

Tracking Electronic Commerce: Signals of Change

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While virtually all businesses today seem to have their own Web sites, most businesses have yet to become deeply involved in electronic commerce (EC): 80 percent of EC is conducted by the top 25 suppliers on the Internet. As the CEO of a large publishing house has said, „Once you can tell the success story of electronic commerce without mentioning Amazon, Cisco, and Dell, I will take this trend for real.“ When will EC become real for companies other than the pioneering early adopters? For many businesses, this question will be a key strategic issue – for some, even an issue of survival. The ability to recognize early indicators of accelerated e-commerce growth will help these businesses to know when to „take this trend for real.“

Widespread use of electronic commerce will accelerate as barriers to its adoption fall. Whether a business can exploit EC to create new revenue streams or will fall victim to it depends largely on how well that organization has foreseen and prepared for the coming change. Recognizing signals of accelerated EC growth will help to protect a business against being blindsided.

Identifying Signals of Discontinuous Growth

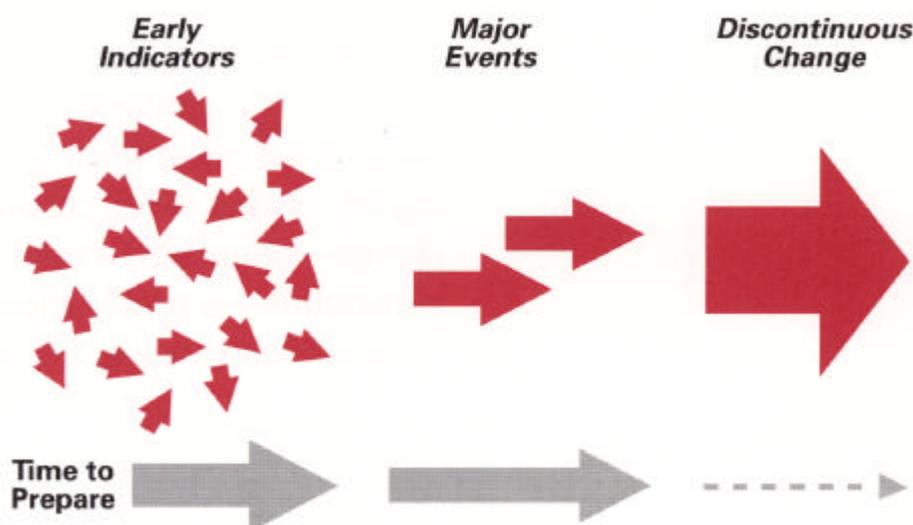
Signals of impending, explosive growth fall into three categories (Exhibit 1). *Early indicators* warn of the changes that are under way, but their real significance may not be fully apparent until later, with benefit of hindsight. Next come *major events*, which are easier to recognize as resolving key barriers to EC growth. Finally, *discontinuous change* – exponential acceleration in adoption or market penetration – is readily apparent, but for many businesses recognition may come too late.

The discontinuous market growth of facsimile machines in US. business offices and of cable television connections in US. households in die 1980s followed die same pattern. Both were signaled by early indicators and major events that few recognized at the time. Their stories offer clues for tracking EC growth.

Facsimile. Fax was an exotic technology that suddenly became a business necessity. For over 100 years, since facsimile machines were first invented in the mid-1800s, faxing was limited to specialized, high-cost, low-volume applications. Then modem fax began to incubate in Japan. In the 1980s, Japanese suppliers brought modem fax machines to the United States, where the technology took root as a business-to-business communications tool (Exhibit 2). Fax machines proliferated as standardization, lower prices, higher quality, and more effective distribution converged by the late 1980s to allow fax to achieve „critical mass“: the degree of market penetration at which companies had to have it in order to stay in touch with their business partners. Given its long history, this sudden growth caught many businesses by surprise, including innovative companies such as FedEx, whose mailroom-oriented ZapMail service failed shortly after launch, having been introduced when affordable office fax machines were beginning to proliferate.

