Handbook on Electronic Commerce

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(Editors)

Handbook on Electronic Commerce

With 112 Figures
and 43 Tables

Springer

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Foreword

The U.S. and other developed nations are undergoing a transition from a paper economy to a digital economy, not unlike the transition from an oral exchange economy to a physically recorded (clay, papyrus) exchange economy that took place several millennia ago. As with the earlier transition, a change in the medium for recording and reporting transactions (i.e., from oral to written, from written to electronic) is bringing about a significant change in the economic and social system in which they are imbedded.

The oral-to-written transition eventually gave us the concepts of property rights, commercial law, accounting standards, and financial transparency. What will the written-to-electronic transition give us? The answer is not clear, but we can expect that the economic system that follows this transition will differ substantially from the current system to which we are accustomed.

In this book we examine the electronic exchange mechanisms of the emerging digital economy. We do so by examining eight salient topics in electronic commerce (EC). Each of these topics is examined in detail in a separate section of this book. The first topic is the *New Era of EC*. Electronic Data Interchange (EDI) over Wide Area Networks is beginning to transform the economies of the developed nations. In addition, the Internet, and especially the World Wide Web, is contributing to this transformation in an important way. This will have an impact on certain types of transactions (e.g., auctions), consumer search for products and services, marketing efforts (e.g., advertising), product customization and pricing, producer and consumer decision support, market research, and the like. We (i.e., the authors of the chapters in this part of the book) examine the broad scale impact of digital technology on commerce.

The second topic is *Consumer EC*. Specialists in consumer marketing are especially concerned with theories and models of buyer behavior - for example, how purchasing decisions are made and how these decisions are affected by marketing efforts. This in turn requires that the specialists develop methods for measuring buyer behavior. We examine the ways in which these theories, models, and measurement methods as applied to Internet marketing will differ from those as applied to marketing that makes use of more conventional media.

The third topic is *Web-based Storefront Design and Development*. An important and growing component of EC is the use of the World Wide Web, sometimes along

with electronic mail, to advertise products, provide detailed product and other (e.g., pricing, delivery) information, and execute sales transactions. The result is a virtual store, which has characteristics analogous to but different from physical stores (i.e., specialty stores, supermarkets, shopping malls, etc.). We examine the similarities and differences between traditional physical stores and the emerging electronic stores and offer suggestions for the design of Web-based electronic stores.

The fourth topic is *EC Technology and Infrastructure.* Five topics are investigated here. The first is online payment methods, which have many of the problems of more traditional payment methods and a few additional problems as well. The second is smart cards, some of which are memory cards and some of which contain their own internal processing capabilities (i.e., chips). The third is the assembly of EC systems from reusable and interoperable components. The fourth is the digital library as a component of an EC system. The fifth is the use of intelligent agents in EC networks.

The fifth topic is *Business-to-Business (B2B) EC.* Much of the "talk" (news reporting, empirical research, speculation, etc.) about EC concerns consumer marketing, especially as it relates to the Internet. But there is a growing use of EC in B2B activities. At present, much of this is due to EDI, but increasingly it also includes the use of Internet technology in the form of extranets. Both of these will contribute to the rise of mass customization of products and services and will make possible more effective supply chain management. We examine how this will come about and how the structure of B2B relationships is likely to change.

The sixth topic is *Enterprise Management for EC.* Three topics are investigated here. One is the growing internal use of Internet technology in the form of intranets. The second is the rise of virtual organizations and their associated extranets. The third is the distribution of existing information technology applications, such as data warehousing and decision support, across the World Wide Web. In each case, existing useful and powerful systems (i.e., internal information processing systems, interorganizational systems, and computer-based analytical tools) are enhanced when distributed across an EC network.

The seventh topic is *Information Services and Digital Products.* The Internet can be used not only as a market mechanism for traditional products and services, but also as the foundation of a market for information. When compared with traditional markets, the market for electronic information is similar in some respects but different in others. We examine this new market for digital products, with special attention to the production and sale of digital products and the role of information intermediaries that help to match information producers with information consumers.

The eighth topic is *Security, Privacy, and Legal issues.* The Internet is inherently an insecure network, although it is becoming more secure. However, the rise of EC on the Internet offers financial incentives to exploit its lack of security, both by interfering with transactions (i.e., reading, tampering, spoofing, and repudiating) and by gaining unauthorized access to organizational networks (i.e., intranets and extranets). EC also presents legal issues, including the nature of electronic contracts (e.g.,

one-to-many contracts), the use of electronic authentication in reducing fraud, and capital markets transactions (e.g., disclosure as it relates to securities purchases).

