applications

3 Retailing in Electronic Commerce: Products and Services 79
Opening Case: Amazon.com—E-Commerce Innovator 80
3.1 Internet Marketing and B2C Electronic Retailing 82
Overview of Electronic Retailing 82
Size and Growth of the B2C Market 82
Characteristics and Advantages of Successful E-Tailing 83
3.2 E-Tailing Business Models 85
Classification of Models by Distribution Channel 85
Referring Directories 87
Mails with Shared Services 87
Other B2C Models and Special Retailing 87
B2C Social Shopping 88
Drop-Shipping 88
3.3 Online Travel and Tourism (Hospitality) Services 91
Characteristics of Online Travel 91
Case 3.1: EC Application 93
Benefits, Limitations, and Competition in Online Travel Services 93
Competition in Online Travel 93
Corporate Travel 94
3.4 Employment and the Online Job Market 94
The Internet Job Market 94
Benefits and Limitations of the Electronic Job Market 96
3.5 Online Real Estate, Insurance, and Stock Trading 97
Real Estate Online 97
Insurance Online 97
Online Stock Trading and Investments 98
3.6 Online Banking and Personal Finance 99
E-Banking 99
Online Banking Capabilities 99
Pure Virtual Banks 100
Case 3.2: EC Application 100
Online Billing and Bill Paying 101
E-Procurement Concepts .................................................. 139
The Benefits and Limitations of E-Procurement .................. 139
4.5 Reverse Auctions at Buy-Side E-Marketplaces (E-Tendering) ........ 141
The Major Benefits of Reverse Auctions .............................. 141
Conducting Reverse Auctions ........................................... 142
Case 4.1: EC Application Amazon Enters the B2B Market .............. 142
4.6 Other E-Procurement Methods ...................................... 144
Desktop Purchasing ....................................................... 144
Group Purchasing ......................................................... 144
Buying from Other Sources .............................................. 145
Acquisition Via Electronic Bartering ................................... 145
Selecting an Appropriate E-Procurement Solution .................. 146
Global Exchanges ........................................................ 146
Functions of and Services Provided by Exchanges .................... 146
Ownership of B2B Exchanges .......................................... 148
Dynamic Pricing in B2B Exchanges .................................... 149
Advantages, Limitations, and the Revenue Model of Exchanges ......... 149
4.8 B2B in Web 2.0 and Social Networking ........................... 150
E-Communities in B2B .................................................... 150
The Opportunities of Social Commerce in B2B ......................... 151
The Use of Web 2.0 Tools in B2B ....................................... 151
Virtual Trade Shows and Trade Fairs .................................. 152
Social Networking in B2B ................................................. 152
Examples of Other Activities of B2B Social Networks .................. 153
The Future of B2B Social Networking .................................. 153
Case 4.2: EC Application: E-Procurement in Healthcare ................ 153
4.9 Collaborative Commerce ............................................. 155
Essentials of Collaborative Commerce ................................ 155
The Elements and Processes of C-Commerce .......................... 155
Collaboration Hubs ....................................................... 155
Improving Collaborative Commerce ................................... 155
Representative Examples of Collaborative Commerce ................ 156
Social Collaboration ....................................................... 158
Barriers to C-Commerce .................................................. 158
Managerial Issues ....................................................... 158
Summary ..................................................................... 160
Closing Case: Maybelline Uses Collaborative Commerce to Manage Distribution ........................................ 164
References .................................................................. 165

5 Innovative EC Systems: From E-Government to E-Learning, E-Health, Sharing Economy, and P2P Commerce ......................... 167
Opening Case: E-Government in Estonia ................................ 167
5.1 Digital Government: An Overview ................................... 169
Definition and Scope ....................................................... 169
Government-to-Citizens .................................................. 170
Government-to-Business .................................................. 172
Government-to-Government .............................................. 173
Government-to-Employees and Internal Efficiency and Effectiveness .................. 173
Implementing E-Government ............................................. 174
The Transformation to E-Government .................................. 174
Managerial Issues ................................................. 240
Summary ......................................................... 241
Closing Case: Can Uber Continue to Grow in an Evolving Market? ......................................................... 244
References ......................................................... 246

