

CHAPTER 3

USING INFORMATION TECHNOLOGY TO ENGAGE IN ELECTRONIC COMMERCE



Management Information Systems
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Introduction

- Electronic commerce (or e-commerce), uses communications networks and computers to accomplish business processes
- Most electronic commerce is between businesses (B2B), rather than between a business and a consumer, but B2C still has many opportunities for growth and profit

ELECTRONIC COMMERCE

- Here, we shall treat “electronic business” and “electric commerce” as synonyms
- Thus, any business transaction that uses network access, computer-based systems, and a Web browser interface qualifies as electronic commerce

Electronic Commerce Beyond the Boundary of the Firm

- **Business-to-customer (B2C)** electronic commerce refers to transactions between a business and the final consumer of the product
- **Business-to-business (B2B)** electronic commerce refers to transactions between businesses in which neither is the final consumer. These may involve relatively few people, generally the information systems groups of the companies are most affected

Table 3.1

Environmental Interfaces of the Business Areas

	FINANCE	HUMAN RESOURCES	INFORMATION SERVICES	MANUFACTURING	MARKETING
FINANCIAL COMMUNITY	X				
STOCKHOLDERS AND OWNERS	X				
CUSTOMERS	X		X		X
GLOBAL COMMUNITY		X			
LABOR UNIONS		X		X	
SUPPLIERS			X	X	
COMPETITORS					X
GOVERNMENT	X	X	X	X	X

Anticipated Benefits from Electronic Commerce

There are three main benefits of e-Commerce:

- 1. Improved customer service** before, during, and after the sale
- 2. Improved relationships with suppliers** and the financial community
- 3. Increased economic return** on stockholder and owner investments

These benefits contribute to the firm's financial stability and enable it to better compete in a business world that is using more and more computer technology

Electronic Commerce Constraints

Three constraints on e-commerce are as follows:

1. High costs
2. Security concerns
3. Immature or unavailable software

Each of these constraints is being challenged as IT and IS needs for e-commerce become increasingly popular and the cost of the required computing resources keeps falling

Scope of Electronic Commerce

- The amount of economic impact varies from industry to industry but about 94% of electronic commerce is B2B leaving 6% for B2C
- E-commerce is estimated to be growing at between 5% and 15% each year, though may slow down, high growth in e-Commerce will likely continue for the next several years
- Table 3.2 gives examples of the extent of the use of e-commerce in certain areas of the economy

Table 3.2

Percentage of Electronic Commerce Sales versus Total Sales in Selected Industry Segments for 2000

INDUSTRY SEGMENT	E-COMMERCE % OF TOTAL SALES
Apparel manufacturing	20%
Transportation equipment manufacturing	46%
Motor vehicle wholesaling	20%
Drug wholesaling	40%
Travel and reservation retail	24%

The Path to Electronic Commerce

- Implementing an e-commerce system includes a significant risk of failure
- The first step is a commitment to implement the system as part of a strategic business plan to use e-commerce to achieve competitive advantage
- The firm then gathers business intelligence to understand the potential role each environmental element will play

