

THOMSON
COURSE TECHNOLOGY



ELECTRONIC
COMMERCE

SEVENTH ANNUAL EDITION

GARY SCHNEIDER

TABLE OF CONTENTS

Preface

Part 1: Introduction

Chapter 1	<i>Introduction to Electronic Commerce</i>	2
	Electronic Commerce: The Second Wave	4
	Electronic Commerce and Electronic Business	5
	Categories of Electronic Commerce	5
	The Development and Growth of Electronic Commerce	8
	The Dot-Com Boom, Bust, and Rebirth	9
	The Second Wave of Electronic Commerce	11
	Business Models, Revenue Models, and Business Processes	14
	Focus on Specific Business Processes	14
	Role of Merchandising	15
	Product/Process Suitability to Electronic Commerce	15
	Advantages of Electronic Commerce	17
	Disadvantages of Electronic Commerce	18
	Economic Forces and Electronic Commerce	20
	Transaction Costs	21
	Markets and Hierarchies	22
	Using Electronic Commerce to Reduce Transaction Costs	24
	Network Economic Structures	24
	Network Effects	25
	Using Electronic Commerce to Create Network Effects	26
	Identifying Electronic Commerce Opportunities	26
	Strategic Business Unit Value Chains	26
	Industry Value Chains	28
	SWOT Analysis: Evaluating Business Unit Opportunities	30
	International Nature of Electronic Commerce	31
	Trust Issues on the Web	32
	Language Issues	33
	Culture Issues	34
	Culture and Government	36
	Infrastructure Issues	38
	Summary	41
	Key Terms	41
	Review Questions	42
	Exercises	42
	Cases	43
	For Further Study and Research	47

Chapter 2	<i>Technology Infrastructure: The Internet and the World Wide Web</i>	51
	The Internet and the World Wide Web	53
	Origins of the Internet	54
	New Uses for the Internet	54
	Commercial Use of the Internet	55
	Growth of the Internet	56
	Emergence of the World Wide Web	57
	Packet-Switched Networks	60
	Routing Packets	60
	Internet Protocols	62
	TCP/IP	62
	IP Addressing	63
	Domain Names	64
	Web Page Request and Delivery Protocols	66
	Electronic Mail Protocols	66
	Unsolicited Commercial E-Mail (UCE, Spam)	67
	Markup Languages and the Web	68
	Standard Generalized Markup Language	69
	Hypertext Markup Language	70
	Extensible Markup Language (XML)	76
	HTML and XML Editors	81
	Intranets and Extranets	82
	Intranets	82
	Extranets	83
	Public and Private Networks	83
	Virtual Private Network (VPN)	84
	Internet Connection Options	85
	Connectivity Overview	85
	Voice-Grade Telephone Connections	86
	Broadband Connections	86
	Leased-Line Connections	88
	Wireless Connections	88
	Internet2 and the Semantic Web	92
	Summary	94
	Key Terms	95
	Review Questions	97
	Exercises	97
	Cases	98
	For Further Study and Research	101

Part 2: Business Strategies for Electronic Commerce

Chapter 3	<i>Selling on the Web: Revenue Models and Building a Web Presence</i>	106
	Revenue Models	107
	Web Catalog Revenue Models	108
	Digital Content Revenue Models	115
	Advertising-Supported Revenue Models	117
	Advertising-Subscription Mixed Revenue Models	121
	Fee-for-Transaction Revenue Models	122
	Fee-for-Service Revenue Models	130
	Revenue Models in Transition	132
	Subscription to Advertising-Supported Model	133
	Advertising-Supported to Advertising-Subscription Mixed Model	133

Advertising-Supported to Fee-for-Services Model	133
Advertising-Supported to Subscription Model	134
Multiple Transitions	134
Revenue Strategy Issues	136
Channel Conflict and Cannibalization	137
Strategic Alliances and Channel Distribution Management	138
Mobile Commerce	139
Creating an Effective Web Presence	140
Identifying Web Presence Goals	140
Achieving Web Presence Goals	141
Web Site Usability	146
How the Web Is Different	146
Meeting the Needs of Web Site Visitors	147
Trust and Loyalty	149
Rating Electronic Commerce Web Sites	150
Usability Testing	150
Customer-Centric Web Site Design	151
Connecting with Customers	151
The Nature of Communication on the Web	152
Summary	155
Key Terms	155
Review Questions	156
Exercises	157
Cases	157
For Further Study and Research	161
Chapter 4 <i>Marketing on the Web</i>	165
Web Marketing Strategies	167
Product-Based Marketing Strategies	168
Customer-Based Marketing Strategies	170
Communicating with Different Market Segments	171
Trust and Media Choice	172
Market Segmentation	173
Market Segmentation on the Web	175
Offering Customers a Choice on the Web	176
Beyond Market Segmentation: Customer Behavior and Relationship Intensity	176
Segmentation Using Customer Behavior	176
Customer Relationship Intensity and Life-Cycle Segmentation	179
Acquisition, Conversion, and Retention of Customers	181
Customer Acquisition, Conversion, and Retention: The Funnel Model	183
Advertising on the Web	184
Banner Ads	185
Other Web Ad Formats	189
Site Sponsorships	190
Effectiveness of Online Advertising	190
E-Mail Marketing	191
Permission Marketing	191
Combining Content and Advertising	192
Outsourcing E-Mail Processing	192
Technology-Enabled Customer Relationship Management	193
CRM as a Source of Value in the Marketspace	193
Creating and Maintaining Brands on the Web	195
Elements of Branding	195
Emotional Branding vs. Rational Branding	196
Brand Leveraging Strategies	197