7 Intelligent (Smart) E-Commerce ........................................ 249
Opening Case: INRIX Solves Transportation Problems .......................................................... 249
7.1 Introduction to Intelligent E-Commerce ........................................ 251
An Overview of Intelligent E-Commerce ........................................ 251
7.2 The Essentials of Artificial Intelligence ........................................ 253
Artificial Intelligence (AI): Definitions and Characteristics ........................................ 253
The Content of the AI Field ........................................ 253
Chatbots ......................................................... 256
7.3 Recent AI Applications in E-Commerce ........................................ 258
The AI Contribution to E-Commerce ........................................ 258
AI in E-Commerce: Some Illustrative Examples ........................................ 258
7.4 Knowledge (Expert) Systems ........................................ 260
An Overview of Knowledge Management ........................................ 260
Knowledge Management Types and Activities ........................................ 260
Knowledge Sharing ........................................ 261
How Is Knowledge Management Related to E-Commerce? ........................................ 261
KM and Social Networks ........................................ 262
Expert Systems ........................................ 262
Knowledge-Based System ........................................ 263
Case 7.1: EC Application Allstate Is Using Knowledge Systems ........................................ 264
7.5 Intelligent Personal Assistants and Robot Advisers ........................................ 265
Amazon's Alexa ........................................ 265
Apple's Siri ........................................ 267
Other Personal Assistants ........................................ 267
Personal Robots ........................................ 268
Application Case 7.2: EC Application: Autonomous' Personal Robot ........................................ 268
7.6 The Internet of Things and E-Commerce ........................................ 270
The Essentials of IoT ........................................ 270
The Structure of IoT Applications ........................................ 270
The Major Benefits of IoT ........................................ 271
The Drivers of IoT ........................................ 271
How the IoT Works ........................................ 271
Some Issues in Implementing the IoT ........................................ 272
7.7 Selective Demonstrations of IoT in Action ........................................ 273
A Sampler of Existing Applications ........................................ 273
Smart Homes and Appliances ........................................ 274
Smart Cities ........................................ 275
Smart Cars (Self-Driven) ........................................ 276
Managerial Issues ........................................ 276
Summary ......................................................... 277
Closing Case: CNH Industrial Uses the Internet of Things to Excel ........................................ 280
References ......................................................... 281

8 Social Commerce: Foundations, Social Marketing, and Advertising ........................................ 285
Opening Case: Social Media Wants Your Marketing Dollars ........................................ 285
8.1 Social Commerce: Definitions and Evolution ........................................ 287
Definitions ........................................ 287
The Evolution of Social Commerce ........................................ 287
8.2 The Content of the Social Commerce Field ........................................ 288
The Landscape and Major Components of the Field ........................................ 288
8.3 The Benefits and Limitations of Social Commerce

Benefits to Customers
Benefits to Retailers
Benefits to Other Types of Enterprises
The Social Business: An IBM Approach
New or Improved Business Models
Concerns and Limitations of Conducting Social Commerce

8.4 Social Shopping: Concepts, Benefits, and Models

Definitions and Drivers of Social Shopping
Traditional E-Commerce Sites with Social Media Additions
The Major Types and Models of Social Shopping
Case 8.1: EC Application Polyvore A Trendsetter in Social Shopping
Other Innovative Models
Social Shopping Aids: From Recommendations to Reviews, Ratings, and Marketplaces
Other Shopping Aids and Services
Social Marketplaces and Direct Sales
Shopping for Virtual Goods in a Virtual Economy
Real-Time Online Shopping
Social Shopping in the Near Future

8.5 Social Advertising: From Viral Advertising to Microblogging and Other Promotions

Social ads and Social Apps
Viral (Word-of-Mouth) Marketing and Social Networking
Using YouTube and Other Social Presentation Sites for Advertising
Using Twitter as an Advertising and Marketing Tool
Using Facebook for Advertising
Using LinkedIn
Other Innovative Ways to Advertise in Social Media

8.6 Social Customer Service and CRM

How Does Social Networking Empower Customers?
Social CRM
How to Serve the Social Customers
The Benefits of Social CRM
Case 8.2: EC Application iRobot Uses Social Media for Multichannel CRM
The Evolution of Social CRM
Multidimensional Presentation SCRM
Examples of Implementation of Social Customer Service and CRM
Reputation Management System
Managerial Issues
Summary
Closing Case: How Sony Uses Social Media for Improving CRM
References

9 Social Enterprise and Other Social Commerce Topics

Opening Case: Maximizing the Impact of Social Media with a Minimum of Effort in Mortgage Lending

9.1 Social Business and Social Enterprise

Definitions: Social Business and Social Enterprise
Business Networks
Technical and Nontechnical Attacks: An Overview ................. 416
The Major Technical Attack Methods .......................... 416
Malware (Malicious Software): Viruses, Worms, and Trojan Horses 416
Mirai (Malware) ........................................ 419

11.4 Nontechnical Methods: From Phishing to Spam and Fraud .... 420
Social Engineering and Fraud ................................ 421
Social Phishing ........................................... 421
Fraud and Scams on the Internet ............................... 423
Top 10 Attacks and Remedies .................................. 424
Identity Theft and ID Fraud .................................. 425
Cyber Bank Robberies ....................................... 425
Ransomware ................................................. 425
Spam Attacks ............................................... 427
Spyware .................................................... 427
Social Networking Makes Social Engineering Easy ............. 427
Data Breach (Leak) ........................................ 428

