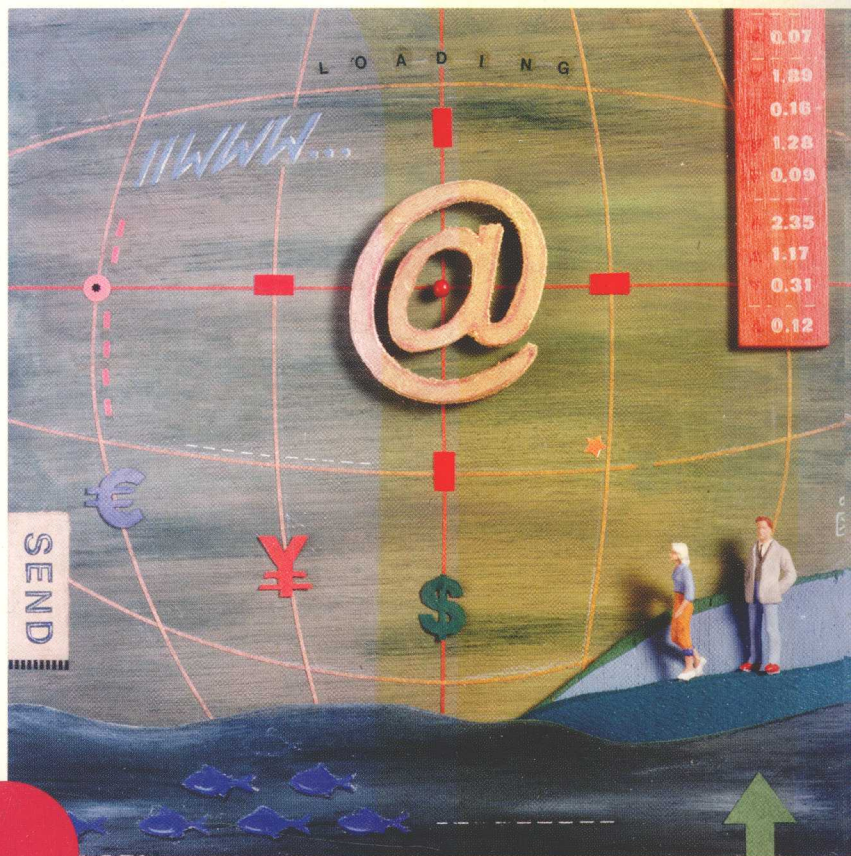FIFTH ANNUAL EDITION

ELECTRONIC COMMERCE
THE SECOND WAVE

Gary P. Schneider

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Fifth Annual Edition

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COURSE TECHNOLOGY ™

Electronic Commerce: The Second Wave, Fifth Annual Edition
by Gary P. Schneider, Ph.D, CPA

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Electronic Commerce: The Second Wave, Fifth Annual Edition provides complete coverage of the key business and technology elements of electronic commerce. The book does not assume that readers have any previous electronic commerce knowledge or experience.

In 1998, having spent several years doing electronic commerce research, consulting, and corporate training, I began developing both an undergraduate business school course and an MBA-level course in electronic commerce. Although I had used a variety of books and other materials in my corporate training work, I was concerned that those materials would not work well in university courses because they were written at widely varying levels and did not have the pedagogic organization and features, such as review questions, that are so important to students.

After searching for a textbook that offered balanced coverage of both the business and technology elements of electronic commerce, I concluded that no such book existed. The first edition of *Electronic Commerce* was written to fill that void. In the subsequent editions, I have worked to improve the book and keep it current with the rapid changes in this dynamic field. The fifth edition includes many updates to the content that reflect the rapid changes that are occurring in electronic commerce today. The fifth edition also introduces an idea—that of the second wave of electronic commerce—that is used to help students understand how electronic commerce is similar to other technological innovations that have changed the world in the past.

Electronic Commerce: The Second Wave, Fifth Annual Edition introduces readers to both the theory and practice of conducting business over the Internet and World Wide Web. In this edition, the two chapters that deal with security issues have been combined to provide a more concise treatment of the subject. The book is organized into four sections: an introduction, business strategies, technologies, and an integration.

New to this Edition

- Introduction of the concept of a second wave of electronic commerce and exploration of the opportunities it offers for business success
- A new focus on the separate operation of revenue models and cost reduction initiatives rather than combined business models
- More in-depth coverage of marketing and promotion strategies, including new material on Web site sponsorships and search engine positioning
- New material on the use of Internet technologies in managing logistics and coordinating the tracking of materials as they move through the supply chain
- Increased coverage of the use of Internet technologies such as e-procurement and reverse auctions in supply chain management
- Expanded coverage of online auction management software and online auction-related services
- Coverage of the latest developments in online privacy legislation for Web sites that interact with children
- Increased coverage of transaction taxes, including sales taxes, use taxes, and value-added taxes
- Inclusion of the latest information about spam filtering technologies
- Updated coverage of wireless and Web services technologies
- Expanded coverage of change management strategies used in electronic commerce implementation projects

Introduction

The book's first section includes two chapters. Chapter 1, "Introduction to Electronic Commerce," defines electronic commerce and describes how companies use it to create new products and services, reduce the cost of existing business processes, and improve the efficiency and effectiveness of their operations. The concept of the second wave of electronic commerce is presented and developed in this chapter. Chapter 1 also describes the history of the Internet and the Web, explains the international environment in which electronic commerce exists, provides an overview of the economic structures in which businesses operate, and describes how electronic commerce fits into those structures. Two themes are introduced in this chapter that recur throughout later chapters: examining a firm's value chain can suggest opportunities for electronic commerce initiatives and reductions in transaction costs are important elements of many electronic commerce initiatives.