Brand Consolidation Strategies	197
Costs of Branding	197
Affiliate Marketing Strategies	198
Viral Marketing Strategies	199
Search Engine Positioning and Domain Names	201
Search Engines and Web Directories	201
Paid Search Engine Inclusion and Placement	202
Web Site Naming Issues	204
Summary	207
Key Terms	207
Review Questions	209
Exercises	209
Cases	210
For Further Study and Research	213

Chapter 5 <i>Business-to-Business Strategies: From Electronic Data Interchange to Electronic Commerce</i>	217
Purchasing, Logistics, and Support Activities	219
Purchasing Activities	220
Direct vs. Indirect Materials Purchasing	222
Logistics Activities	223
Support Activities	225
E-Government	226
Network Model of Economic Organization	228
Electronic Data Interchange	229
Early Business Information Interchange Efforts	230
Emergence of Broader EDI Standards	231
How EDI Works	232
Value-Added Networks	237
EDI on the Internet	239
Open Architecture of the Internet	240
Financial EDI	241
Supply Chain Management Using Internet Technologies	242
Value Creation in the Supply Chain	242
Increasing Supply Chain Efficiencies	244
Using Materials-Tracking Technologies with EDI and Electronic Commerce	245
Creating an Ultimate Consumer Orientation in the Supply Chain	247
Building and Maintaining Trust in the Supply Chain	247
Electronic Marketplaces and Portals	248
Independent Industry Marketplaces	248
Private Stores and Customer Portals	251
Private Company Marketplaces	251
Industry Consortia-Sponsored Marketplaces	252
Summary	254
Key Terms	254
Review Questions	255
Exercises	256
Cases	256
For Further Study and Research	259

Chapter 6	<i>Online Auctions, Virtual Communities, and Web Portals</i>	263
	Auction Overview	264
	Origins of Auctions	265
	English Auctions	265
	Dutch Auctions	266
	First-Price Sealed-Bid Auctions	267
	Second-Price Sealed-Bid Auctions	267
	Open-Outcry Double Auctions	267
	Sealed-Bid Double Auctions	268
	Reverse (Seller-Bid) Auctions	268
	Online Auctions and Related Businesses	269
	General Consumer Auctions	270
	Specialty Consumer Auctions	276
	Consumer Reverse Auctions and Group Purchasing Sites	276
	Business-to-Business Auctions	279
	Business-to-Business Reverse Auctions	283
	Auction-Related Services	284
	Virtual Communities and Web Portals	288
	Mobile Communications Technology	289
	Mobile Business	290
	Intelligent Software Agents	290
	Virtual Communities	291
	Early Web Communities	292
	Web Community Consolidation	294
	Web Communities in the Second Wave of Electronic Commerce	294
	Revenue Models for Web Portals and Virtual Communities	296
	Summary	300
	Key Terms	300
	Review Questions	301
	Exercises	302
	Cases	303
	For Further Study and Research	305
Chapter 7	<i>The Environment of Electronic Commerce: Legal, Ethical, and Tax Issues</i>	309
	The Legal Environment of Electronic Commerce	311
	Borders and Jurisdiction	311
	Jurisdiction on the Internet	314
	Conflict of Laws	317
	Contracting and Contract Enforcement in Electronic Commerce	318
	Use and Protection of Intellectual Property in Online Business	322
	Web Site Content Issues	322
	Domain Names, Cybersquatting, and Name Stealing	326
	Protecting Intellectual Property Online	327
	Defamation	328
	Deceptive Trade Practices	329
	Advertising Regulation	329
	Online Crime, Terrorism, and Warfare	331
	Online Crime	331
	Online Warfare and Terrorism	333
	Ethical Issues	333
	Ethics and Web Business Policies	334
	Privacy Rights and Obligations	334
	Communications with Children	339
	Taxation and Electronic Commerce	340

Nexus	341
U.S. Income Taxes	341
U.S. State Sales Taxes	342
European Union Value Added Taxes	343
Summary	344
Key Terms	345
Review Questions	345
Exercises	346
Cases	346
For Further Study and Research	349