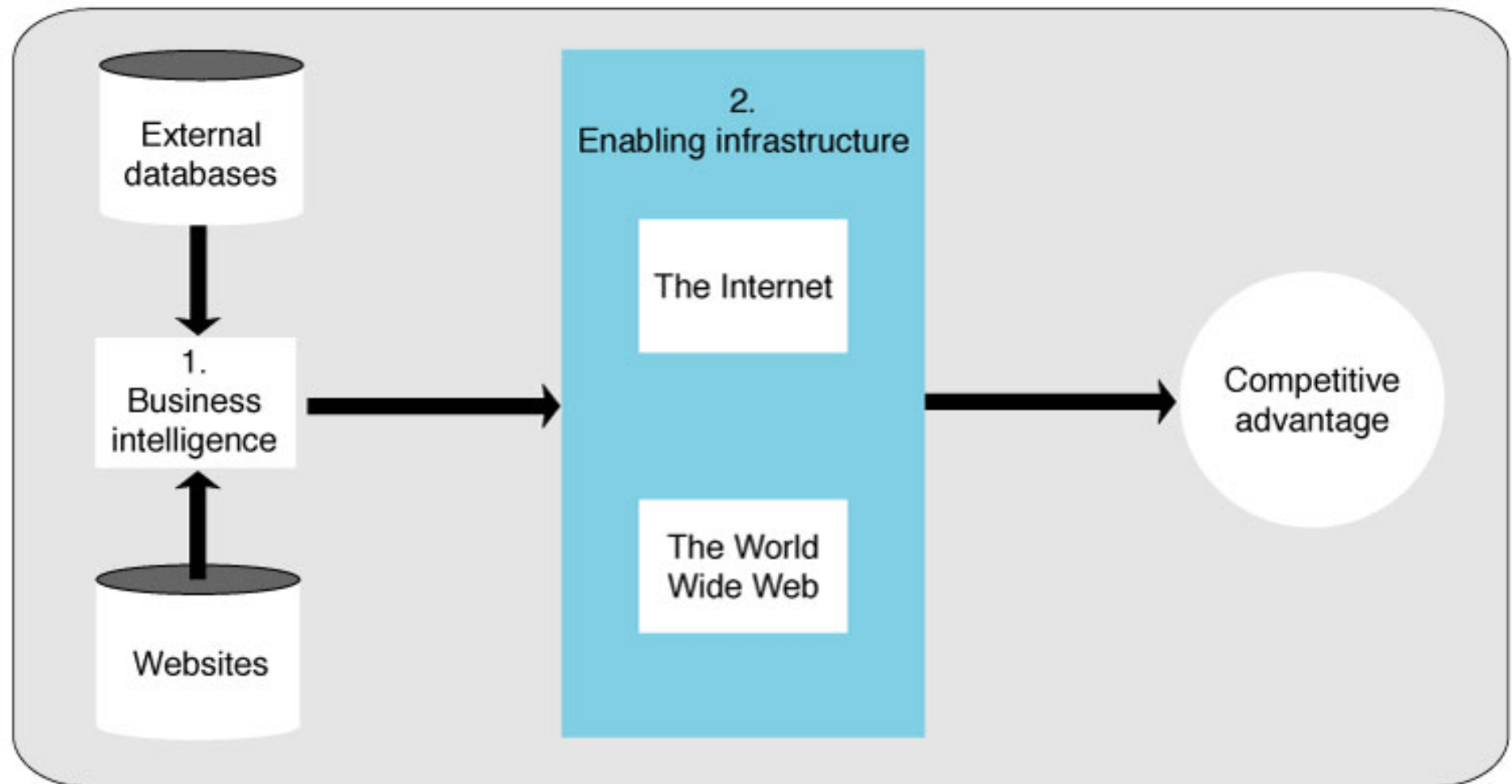
BUSINESS INTELLIGENCE

- Before engaging in e-commerce managers must understand their firm's relationships with customers, competitors, suppliers, and other external entities
- Business Intelligence (BI) is the gathering of information about the environmental elements that interact with your firm

External Databases

- Companies can also use commercial databases that provide environmental information instead of gathering it themselves
- Firms use these databases because it is faster and less expensive than trying to research the information on their own
- Figure 3.1 illustrates the use of external databases and Web searches for business intelligence