Chapter 2, "Technology Infrastructure: The Internet and the World Wide Web," introduces the technologies used to conduct business online, including topics such as Internet infrastructure, protocols, and packet-switched networks. Chapter 2 also describes the markup languages used on the Web (HTML and XML) and discusses Internet connection options and tradeoffs.

Business Strategies for Electronic Commerce

The second section of the book includes five chapters that describe the business strategies that companies and other organizations are using to do business online. Chapter 3, "Selling on the Web: Revenue Models and Building a Web Presence," describes revenue models that companies are using on the Web and explains how some companies have changed their revenue models as the Web has matured. The chapter also describes how firms that understand the nature of communication on the Web can identify and reach the largest possible number of qualified customers.

Chapter 4, "Marketing on the Web," provides an introduction to Internet marketing. It includes coverage of market segmentation, technology-enabled customer relationship management, rational branding, viral marketing, and permission marketing. The chapter also explains how online businesses can share and transfer brand benefits through affiliate marketing and cooperative efforts among brand owners.

Chapter 5, "Business-to-Business Strategies: From Electronic Data Interchange to Electronic Commerce," explores the variety of methods that companies are using to improve their purchasing and logistics primary activities with Internet and Web technologies. Chapter 5 also provides an overview of EDI and explores how the Internet now provides an inexpensive EDI communications channel that allows smaller businesses to reap EDI's benefits. Chapter 5 also explains how the Internet and the Web have become an important force driving the adoption of technologies such as e-procurement and reverse auctions in the practice of supply chain management.

Chapter 6, "Online Auctions, Virtual Communities, and Web Portals," outlines how companies now use the Web to do things that they have never done before, such as operating auction sites, creating virtual communities, and serving as Web portals. The chapter describes how firms are using Web auction sites to sell goods to their customers and generate advertising revenue. The chapter explains how businesses are creating virtual communities with their customers and suppliers.

Chapter 7, "The Environment of Electronic Commerce: Legal, Ethical, and Tax Issues," discusses the legal and ethical aspects of intellectual property usage and the privacy rights of customers. Online crime, terrorism, and warfare are covered as well. The chapter also explains that the large number of government units that have jurisdiction and power to tax makes it essential that companies doing business on the Web understand the potential liabilities of doing business with customers in those jurisdictions.

The third section of the book includes four chapters that describe the technologies of electronic commerce and explains how they work. Chapter 8, "Web Server Hardware and Software," describes the computers, operating systems, e-mail systems, utility programs, and Web server software that organizations use in the operation of their electronic commerce Web sites. Web site hosting options are also discussed in this chapter.

Chapter 9, "Electronic Commerce Software," describes the basic functions that all electronic commerce Web sites must accomplish and explains the various software options available to companies of various sizes. This chapter includes a completely new overview of Web services, a set of technologies that could become an important electronic commerce infrastructure element in the near future.

Chapter 10, "Electronic Commerce Security," discusses security threats and countermeasures that organizations can use to ensure the security of client computers, communications channels, and Web servers. The role of industry organizations in promoting computer, network, and Internet security is also outlined. The chapter emphasizes the importance of a written security policy and explains how encryption and digital certificates work.

Chapter 11, "Payment Systems for Electronic Commerce," presents a discussion of electronic payment systems, including electronic cash, electronic wallets, stored-value cards, credit cards, debit cards, and charge cards. The chapter describes how payment systems operate, including approval of transactions and disbursements to merchants.

Integration

The fourth section of the book includes one chapter that integrates the business and technology strategies used in electronic commerce. Chapter 12, "Planning for Electronic Commerce," presents an overview of key elements that are typically included in business plans for electronic commerce implementations. These elements include the setting of objectives and estimated costs and benefits of the project. The chapter describes outsourcing strategies used in electronic commerce and covers the use of project management as a formal way to plan and control specific tasks and resources used in electronic commerce projects. This chapter concludes with discussions of change management and staffing strategies.

FEATURES

The fifth annual edition of *Electronic Commerce* includes a number of features and offers additional resources designed to help readers understand electronic commerce. These features and resources include:

- **Business Case Approach** The introduction to each chapter includes a real business case that provides a unifying theme for the chapter. The case provides a backdrop for the material described in the chapter. Each case illustrates an important topic from the chapter and demonstrates its relevance to the current practice of electronic commerce.