Exhibit 1

Stages in the Growth of Transformative Technologies

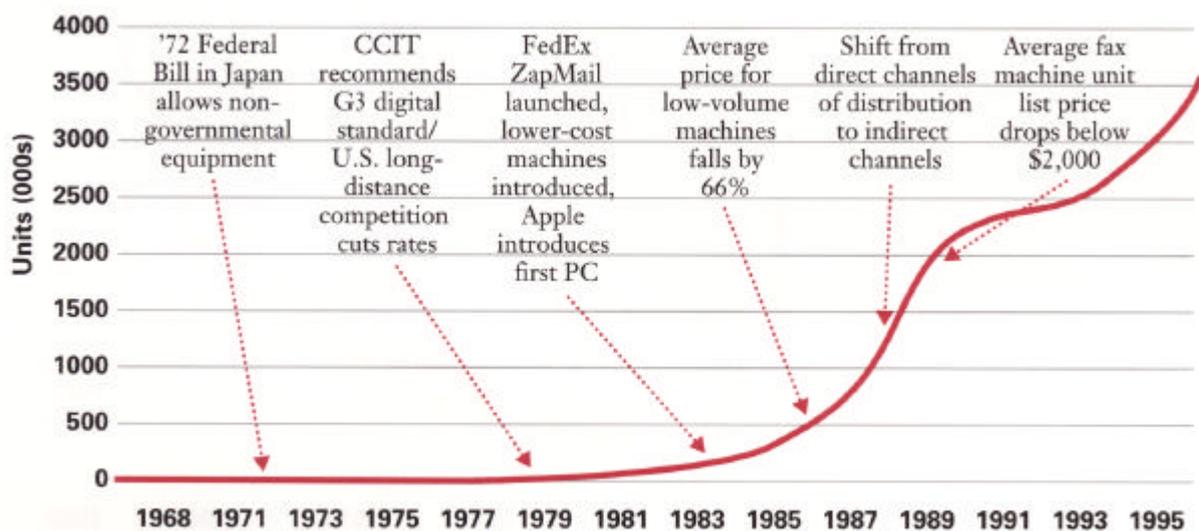


Cable Television. Similarly, cable TV, which emerged in the United States around 1950, coasted along for some 25 years as a small-town industry that focused on improving subscribers' reception of broadcast TV signals. Then, in the late 1970s and early 1980s, cable took off, quickly penetrating the major US. markets (Exhibit 3). By the mid-1980s, it had transformed the US. entertainment and information landscape. In retrospect, some of the signals that foretold cable's suddenly explosive growth now seem obvious: the emergence of communications satellites that could cost-effectively distribute cable programming everywhere in the United States (and eventually worldwide), demonstration of cable's viability in major markets once it could offer enhanced product, and increased flows of capital to fund cable system construction.

In tracking the growth of EC, it's helpful to focus on two areas: *Internet direct marketing* and *business-to-business EC*. Internet direct marketing will affect the full range of consumer purchase transactions, and business-to-business EC will change the way businesses interact as suppliers and buyers. In each case, it will be worthwhile for businesses to monitor signs of discontinuous, accelerated growth.

Exhibit 2

Annual U.S. Unit Sales of Fax Machines



Source of fax sales data: Computer and Business Equipment Manufacturers Association/BIS Cap

Internet Direct Marketing

Internet direct marketing includes *Internet direct advertising*, such as banner ads that entice consumers to visit Internet shopping networks, and *Internet consumer commerce*, as practiced via Amazon.com's online bookstore.

Despite the recent huge growth of online advertising – from \$50 million in 1995 to about \$2 billion in 1998 – the field is still embryonic relative to traditional direct marketing and to its future online potential. Current advertisers represent a narrow sampling of industries, principally computer, technology, and financial services firms. Online consumer commerce is similarly embryonic, with relatively few, albeit famous, success stories. Early successes in online sales have not come from the traditional players, but from smaller, more nimble companies adept at integrating the unique value-added features of the Internet, such as exhaustive inventory, personalized marketing, supplemental product information, and discount pricing.

Traditional commerce is beginning to feel the effects of Internet direct marketing. Some companies, like the PC software retailer Egghead, have redefined their business models in response to EC: Egghead closed all its retail outlets in 1998 to become a pure Internet player.