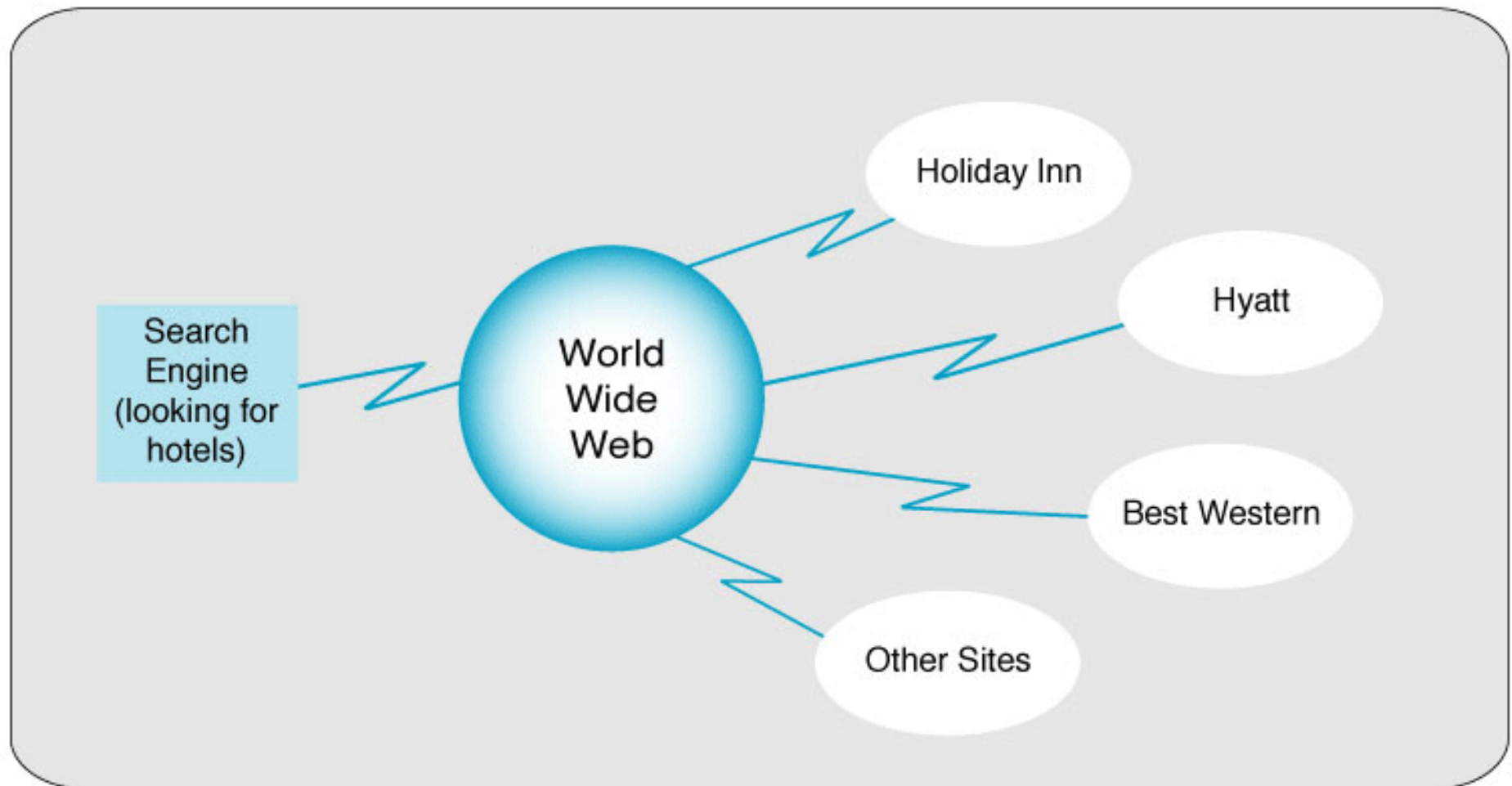
Figure 3.1 Business Intelligence, the Internet, and the World Wide Web are the Key Ingredients to an Electronic Commerce Strategy.



Search Engines

- A **search engine** is a special program that provides links to Web sites based on a keyword or group of words supplied by the user
- Search engines then look through their database of Web site content to see which Web sites use that word or phrase
- Other specialized indexing programs create directories of Web site categories, working on the “backend” of the search engine

Figure 3.2 Search Engines Explore the Internet to Find Sites Containing Information You Seek.



THE INTERORGANIZATIONAL SYSTEM (IOS)

- An **IOS** is created through linkages with other firms so they can work together as a coordinated unit
- This allows them to achieve benefits that each could not achieve alone
- Inter organizational systems are fundamental to electronic commerce

IOS Benefits

- The trading partners enter into an IOS venture with the expectation of realizing benefits such as:
 - Comparative Efficiency
 - Internal efficiency
 - Inter organizational efficiency
 - Bargaining Power
- **Vendor stock replenishment** is a special type of IOS where the *supplier* can initiate the replenishment process by electronically monitoring the firm's inventory levels

Bargaining Power

- Bargaining power is derived from three basic areas:
 - Unique product features
 - Reduced search-related costs
 - Increased switching costs

Electronic Data Interchange (EDI)

- **EDI** is essentially electronic forms that can be sent over networks
- It involves transmitting data in a machine-readable, structured format, enabling the data to be received without the need for re-keying
- Two major standards for EDI are the American National Standards Institute standard ASC X12 is used in North America and the EDIFACT international standards are used in Europe