So far we have talked about the electronic exchange mechanisms of our emerging digital economy. But what about an eventual digital society and digital polity? If companies and customers can exchange products and services for money (and for each other) over digital networks, why cannot politicians and constituents exchange votes and elective office for government actions (e.g., statutes, regulations, and referenda) over the same or similar networks? This fascinating topic awaits further investigation.

Michael J.P. Shaw
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Troy J. Strader
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Contents

Part I The New Era

Chapter 1
Electronic Commerce: State of the Art
Michael J. Shaw 3

Chapter 2
The Future of the Digital Economy
Soon-Yong Choi and Andrew B. Whinston 25

Chapter 3
Decision Support Systems and Internet Commerce
Robert W. Blanning and Tung X. Bui 53

Chapter 4
Electronic Markets: Impact and Implications
Troy J. Strader and Michael J. Shaw 77

Part II Consumer Electronic Commerce

Chapter 5
Electronic Commerce: Markets and Users
Michael H. Dickey, Gabriele Piccoli, and Blake Ives 101

Chapter 6
The Internet as a New Marketplace: Implications for Consumer Behavior and Marketing Management
Gina Colarelli O'Connor and Robert O'Keefe 123

Chapter 7
Product Marketing on the Internet
Chandrasekar Subramaniam, Michael J. Shaw, and David M. Gardner 147

Chapter 8
Internet Involvement: Instrument Development, Measurement and Implications for Electronic Commerce
A. F. Salam, H.R. Rao, and C. C. Pegels 175

Chapter 9
Culture Clash in Internet Marketing: Implications for Marketing Practices
Ann Schlosser and Alaina Kanfer 195

Part III Web-Based Storefront Design and Development

Chapter 10
Design of Electronic Stores
Ting-Peng Liang and Nian-Shin Chen 215

Chapter 11
Web Development and Management: Using the Cohort Model
Claire R. McInerney and Kai R. T. Larsen 233

Chapter 12
A Framework for Garment Shopping over the Internet
Nebojša Jojić, Yong Rui, Yueting Zhuang, and Thomas Huang 249

Part IV Technology and Infrastructure

Chapter 13
Consumer Mass Market Online Payment Solutions
Christoph Schlueter Langdon, Fabrice Roghé, and Michael J. Shaw 273

Chapter 14
Smart Cards
Debbie McElroy and Efraim Turban 289

Chapter 15
Component-based Electronic Commerce
Arie Segev and Martin Bichler 313

Chapter 16
Electronic Commerce and Digital Libraries
Andrea L. Houston and Hsinchun Chen 339

Chapter 17
Intelligent Software Agents for Electronic Commerce
Kristin M. Tolle and Hsinchun Chen 365

Part V Business-To-Business Electronic Commerce

Chapter 18
Electronic Catalogs in the Web-Based Business-to-Business Procurement Process
John P. Baron, Michael J. Shaw, and Andrew D. Bailey 385

Chapter 19
The New Economy Electronic Commerce, and the Rise of Mass Customization
Bill Fulkerson and Michael Shank 411

Chapter 20
Supply Chain Processes and Relationships for Electronic Commerce
Daniel E. O'Leary 431

Chapter 21
Supply Chain Management: Developing Visible Design Rules across Organizations
B. Rachel Yang 445

Chapter 22
Web-based Global Supply Chain Management
Gek Woo Tan, Michael J. Shaw, and Bill Fulkerson 457

Part VI Enterprise Management

Chapter 23
Virtual Organizations and E-Commerce
Paul Gray and Magid Igbaria 481

Chapter 24
Web-enabled Data Warehouse
Ye-Sho Chen, Bob Justis, and Edward Watson 501

Chapter 25
Intranets: An Internet Inside the Organization
Dave King 521

Chapter 26
Decision Support Applications in Electronic Commerce
Clyde W. Holsapple, Kshiti D. Joshi, and Meenu Singh 543

Part VII Information Services and Digital Products

Chapter 27
The Internet Information Market: the Emerging Role of Intermediaries
P. K. Kannan, Ai-Mei Chang, and Andrew B. Whinston 569

Chapter 28
A Strategic Perspective of Internet Information Providers
Alexandre Barsi Lopes and Dennis Galletta 591

Chapter 29
A Strategic Framework for Electronic Commerce: The Digital Production Cycle
Jaana Porra 613

Chapter 30
The Emergence of Auctions on the World Wide Web
Stefan Klein 627

Part VIII Security, Privacy, and Legal Issues

Chapter 31
Electronic Commerce: Privacy, Security, and Control
Daniel G. Conway and Gary J. Koehler 649

Chapter 32
The Emerging Law of Electronic Commerce
Jane Kaufman Winn 691

Contributors 711

World Wide Web Sites 715

Index 721