But there are still significant barriers to accelerated growth of online direct marketing:

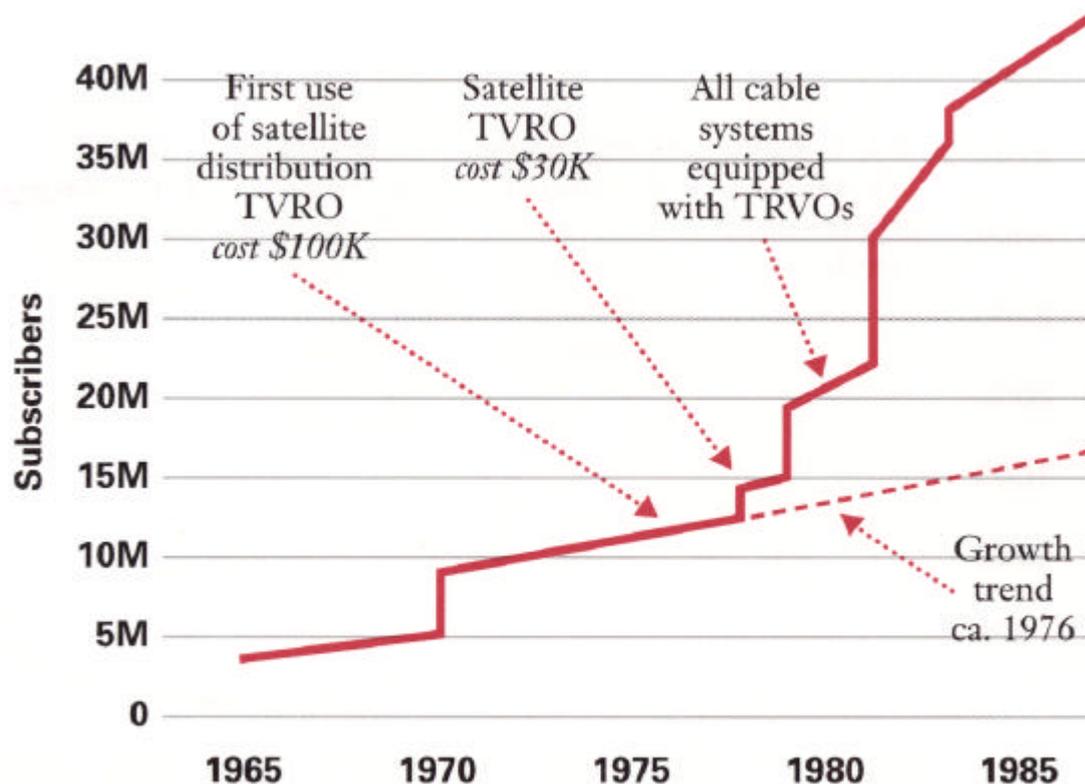
- *Online penetration* – There still is not a truly mass market of customers who are online from home or work.
- *Perceived security risks* – Consumers don't see the Internet as a secure environment for conducting transactions or for revealing information.
- The „so what?“ *barrier* – Direct marketers have failed to create a compelling value proposition for online shopping.

- *Consumer anonymity* – Direct marketers are unable to target appropriate prospective customers or track response rates of specific users online.
- *Unclear efficacy of advertising* – The Internet does not provide a way to determine and prove the effectiveness of online advertising.

Certain signals will indicate that the most significant of these barriers are being resolved.

Exhibit 3

U.S. Basic Cable Subscribers, 1965-1986



Source: National Cable TV Association, Cabletelevision Advertising Bureau

More Internet-Enabled Households. Although overall household penetration of PCs and Internet access is still low, higher-income households, which currently make most catalog purchases, are also disproportionately more likely to have a PC (60 percent of households with more than \$50k income) and to be online (40 percent). Other indicators of market penetration could include increases in the percentage of households with separate Internet access phone lines, in sales of lower-cost modem-equipped PCs to middle- and lower-income households, and in percentages of PC users accessing Internet and other online services. In October 1998, a newsletter tracking growth of Internet access reported that US. Internet service providers (ISPs) served 26 million residential customers,¹ representing an increase of approximately 9 percent during 1998 – all of which occurred during the usually quiet summer months.

Less Concern About Internet Security. When brand-name banks and credit card companies sponsor public awareness campaigns claiming the Internet is a secure environment, it will signify that this well-known barrier is being challenged, as will promotion of Internet-based home banking services and reduced public concern as measured by surveys and behaviors.