Extranet

- Another way of establishing an IOS is by using a secure form of Internet technology called an extranet
- Firms use them in collaboration with trusted suppliers and large customers to share sensitive information
- Security and privacy are serious concerns so the extranets are generally secured behind a firewall

Electronic Funds Transfer (EFT)

- When data representing money is transmitted over a computer network, it is called **electronic funds transfer**
- EFT is used by firms and individuals who have their payroll checks deposited into their bank accounts or who pay bills using electronic payments
- EFT also plays a major role in electronic commerce

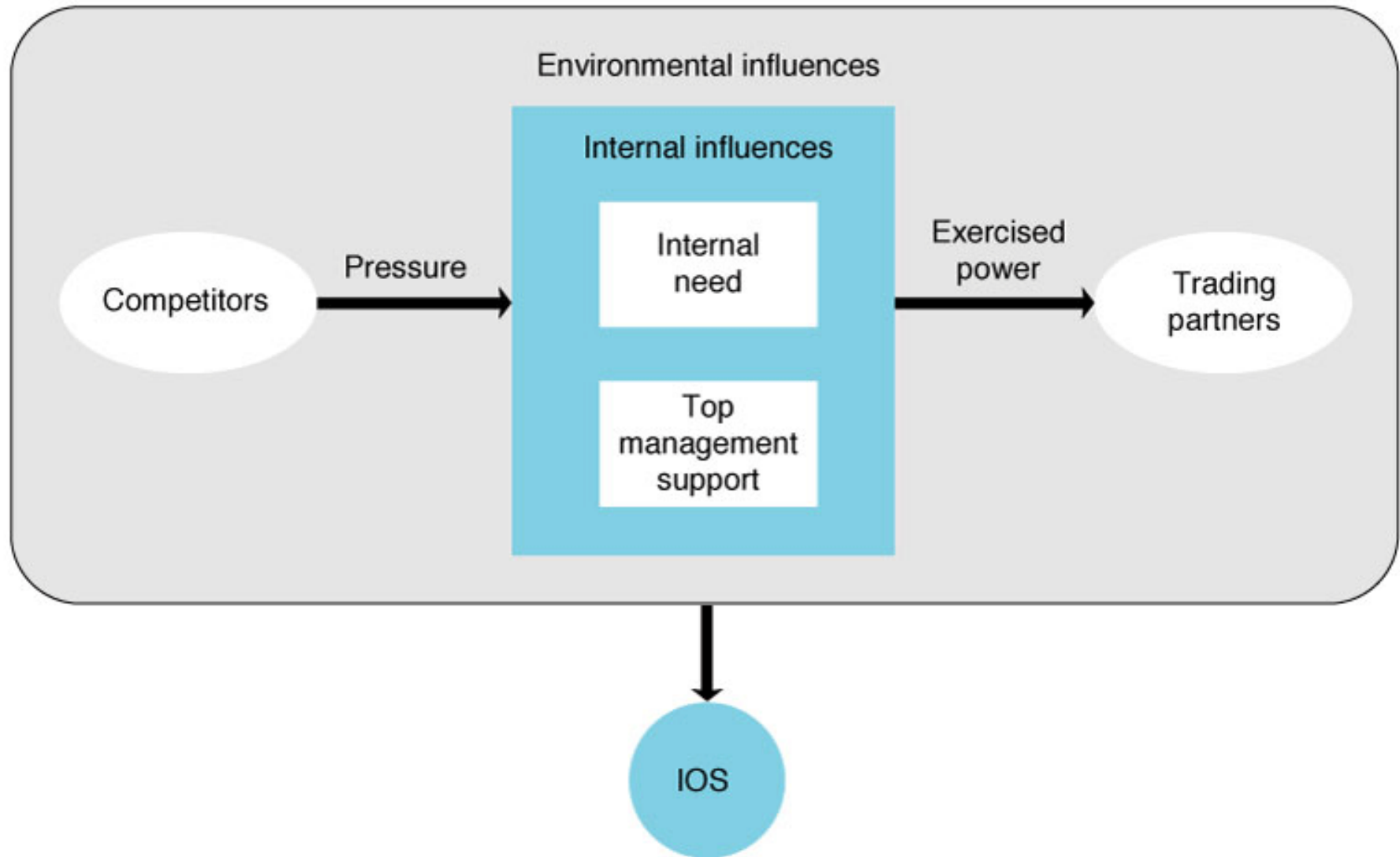
Proactive and Reactive Business Partners