Part 3: Technologies for Electronic Commerce

Chapter 8 <i>Web Server Hardware and Software</i>	354
Web Server Basics	356
Types of Web Sites	356
Web Clients and Web Servers	357
Dynamic Content	358
Various Meanings of “Server”	360
Web Client/Server Communication	361
Two-Tier Client/Server Architecture	361
Three-Tier and N-Tier Client/Server Architectures	362
Software for Web Servers	363
Operating Systems for Web Servers	364
Web Server Software	364
Finding Web Server Software Information	367
Electronic Mail (E-Mail)	367
E-Mail Benefits	367
E-Mail Drawbacks	367
Spam	368
Solutions to the Spam Problem	369
Web Site and Internet Utility Programs	377
Finger and Ping Utilities	378
Tracert and Other Route-Tracing Programs	378
Telnet and FTP Utilities	379
Indexing and Searching Utility Programs	380
Data Analysis Software	380
Link-Checking Utilities	380
Remote Server Administration	381
Web Server Hardware	381
Server Computers	381
Web Server Performance Evaluation	383
Web Server Hardware Architectures	384
Summary	388
Key Terms	388
Review Questions	389
Exercises	390
Cases	390
For Further Study and Research	394

Chapter 9	<i>Electronic Commerce Software</i>	397
	Web Hosting Alternatives	398
	Basic Functions of Electronic Commerce Software	400
	Catalog Display	401
	Shopping Cart	403
	Transaction Processing	407
	Advanced Functions of Electronic Commerce Software	407
	Middleware	407
	Enterprise Application Integration and Databases	408
	Web Services	410
	Integration with ERP Systems	413
	Electronic Commerce Software for Small and Midsize Companies	415
	Basic Commerce Service Providers	415
	Mall-Style Commerce Service Providers	418
	Estimated Operating Expenses for a Small Web Business	420
	Electronic Commerce Software for Midsize to Large Businesses	421
	Web Site Development Tools	421
	Electronic Commerce Software for Large Businesses	423
	Enterprise-Class Electronic Commerce Software	424
	Customer Relationship Management Software	426
	Supply Chain Management Software	428
	Content Management Software	428
	Knowledge Management Software	429
	Summary	430
	Key Terms	430
	Review Questions	431
	Exercises	431
	Cases	433
	For Further Study and Research	435
Chapter 10	<i>Electronic Commerce Security</i>	438
	Online Security Issues Overview	440
	Managing Risk	441
	Computer Security Classifications	442
	Security Policy and Integrated Security	442
	Security for Client Computers	444
	Cookies	444
	Web Bugs	447
	Active Content	447
	Java Applets	449
	JavaScript	449
	ActiveX Controls	450
	Graphics and Plug-Ins	450
	Viruses, Worms, and Antivirus Software	451
	Digital Certificates	455
	Steganography	458
	Physical Security for Clients	458
	Communication Channel Security	459
	Secrecy Threats	459
	Integrity Threats	461
	Necessity Threats	462
	Threats to the Physical Security of Internet Communications Channels	463
	Threats to Wireless Networks	463
	Encryption Solutions	464

Ensuring Transaction Integrity with Hash Functions	471
Ensuring Transaction Integrity with Digital Signatures	472
Guaranteeing Transaction Delivery	473
Security for Server Computers	474
Web Server Threats	474
Database Threats	475
Other Programming Threats	475
Threats to the Physical Security of Web Servers	476
Access Control and Authentication	478
Firewalls	479
Organizations that Promote Computer Security	481
CERT	482
Other Organizations	482
Computer Forensics and Ethical Hacking	483
Summary	484
Key Terms	485
Review Questions	486
Exercises	487
Cases	487
For Further Study and Research	490
Chapter 11 <i>Payment Systems For Electronic Commerce</i>	493
Online Payment Basics	495
Payment Cards	497
Advantages and Disadvantages of Payment Cards	499
Payment Acceptance and Processing	499
Electronic Cash	503
Micropayments and Small Payments	504
Privacy and Security of Electronic Cash	504
Holding Electronic Cash: Online and Offline Cash	505
Advantages and Disadvantages of Electronic Cash	506
How Electronic Cash Works	507
Providing Security for Electronic Cash	507
Electronic Cash Systems	508
Electronic Wallets	513
Microsoft .NET Passport	514
Yahoo! Wallet	514
W3C Micropayment Standards Development Activity	515
The ECML Standard	515
Stored-Value Cards	517
Magnetic Strip Cards	517
Smart Cards	518
Internet Technologies and the Banking Industry	520
Check Processing	520
Phishing Attacks	521
Organized Crime, Identity Theft, and Phishing Attacks	523
Phishing Attack Countermeasures	524
Summary	526
Key Terms	526
Review Questions	527
Exercises	527
Cases	529
For Further Study and Research	531

Part 4: Integration

Chapter 12	<i>Planning for Electronic Commerce</i>	536
Planning Electronic Commerce Initiatives		537
Identifying Objectives		538
Linking Objectives to Business Strategies		538
Measuring Benefits		539
Managing Costs		540
Comparing Benefits to Costs		547
Return on Investment (ROI)		547
Strategies for Developing Electronic Commerce Web Sites		548
Internal Development vs. Outsourcing		549
Selecting a Hosting Service		553
New Methods for Implementing Partial Outsourcing		554
Managing Electronic Commerce Implementations		555
Project Management		555
Project Portfolio Management		557
Staffing for Electronic Commerce		557
Postimplementation Audits		560
Summary		561
Key Terms		561
Review Questions		562
Exercises		562
Cases		563
For Further Study and Research		566
Glossary		569
Index		601