Defining Compelling Value Propositions. The „So what?“ barrier is as much about traditional retailers and catalog companies refocusing to exploit EC as it is about defining attractive value propositions for customers. The well-known early adopters of EC have demonstrated the power of online shopping. Replication of their commitment and effectiveness by more traditional retailers will signal that EC is entering the mainstream.

Leveraging Customer Information. Development of sophisticated Web sites offering value-added services in exchange for customer information is one of the methods being used to overcome the barrier of user anonymity. Another is the creation of advertising networks that assemble affiliated Web sites with centrally managed advertising, and that use „cookie“ identifiers to identify and track users as they roam across sites,

thereby generating consumer preference information for marketing databases. The Internet provides a way to mass-customize relationships with customers; for example, CBS's Market-watch.com sends an e-mail message every day to each registered customer on status and performance of his or her portfolio, at an operational cost of approximately 2 cents per e-mail message.

Measuring Advertising Efficacy. Accelerated growth of online direct advertising will be signaled by adoption of tools and ROI metrics to measure advertising efficacy. One of these tools could be cost-per-action pricing for advertising, in which payments are tied to specific customer responses such as click-throughs, sales leads, or software downloads. Barriers still remain to adoption of these tools, as demonstrated in October 1998 by DoubleClick Inc., a leading proponent of pay-for-performance advertising on the Internet, which announced that it was withdrawing its advertising product in which marketers paid only for advertising that generated clicks or sales from online visitors. Evidently this approach was not producing enough revenue for Internet content suppliers, which still prefer instead to receive guaranteed up-front fees.

When and how these barriers will be overcome cannot be predicted with confidence. There are many positive and negative signs to sort out. Recognizing and correctly interpreting the relevant early indicators and major events, however, will help businesses prepare for the discontinuous change that will follow.

Business-to-Business EC

Internet-based transactions will facilitate all steps of commerce among businesses. Unlike electronic data interchange (EDI), which involves proprietary, closed-platform messaging between only two companies at a time, EC will allow for Web-based, open-platform, and open-system interfaces among multiple entities. And while EDI typically deals only with the actual transaction between the two companies – automating purchase orders, bills of sale, invoicing, payments, and rebates – EC can encompass the entire purchasing cycle, providing everything from product information to post-sale and ongoing customer support.

Although most Fortune 1000 companies use EDI, the high cost of implementing EDI relationships has constrained its further spread, especially into mid-size and smaller companies. Business-to-business EC will grow along three mutually reinforcing dimensions:

- More companies will adopt EC than have used EDI.
- They will use it to trade more types of products.
- They also will use it for more steps in their purchasing processes.

More companies are adopting EC. In 1998, business-to-business EC transactions accounted for approximately \$45 billion in revenues, up from approximately \$500 million in 1996. While such growth is clearly explosive, most companies have yet to adopt business-to-business EC. Barriers to adoption include these issues:

- Security and reliability
- High investment and maintenance costs
- Technical integration difficulties
- New suppliers' lack of readiness
- Difficulty of obtaining relevant information
- Lack of support for specific business processes
- Potential channel conflicts

Early indicators that concerns about security and reliability are being addressed will include, for example, well-publicized EC activities by branded users such as Chrysler, Ford, and GM; guarantees from trusted EC systems suppliers; and demonstrations of secure transactions via the Internet. Introduction of new systems and services that are shown to dramatically reduce transaction costs, and/or to reduce up-front risks of adoption, will represent major events vis-a-vis the adoption barrier of high investment and maintenance costs to get online. Introduction and endorsement of systems that provide transparent interfaces between front-office Web-facing systems and back-office legacy systems will comprise major events toward overcoming technical integration difficulties with existing systems.

More types of products are included in online trading. EDI is used primarily for high-volume and/or high-value items that are directly consumed in the production or service processes of the buyer on a day-to-day basis, such as the ordering of paper by a printing company. The majority of companies that conduct EC buy only 4 percent or less of their supplies over the Internet. However, a recent survey found that more than 50 percent of businesses claimed they would procure at least 25 percent of their requirements via EC within the next 12

months.

EC will expand the scope of transactions to include indirect materials used for maintenance, repair, and operations (MRO). Such materials are typically lower in value and/or in ordered quantities than direct materials but can represent as much as 80 percent of individual transactions.