- The IOS sponsor typically takes a *proactive* approach, stimulating interest in the IOS and encouraging participation in the network
- The participants, on the other hand, typically respond in a *reactive* manner—accepting or rejecting the sponsor's offer to adopt IOS
- For example, the proactive approach taken by the large automobile manufacturers forced suppliers to react by either adopting an EDI system or risk losing participation in the supply chain

Adoption Influences

- Premkumar and Ramamurthy identified four critical factors in determining if a firm will be proactive or reactive:
 - 1. Competitive pressure
 - 2. Exercised power
 - 3. Internal need
 - 4. Top management support
- The second two are internal factors while the first two are environmental

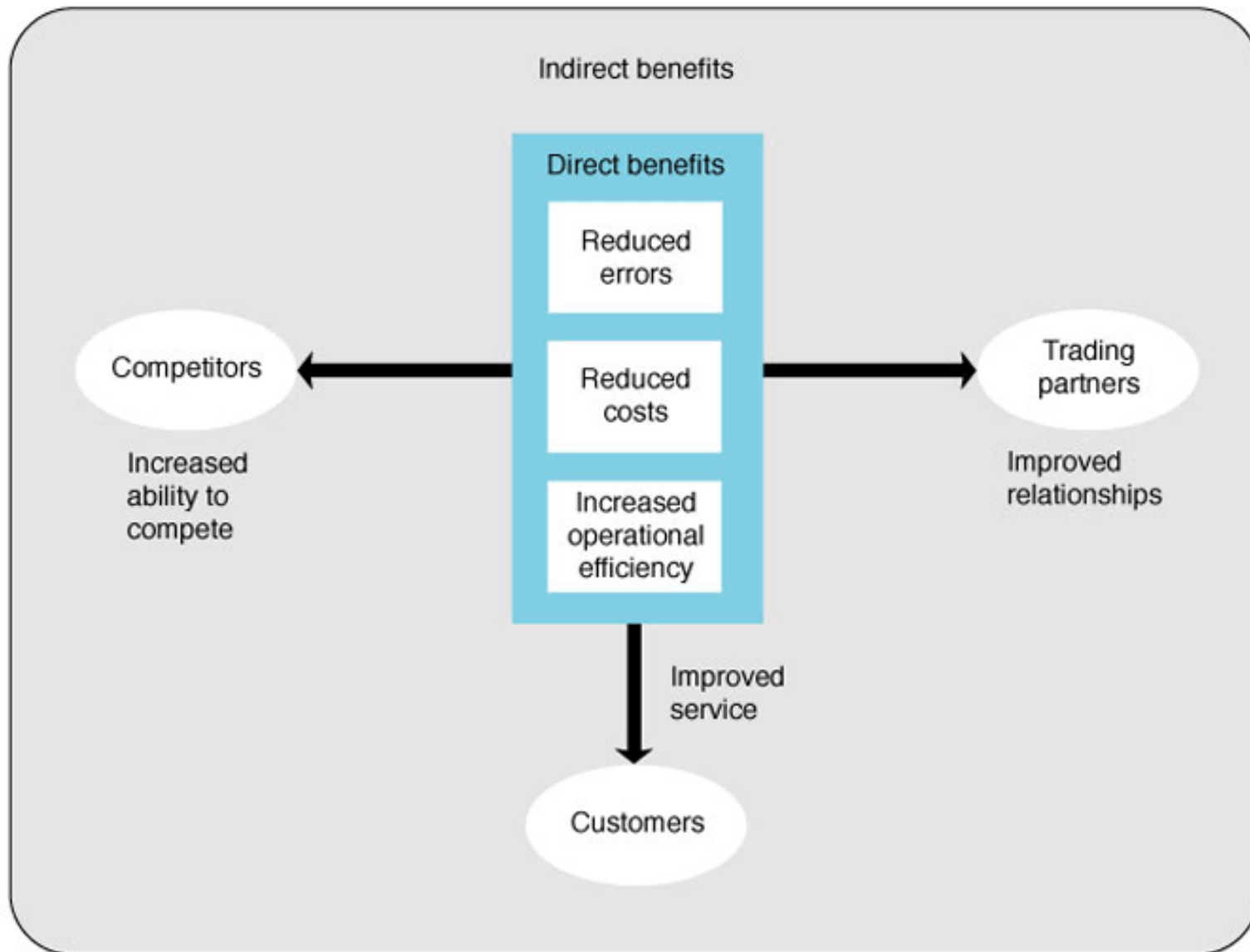
Figure 3.3 Internal and Environmental Influences on IOS Adoption