11.5 The Information Assurance Model and Defense Strategy ..... 429
Confidentiality, Integrity, and Availability ..................... 429
Authentication, Authorization, and Nonrepudiation .............. 429
E-Commerce Security Strategy ................................ 430
The Defense Side EC Systems ................................ 430

11.6 Defending Information Systems and E-Commerce .......... 431
The Defense I: Access Control, Encryption, and PKI ............ 431
The Defense II: Securing E-Commerce Networks ................. 434
The Defense III: General Controls, Spam, Pop-Ups, and Social Engineering Controls ..................... 435

11.7 Consumer and Seller Protection from Online Fraud ......... 438
Consumer (Buyer) Protection ................................ 438
Seller (Merchant) Protection .................................. 440
Protecting Marketplaces and Social Networking Services .... 441
Protecting Both Buyers and Sellers: Using Electronic Signatures and Other Security Features .................. 441

11.8 Implementing Enterprisewide E-Commerce Security ......... 442
The Drivers of EC Security Management ........................ 442
Senior Management Commitment and Support .................... 442
EC Security Policies and Training ................................ 443
EC Risk Analysis and Ethical Issues ........................... 444
Why Is It Difficult to Stop Internet Crime? ..................... 444
Protecting Mobile Devices and Mobile Apps ..................... 445

Managerial Issues ........................................... 446
Summary .................................................... 446
Closing Case: How Dyn Was Attacked by DDOS? ................ 451
References .................................................. 452

12 Electronic Commerce Payment Systems ......................... 457
Opening Case: Cross-Border EC—Costco Partners with China’s Tmall ........... 457

12.1 Changing Retail Landscape ................................ 461
Omni-Channel Retail ........................................ 461
Cash Versus Non-cash Transactions ............................. 461
Move to Mobile ............................................. 463
Implications for EC Payments .................................. 464
Critical Mass ................................................ 466

12.2 Using Payment Cards Online ................................ 466
Credit Card Reading ........................................ 466
12.3 Smart Cards ................................................. 469
Types of Smart Cards: Contact and Contactless ....................... 470
Stored-Value Cards ........................................ 470
Applications of Smart Cards ..................................... 471
12.4 EC Micropayments ........................................... 473
Micropayment Models ........................................ 473
Micropayment Options and Costs ................................ 474
Case 12.1: EC Application: Innovative Credit Card Micropayments
for the Korean Metropolitan Uniform Fare System ................. 474
12.5 PayPal and Other Third-Party Payment Gateways ................. 476
PayPal .................................................. 476
Other Third-Party Gateways .................................... 477
12.6 Mobile Payments ............................................ 478
Types of Mobile Payments ........................................ 478
Mobile Consumer Payments: Wallets, Clouds, and Loops .......... 479
Case 12.2 EC Application Using the Square Magstripe Reader .... 482
12.7 Digital and Virtual Currencies ................................ 483
Types of Currencies: Physical and Digital .......................... 483
Bitcoin and Other Cryptocurrencies ................................ 484
Managerial Issues .............................................. 489
Summary ..................................................... 490
Closing Case ................................................... 495
References ..................................................... 497
13 Order Fulfillment Along the Supply Chain in e-Commerce .... 501
Opening Case: How Amazon.Com Fulfills Orders .................... 502
13.1 Order Fulfillment and Logistics: An Overview ................. 504
Basic Concepts of Order Fulfillment and Logistics ............... 504
The EC Order Fulfillment Process and Elements ................. 505
Operation Models ............................................ 506
Order Fulfillment and the Supply Chain .......................... 506
13.2 Order Fulfillment in Make-to-Order (MTO) and Mass Customization
Mass Customization, Make-to-Order, and Assemble-to-Order .... 507
Case 13.1: EC Application Dell's World-Class Supply Chain
and Order Fulfillment System .................................. 508
Make-to-Order and Assemble-to-Order ............................ 510
Case 13.2: EC Application Feetz Inc. Is Using 3D for Mass Customization
in e-Commerce ............................................. 511
13.3 Warehousing, Robots, and Warehouse Management Systems .... 512
Using Robots (Bots) in Warehouses ............................ 513
Warehouse Management System (WMS) .......................... 514
13.4 Delivery to Customers: From Robots to Drones ............... 514
Speeding Up Deliveries: From Same Day to a Few Hours ........ 514
13.5 Problems in Order Fulfillment along Supply Chains .......... 517
13.6 Solutions for Order Fulfillment Problems Along the Supply Chain
Improvements in the Order-Taking Activity ....................... 519
Changing the Structure and Process of the Supply Chain ........ 519
Integrated Global Logistics Program ................................ 520
Partnering Efforts and Outsourcing Logistics .................... 520
Supply Chain Segmentation ..................................... 520
13.7 RFID as a Key Enabler in Supply Chain Management ........ 520
The Essentials of RFID ....................................... 520
RFID Applications in the Supply Chain Around the Globe
13.8 Other Order Fulfillment Topics
Handling Returns (Reverse Logistics)
Order Fulfillment in B2B
Order Fulfillment in Services
Innovative e-Fulfillment Strategies
Managerial Issues
Summary
Closing Case: Cross-Border EC (Partnering with Tmall Global)
References