Today most transactions for indirect materials continue to occur via traditional mail, telephone, fax, and in-person contacts. Pressure by large buyers to bring their MRO suppliers into EC arrangements will constitute indicators that MRO suppliers' lack of readiness for online business will soon be overcome. For example, Grainger, a leading catalog seller of industrial MRO items, has reported 100 percent growth per quarter of its online sales.

Introduction of Web-based and interoperable software solutions will signal resolution of the barrier of high cost to set up online partnerships. Establishment of virtual communities and agents focused on specific industries and markets will signal solutions to current difficulty in obtaining relevant information.

More process steps are facilitated on the Net. Business-to-business EC will extend across the full range of the basic sourcing process, as compared with EDI, which traditionally has been used only for the transaction steps. Emergence of specialized workflow tools for particular business processes within well-defined vertical markets will signal resolution of a key barrier to expansion of EC across more business processes, i.e., lack of support for specific business processes. Another barrier, lack of partner-specific context for marketing and sales, will be addressed as more sellers introduce online product offerings with custom content and price for particular users. Corporations do not like to pay list price. Recognizing this, Dell Computer dedicated part of its site to „Premier Pages“ to allow businesses password-protected access to preselected and prenegotiated sub-catalogs and price lists. This feature contributed to growth of the business portion of Dell's online sales, which has outstripped the growth of the consumer portion.

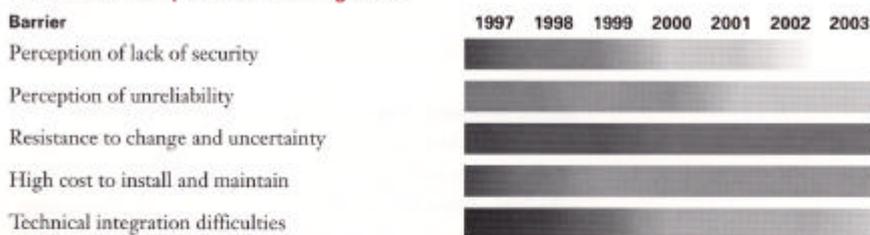
Redesigned incentive systems to accommodate the new EC channel will ameliorate the barrier of potential channel conflicts with current sales representatives. Marshall Industries, an electronic parts distributor, has led the way by abandoning its commission-based sales incentives in favor of Web-focused success measures.

In business-to-business EC, our best guess is that most of the currently known barriers to accelerated growth will be resolved within the next three-to-five years (Exhibit 4). Some, such as technical integration difficulties, pose a tough challenge, while others, such as resistance to change and uncertainty, will never go away entirely. But most of the barriers currently impeding business-to-business EC will yield to the development of new products and interoperability tools, the use of agents, and the comfort that comes with growing familiarity and mounting success.

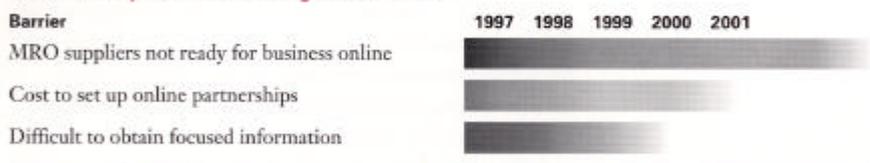
Exhibit 4

Life Expectancy of Barriers Impeding Business-to-Business EC

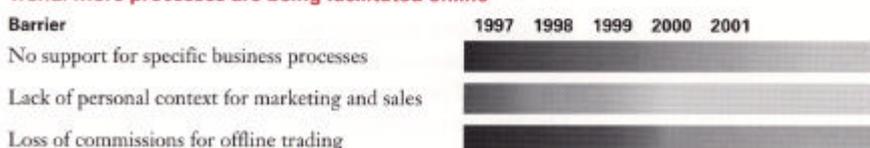
Trend: More companies are trading online



Trend: More products are being traded online



Trend: More processes are being facilitated online



Darker = Stronger effect

Conclusion

Barriers to EC growth will not disappear all at once. Most likely some will fade gradually as new conditions take hold in the market. But one thing is clear: once discontinuous change is under way, there's little time to respond. Recognizing early indicators and major events that signal resolution of barriers to EC growth could provide the lead time needed to prepare the appropriate marketing strategy.

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¹ Interactive Services Report, October 1998