Indirect IOS Benefits

- The indirect benefits of participating in an IOS include:
 - increased ability to compete;
 - improved relationships with trading partners;
 - and improved customer service
- Figure 3.4 shows this relationship between direct and indirect benefits

Figure 3.4 IOS Direct and Indirect Benefits



A Challenge to EDI

- Newer approaches to inter organizational systems for B2B data transfer XML, DHTML, and CORBA
 - **Extensible markup language (XML)** is an extension of the hypertext markup language used to code Web pages
 - **Dynamic hypertext markup language (DHTML)** adds features such as scripting and active controls so the content of the displayed Web page can be dynamically generated
 - **Common Object Request Broker Architecture (CORBA)** grew as a standard as the software industry embraced object-oriented programming and databases

B2C STRATEGIES FOR ELECTRONIC COMMERCE

- Reasons why it's important to understand B2C business include:
 - More products and services are becoming available for digital delivery
 - Consumers are overcoming their reluctance to purchase using the Web
 - Higher communications speeds have made the delivery of digital products practical
 - Fear of information theft (such as credit card info), is being replaced with greater confidence that sensitive information will be safeguarded

Products and Services to Be Delivered to the Consumer Over the Internet

- **Digital Products:** such as songs, albums, movies, computer programs and their updates and services
- **Physical Products:** Sales can be made over the Web, but shipping has to be arranged. The growth of private mail/shipping companies has indirectly aided retail e-Commerce
- A key difference between digital and physical products is that digital products can be consumed as soon as they are downloaded

Virtual Versus Hybrid Sales

- **Virtual sales** are those made by a firm that does not operate a physical storefront
- **Hybrid sales** occur when firms have both a physical storefront and a Web site where customers can purchase products
- Office Depot's Web site (www.officedepot.com) shows an example of the strategy restricting the number of images displayed until the customer has focused his/her search to a relatively few choices (next slide)

Figure 3.5 Home Page for Office Depot

[REGISTER](#) | [LOGIN](#) | [LOGIN/PASSWORD HELP](#) | [SITE MAP](#) | [HELP](#)
 ★ PLEASE VISIT OUR NEW OFFICEDEPOT.COM Guest

Office DEPOT.

What you need. What you need to know:

Super Values

Find a Store

Toner / Ink Quickfind

Order By Item #

My Saved Lists

0 item(s)
Subtotal: \$0.00

Order \$50.00 more for **FREE DELIVERY!***

Cart

Checkout

Office Supplies | Furniture | Technology | Business Center | Company Info | Customer Service

Search for Search

Weekly SuperValues

December 16, 2002

Expanding File \$9.49

File Boxes, Letter Size \$12.59

Executive Chair, \$49.99

Task Chair, Black \$69.99

Rebate Center

\$100 Rebate on 17 in. LCD Monitor

\$10 Rebate on Electronic Organizer

Advertised Specials

Weekly

TECH DEPOT
AN OFFICE DEPOT COMPANY

For over 60,000 of the **BEST Technology Products**

GO! Choose a Computer

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Source: www.officedepot.com (Courtesy of Office Depot, Inc.)