- **Learning From Failures** Not all electronic commerce initiatives have been successful. Each chapter in the book includes a short summary of an electronic commerce failure related to the content of that chapter. We all learn from our mistakes—this feature is designed to help readers understand the missteps of electronic commerce pioneers who learned their lessons the hard way.

- **Summaries** Each chapter concludes with a Summary that concisely recaps the most important concepts in the chapter.

- **Online Companion** The Online Companion is a set of Web pages maintained by the publisher for readers of this book. The Online Companion complements the book and contains links to Web sites referred to in the book and to other online resources that further illustrate the concepts presented. The Web is constantly changing and the Online Companion is continually monitored and updated for those changes so that its links continue to lead to useful Web resources for each chapter. You can find the Online Companion for this book at *http://www.course.com/downloads/mis/ecommerce5* or by visiting Course Technology's Web site at *www.course.com/* and searching on Electronic Commerce.

- **Online Companion References in Text** Throughout each chapter, there are Online Companion References that indicate the name of a link included in the Online Companion. Text set in bold, sans-serif letters (**"Metabot Pro"**) indicates a like-named link in the Online Companion. The links in the Online Companion are organized under chapter and subchapter headings that correspond to those in the book. The Online Companion also contains many supplemental links to help students explore beyond the book's content.

- **Review Questions and Exercises** Every chapter concludes with meaningful review materials including both conceptual discussion questions and hands-on exercises. The review questions are ideal for use as the basis for class discussions or as written homework assignments. The exercises give students hands-on experiences that yield a computer output or a written report.

- **Cases** Each chapter includes a comprehensive case that illustrates key learning objectives from that chapter. The cases offer students a rich environment in which they can apply what they have learned from reading the book and provide a motivation for doing further research on the topics.

- **For Further Study and Research** Each chapter concludes with a comprehensive list of the resources that were consulted during the writing of the chapter. These references to publications in academic journals, books, and the IT industry and business press provide a sound starting point for readers who want to learn more about the topics contained in the chapter.

- **Key Terms and Glossary** Terms within each chapter that may be new to the student or have specific subject-related meaning are highlighted by boldface type. The end of each chapter includes a list of the chapter's key terms. All of the book's key terms are compiled, along with definitions, in a Glossary at the end of the book.

TEACHING TOOLS

When this book is used in an academic setting, instructors may obtain the following teaching tools from Course Technology:

- **Instructor's Manual** The Instructor's Manual has been carefully prepared and tested to ensure its accuracy and dependability. The Instructor's Manual is available through the Course Technology Faculty Online Companion on the World Wide Web (call your customer service representative for the exact URL and to obtain your username and password).
- **ExamView®** This textbook is accompanied by ExamView, a powerful testing software package that allows instructors to create and administer printed, computer (LAN-based), and Internet exams. ExamView includes hundreds of questions that correspond to the topics covered in this text, enabling students to generate detailed study guides that include page references for further review. The computer-based and Internet testing components allow students to take exams at their computers, and also save the instructor time by grading each exam automatically.
- **PowerPoint Presentations** Microsoft PowerPoint slides are included for each chapter as a teaching aid for classroom presentations, to make available to students on a network for chapter review, or to be printed for classroom distribution. Instructors can add their own slides for additional topics they introduce to the class. The presentations are included on the Instructor's CD.
- **Distance Learning** Course Technology is proud to present online content in WebCT and Blackboard to provide the most complete and dynamic learning experience possible. For more information on how to bring distance learning to your course, contact your local Course Technology sales representative.

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DEDICATION

To Trinity

ABOUT THE AUTHOR

Gary Schneider is the Clarence L. Steber Professor of Accounting and Information Systems at the University of San Diego, where he teaches courses in electronic commerce, database design, supply chain management, and management accounting. He has won several teaching awards and has served as academic director of the school's graduate programs in electronic commerce and information systems. Gary has published more than 40 books and 70 research papers on a variety of accounting, information systems, and management topics. His books have been translated into Chinese, French, Italian, Korean, and Spanish. Gary's research has been funded by the Irvine Foundation and the U.S. Office of Naval Research. His work has appeared in the *Journal of Information Systems, Interfaces,* and the *Information Systems Audit & Control Journal.* He has served as editor of the *Accounting Systems and Technology Reporter,* as associate editor of the *Journal of Global Information Management,* and on the editorial boards of the *Journal of Information Systems,* the *Journal of Electronic Commerce in Organizations,* the *Journal of Database Management,* and the *Information Systems Audit & Control Journal.* Gary has lectured on electronic commerce topics at universities and businesses in the United States, Europe, South America, and Asia. He has provided consulting and training services to a number of major clients, including Gartner, Gateway, Honeywell, the National Science Foundation, Qualcomm, and the U.S. Department of Commerce. In 1999, he was named a Fellow of the Gartner Institute. Gary is a licensed CPA in Ohio, where he practiced public accounting for 14 years. He holds a Ph.D. in accounting information systems from the University of Tennessee, an M.B.A. in accounting from Xavier University, and a B.A. in economics from the University of Cincinnati.

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