

## **PREFACE**

This book is written in the belief that the tenets and teachings of economics are vital to an insightful analysis of the broad spectrum of issues affecting commercial uses of the Internet and the next-generation information infrastructure. Our digital future is being decided on the Internet, where prototypical products and services have been test-driven by an odd collection of individuals. Just a few years ago, commercial uses of this somewhat chaotic and decentralized network of networks seemed highly unrealistic. Today, while the government and large corporations are grappling with proposals on how to build the national information infrastructure, major components of commercial use of the Internet—users, technologies, and digital contents—are already converging, aided by the rapid acceptance of the user friendly World Wide Web. What *The Economist* called an "accidental superhighway" has become the hottest commercial medium. While there is a considerable uncertainty about who will be the winners and what products and technological standards will dominate this new arena, the basic foundation for a totally unique competitive market has been laid and so has the stage for a fundamental market analysis using economics.

### **Defining Electronic Commerce As a Market**

Electronic commerce goes far beyond simply "doing business electronically." Doing business electronically means that many conventional business processes such as advertising and product ordering are being digitized and conducted on the Internet. However, the Internet is not a mere alternative channel for marketing or selling products online—i.e. the most recent alternative to mail-order business, catalog shopping, home shopping networks and direct marketing. Instead, the electronic marketplace enables sellers to innovate the whole business processes from production to customer service—which were said to occur in stages—by integrating them in a seamless whole, where, for example, product choices and prices are updated according to consumer information in real-time on Web stores. These process-related changes will significantly impact intra-business organization, business-to-business relationships, and business-to-consumer interactions.

On top of all this, old and new products alike are being released from their physical constraints and are being converted into digital products that can be delivered via the global network and paid for using digital currency. With digitization and digital payment systems, the electronic marketplace becomes a separate and independent market needing no physical presence for stores, products, market institutions, or sellers and buyers. New technologies such as the World Wide Web, digital signatures and encryption, and electronic currencies are tools of the trade in the nascent world of electronic commerce. From an economics perspective, our interest in this world lies in analyzing how these tools are used, how the products are chosen, what level of prices and competition will prevail, and ultimately whether a market exists or fails.

## **What Is This Book About?**

This book is not about how to use the Web or how to set up a Web page for a successful business. Instead of presenting a user's guide for electronic commerce tools, this book will introduce readers to the underlying economic aspects of electronic commerce. Electronic commerce clearly crowns the list of technology-related media topics, as evidenced by the abundance of literature covering the technical and legal aspects. Specific subjects span a wide spectrum from fundamental design and implementation prerequisites such as copyright protection and privacy in transactions to discussions on whether the electronic marketplace will materialize at all! However, in virtually all of these publications, the economic aspects have largely been neglected.

This book is about electronic commerce as a market. At the core of electronic commerce is the meeting of sellers and buyers to trade digital products using digital processes. Production, product delivery and payments are all handled electronically as are marketing and consumer searches—the electronic equivalent of shopping. Except for online delivery, non-digital product sellers will as well be affected by the Internet's unique business processes in such areas as disseminating product information, tracking sales and collecting customer information, application engineering and customer service.

Given this market setting, electronic commerce is a suitable candidate for microeconomic market analysis. However, existing literature on the Internet is limited to teaching readers how to use the Internet. Topical literature dealing with digital copyrights, online marketing, and electronic payments on the other hand is usually geared toward the technical and legal aspects of these new technologies. In this book, while paying attention to the current status of some of the intertwined issues of electronic commerce in technology, standards, policy, and legal issues, we focus on many economic issues and aspects of electronic commerce that other existing literature does not cover. Six major issues are identified: quality and the role of intermediaries; digital copyrights; advertising; consumer searches for product information; product selection and pricing strategies; and electronic financial and payment services. As the market has not yet consolidated around one solution in most cases, for each of these issues we provide our readers with an understanding of the short- and long-term implications and economic ramifications of various proposals and guidelines under consideration.

Applying standard economic analyses to an entirely new industry will lay the foundation for the development of radically new business models. Given the urgency of the issues and the immediate applicability of the economic analysis, our primary focus will be to provide detailed analysis for those involved in the actual production, marketing, and distribution as well as for professionals doing business in the electronic marketplace. As electronic commerce progresses towards a full-fledged marketplace, economic analysis will take on an increasingly greater importance. It is already clear that those businesses that achieve early success from applying these theories will enjoy a distinct comparative advantage in this newly defined world of business. Given this, our audience is not limited to professionals and students of the world of economics but also includes business professionals and casual readers. The economic topics we explore are related to the basic

aspects of doing business electronically and are relevant to anyone interested in entering the realm of electronic commerce—be it as an entrepreneur, an investor or an established business.

### **How Is This Book Organized?**

*The Economics of Electronic commerce* is divided into three parts. Part 1 sets the general framework necessary for later in-depth analysis of the issues. In a concise and succinct manner, Chapter 1 defines electronic commerce as a market, and discusses the characteristics of the electronic marketplace and its sellers and buyers, and presents an overview of current issues and research activities. Chapter 2 defines the "raison d'etre" of the electronic marketplace—digital products. Although digital products are often equated with online information products, we adopt a much broader definition. Digital products include not only software and online contents but also advertisements and product information, payment information, digitized processes and communication. Many physical products are also digitized—for example, digitized house keys, concert tickets, currencies and smart products. Finally, Chapter 3 presents an overview of the Internet network and technology, concluding with an in-depth review of various pricing strategies for the network.

Part 2 revisits each of these issues in depth. Each chapter presents a summary of the issue, a brief review of relevant literature in economics, and an analysis focusing on the economic perspectives. Each of the seven chapters can be read separately if readers are interested in a specific topic. Each chapter provides a summary of economic models and issues sufficient to allow readers to follow later discussions. In Chapter 4, we analyze the critical problem of quality uncertainty and discuss the role of intermediaries in preventing market failure. Chapter 5 focuses on the need for copyright protection as a means to promote market efficiency and product quality in electronic commerce. Chapter 6 analyzes how sellers can signal product quality to their buyers using advertising and other marketing strategies. Looking at quality from the other side, Chapter 7 evaluates how electronic commerce is affected by buyer initiatives to find about product quality and prices. Three related topics in product selection strategy—product choice and customization, the use of information about consumer preferences, and discriminatory pricing—are explained in Chapter 8. Finally, Chapters 9 and 10 are concerned with the financial and monetary effects of doing business electronically. Chapter 9 focuses on online financial services while Chapter 10 is devoted to electronic payment systems, especially those systems based on digital currency and their impact on the monetary system and policy.

Part 3 contains the final two chapters in which we summarize our conclusions, adding a strategic perspective. We also point out areas in this emerging marketplace deserving future research.

At the end of each chapter, we provide a list of academic and technical literature for advanced economic study. Although it is not our intention to produce a reference or a user's manual for Internet users, we do provide information, in sidebars, on technically

advanced topics and terms. In addition, we include examples whenever possible to make our discussion more concrete and specific. The online references to these and other related sites and documents found at the end of each chapter will allow readers to further explore these and other examples on their own.

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