Part V E-Commerce Strategy and Implementation

14 EC Strategy, Globalization, SMEs, and Implementation
Opening Case: Telstra Corporation Helps Its Corporate Customers
Justify EC Initiatives
14.1 Organizational Strategy: Concepts and Overview
Strategy and Performance Cycle
Strategy Initiation
Strategy Formulation
Strategy Implementation
Strategy Assessment
Performance Improvement and Innovations
14.2 Why Justify E-Commerce and Social Media Investments?
How Can They Be Justified?
Increased Pressure for Financial Justification
Other Reasons Why EC and Social Media Justification is Needed
EC Investment Categories and Benefits
How Is an EC or Social Media Investment Justified?
What Needs to Be Justified? When Should Justification Take Place?
Using Metrics in EC and Social Media Justification
Case 14.1: EC Application Aldi Supermarket Trying E-Commerce in the United Kingdom
Web Analytics
The Process of Justifying EC and IT Projects
14.3 A Strategy for Global E-Commerce and Social Media
Benefits and Extent of Global Operations
Barriers to Global E-Commerce
Breaking Down the Barriers to Global E-Commerce
14.4 Strategy for Small- and Medium-Sized Enterprises
Case 14.2: EC Application Website Builders
Globalization and SMEs
Resources to Support SME Activities in EC and Social Media
SMEs and Social Networks
14.5 The Implementation Landscape
The Major Implementation Factors
Case 14.3: EC Application E-Commerce Builders
14.6 Development Strategies for E-Commerce and Social Media Projects
In-House Development: Insourcing
Insourcing with Applications or Tools
Outsourcing Development and Implementation
Case 14.4: EC Application Would You Build an App Online?
Selecting a Development Option
14.7 Opportunities for Success in E-Commerce and Social Media and Avoiding Failure ............................................. 563
Factors that Determine E-Commerce and Social Media Success .... 563
E-Commerce and Social Media Successes ............................. 564
Cultural Differences in EC and Social Media Successes and Failures 565
Managerial Issues .......................................................... 566
Summary ............................................................................ 566
Closing Case: Battle of the B2C Titans ................................. 569
References ......................................................................... 570

15 E-Commerce: Regulatory, Ethical, and Social Environments .... 573
Opening Case: Fake News: The Austin, Texas, Fiasco ................ 574
15.1 Ethical Challenges and Guidelines .................................. 575
Ethical Principles and Guidelines ......................................... 575
Business Ethics ................................................................. 575
EC Ethical and Legal Issues ................................................ 576
15.2 Intellectual Property Law and Copyright Infringement ........ 577
Intellectual Property in E-Commerce ..................................... 577
Protecting Intellectual Property on Websites ......................... 579
15.3 Privacy Rights, Protection, and Free Speech ................. 580
Privacy in E-Commerce ..................................................... 580
Social Networks Changing the Landscape of Privacy and Their Protection ............................ 580
Privacy Rights and Protection ............................................. 581
Free Speech Online Versus Privacy Protection .......................... 582
The Price of Protecting an Individual’s Privacy ......................... 583
Case 15.1: EC Application: School Administrators Used Webcams to Spy on Students at Home .................. 583
The Future of ePrivacy ...................................................... 583
How Information About Individuals Is Collected and Used Online .................................................. 583
Privacy Protection by Information Technologies .................. 585
Privacy Issues in Web 2.0 Tools and Social Networks ............. 585
Privacy Protection by Ethical Principles ............................... 586
Privacy Protection in Countries Other Than the United States 586
15.4 Other EC Legal Issues .................................................. 587
Selected Legal and Regulatory Environment: E-Discovery and Cyberbullying ................................... 587
15.5 Fake Content on the Web ............................................. 590
Fake News ......................................................................... 590
Other Fake Content Types and Activities on the Internet ........ 590
Internet Trolls .................................................................. 590
Difficulties Controlling Fake Content ................................ 591
Tips for Analyzing and Dealing with Various Types of Fake News .................................................. 592
15.6 Public Policy, Taxation, and Political Environments ........ 593
Net Neutrality .................................................................. 593
Taxation of EC Transactions in the United States .................. 593
Internet Censorship by Countries ....................................... 594
15.7 Societal Issues and Green EC ......................................... 594
The Digital Divide .......................................................... 595
Telecommuting ............................................................... 595
Does EC Increase Unemployment? .................................... 596
Green EC and IT ............................................................. 596
Other Societal Issues ........................................................ 598