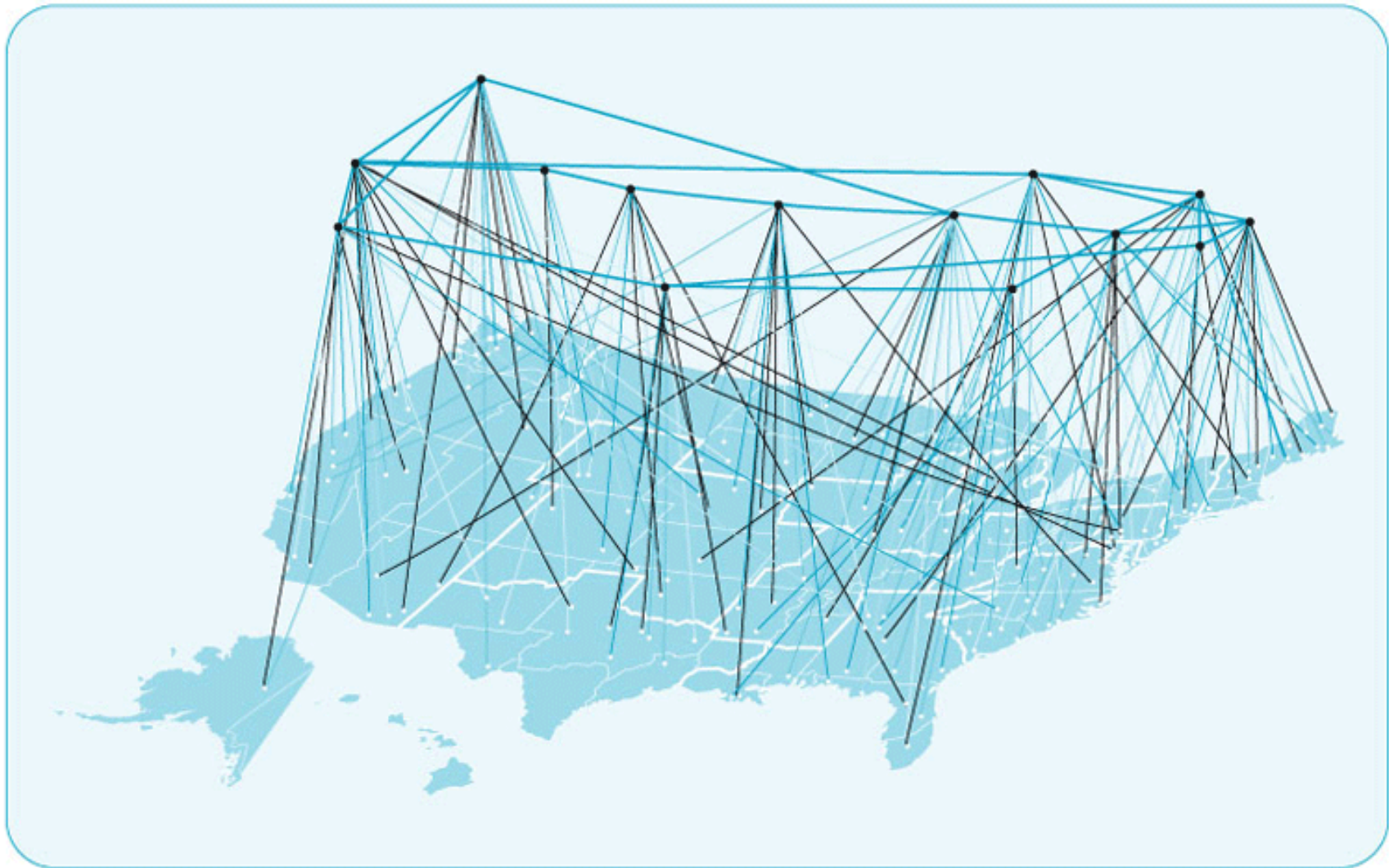
<http://www.deden08m.com>

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EVOLUTION OF THE INTERNET

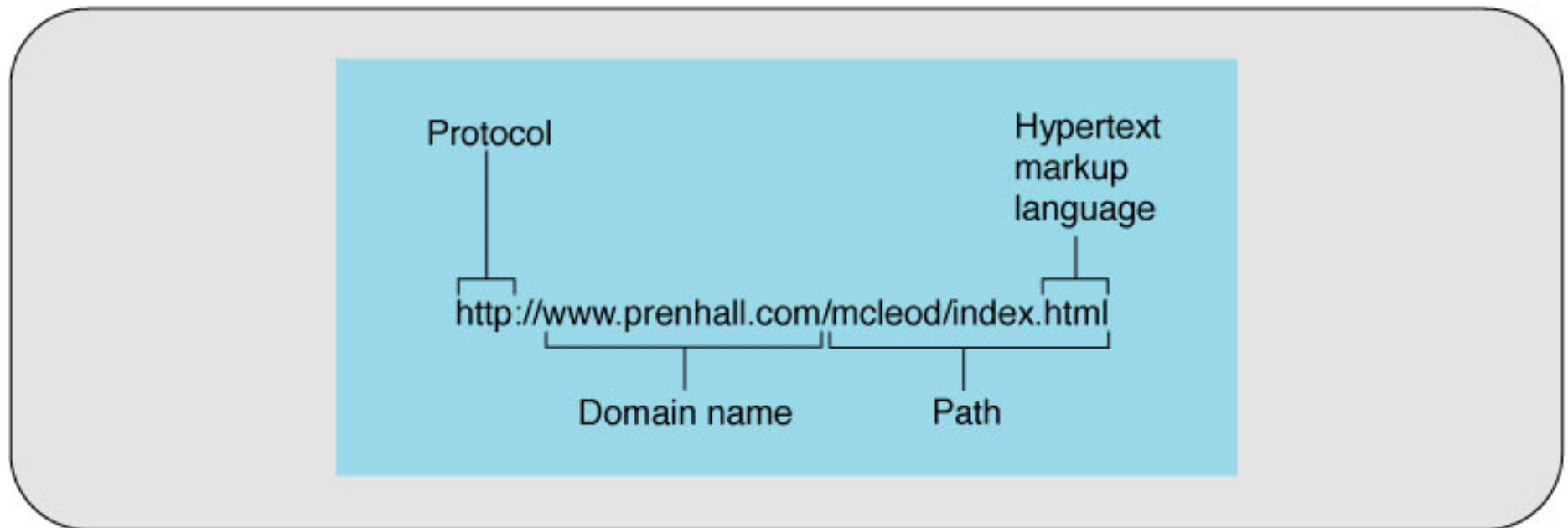
- Understanding the Internet's evolution can help forecast future opportunities
- ARPANET makes it possible for military personnel and civilian researchers to exchange information relating to military matters. It forms a major portion of what has come to be known today known as the Internet
- In 1989, Tim Berners-Lee, working at CERN, came up with a way for physicists to communicate using **hypertext** electronically linked documents.
- This system quickly evolved into what is now known as the World Wide Web

Figure 3.6 The Internet Is a Network of Networks



Source: Based on Parsons and Oja, "New Perspectives on Computer Technology," Course Technology, 1994, p. NP212.

Figure 3.7 World Wide Web Terminology



CYBERSPACE AND THE INFORMATION SUPERHIGHWAY

- The term **cyberspace** is from William Gibson's 1984 book *Neuromancer* to describe a society that had become a slave to its technology
- The **information superhighway** describes a system that gives everyone access to the wealth of information that exists in our modern society
- The two main organizations in leadership roles in establishing Internet and Web standards are **The Internet Society** and the **IETF** (Internet Engineering Task Force)
- Web standards come from the **World Wide Web Consortium (W3C)**

BUSINESS APPLICATIONS OF THE INTERNET

- The Internet can be used for any business application that involves data communication, including both communication inside the firm and with the environment
- Unlike proprietary networks, the Internet can be used with any computer platform without any special effort to access the network
- The Internet also makes it possible to transmit a wider variety of media than can be handled over most conventional networks

Marketing Research and Retailing Applications

- By taking advantage of this new source of customer information, industrial marketers have gained new inroads to their markets
- The Web business application with which the general public is most familiar is retailing – most large retail chains now have an established Web presence

Suggestions for Successful Internet Use

1. Make sure your Web site is robust
2. Make sure your browser and database structure are both flexible and intuitive
3. Emphasize content
4. Update often
5. Look beyond customers
6. Target content to specific users' needs
7. Make the interface intuitive
8. Be in the right Web location
9. Create a sense of community
10. Get help if you need it

Future Impact of the Internet on Business

- The Internet is seen as the precursor to a **National Information Infrastructure**
- Each country will have its own NII, all linked together in some manner that is yet to be defined
- Having an NII will affect commerce in the different countries in different ways. Industrialized countries that make quick use of innovations in technology, the effect can be swift and dramatic
- Important new issues are also emerging, especially the issue of circulating customers' personal information

END OF CHAPTER 3