

Part III

The Internet Ecosystem

Chapter VI

The Internet Applications and Business

THE INTERNET ECONOMY

The Internet Economy is an ecosystem of producing, distributing, and consuming wealth. This ecosystem is made up of companies directly generating all or some part of their revenues from Internet or Internet-related products and services. The economy includes not only “high-tech” companies but any company that generates revenue from the Internet.

Internet Usage

The Internet landscape of the United States will undergo a profound change from 2002 to 2003. The United States will lose the distinction of having the largest number of Internet users worldwide. However, the loss of this distinction is not without an up-side. Eighty-four percent of U.S. PC's access the Internet today, and this will grow to 88% by 2003. The Internet has become part of U.S. culture — approximately 71% of the population will use the Internet at least once per month by 2003. The United States will maintain its leadership role as the biggest e-commerce generator of all regions. The maturity of the e-commerce market in the United States is responsible for the erosion of the United States' standing as the world leader in terms of Internet users. Other regions with larger populations are becoming increasingly connected. Alternatively, it is the maturity of the U.S. market that has driven the United States to dominate e-commerce spending worldwide (www.idc.com).

However, not every Internet user shops online; only 17 million households (17% or every 5th) do it (NUA/Forrester Research). In 2000 about 56% of U.S. companies were selling their products and services online, up 24% from 1998 (NUA).

Economic Impact

The Internet Economy force has become a more integral part of the U.S. economy than ever before, creating jobs and increasing productivity in companies across the economy. The impact goes far beyond dot coms, as Internet Economy forces are transforming traditional companies and jobs. Seven of every 10 of these jobs are traditional rather than high-tech jobs, according to a new study by the University of Texas' Center for Research in Electronic Commerce. Of the Internet-related jobs, only 28% are in Information Technology, which ranks below sales and marketing (33%) as the job function generating the most Internet-related employment. Dot com companies are a very small part (about 9.6%) of the overall Internet Economy.

The research is contained in the fourth report measuring the Internet Economy commissioned by Cisco Systems and covers the first half of 2000. It shows the Internet is transforming the economy and the way people work, to an extent few people would have imagined just a few years ago.

According to the study, the Internet Economy now directly supports more than 3.088 million workers, including an additional 600,000 in the first half of 2000. This is about 60,000 more than the number employed in the insurance industry and double the real estate industry. These jobs were created both by the explosion of the Internet and by companies shifting workers to take advantage of the benefits created by embracing the Internet. Employment in Internet Economy companies is growing much faster than employment in the overall economy. Total employment at Internet Economy companies grew 10% between the first quarter of 1999 and the first quarter of 2000. Internet-related jobs at Internet Economy companies grew 29% during the same period. Both of these figures far exceed the growth of non-Internet related jobs in these same Internet Economy companies, which grew 6.9% during the same period.

The Internet Economy generated an estimated \$830 billion in revenues in 2000, a 58% increase over 1999. The \$830 billion in revenues is a 156% increase from 1998, when the Internet accounted for \$323 billion in revenues. Internet economy revenue is growing twice as fast as Internet Economy employment. In 2000, for example, second quarter revenue grew 58.8% over the second quarter of 1999. Meanwhile, second quarter employment grew

22.6% over 1999. Internet-related revenue is a growing piece of corporate revenue as a whole. For Internet Economy companies, Internet revenue is one-fifth the size of non-Internet revenue – but growing three times as fast as corporate revenue as a whole. Revenue grew by \$23 billion between the first quarter of 1999 and first quarter of 2000. Internet-related revenue grew \$68 billion during the same period.

Internet Economy employees are increasingly productive employees. Revenue per employee increased an estimated 11.5% in the first half of 2000 – a key indication of the productivity gains generated by the Internet. In the first half of 2000, Internet Economy companies generated \$1 of every \$5 in revenue from the Internet. Even as the overall economy experiences fluctuations, Internet Economy forces continue to reshape the economy in unprecedented ways, producing savings for businesses and consumers alike. And reports of strong online holiday spending levels in 2000 (a study by Goldman Sachs and PC Data, for example, said total Internet holiday spending rose to \$8.7 billion from \$4.2 billion in 1999) provide yet another sign of the way customers and retailers now routinely use the Internet.

The Internet is increasingly becoming part of the basic business model for many companies, laying the groundwork for even more impressive growth during strong economic conditions. The Internet is rapidly becoming an integral part of the traditional economy – like telephones, elevators and personal computers over the years – leading to the day when there will be no separate measure of the Internet Economy¹.

That makes the United State's Internet Economy by itself the 10th largest economy in the world, greater than South Korea's and equal to Spain's. The Internet jobs exceed employment in the insurance, telecommunications, real estate, public utilities industries and twice as many as the airline, chemical, and allied products, legal and real estates industries. As an example of its growing role in the economy, the Internet Economy now employs more workers than the insurance industry (2.36 million workers) and the real estate industry (1.5 million).

The Internet sector rivals the automobile and telecommunications industries which have been in existence for nearly a century. The planned speed for the Internet communications is about three Terabits per second which is an equivalent of sending the Encyclopedia Britannica within 1 second. The Internet infrastructure is built of components that cost about \$1 trillion and the development process is still taking place at the rate of \$200-300 billion spent per year.

The Internet Economy started about 1994 when the first browser Mosaic was available. Ever since, its growth has been much faster than the Industrial Revolution's that began in the 18th century. The latter economy was based on physical assets to create value, while the former economy is based on instantly communicated information and discovered knowledge (patterns and rules) about customers and potential ones. This knowledge leads to better customer relationships and more opportunities for all stakeholders.

THE INTERNET ECOSYSTEM

The Internet Ecosystem is a business model made up of a community of users, customers, technological infrastructure, support solutions providers, and product and services producers and suppliers.

The Internet Ecosystem can be organized in the following layers (The University of Texas's Center for Research in Electronic Commerce in Austin):

1. **Infrastructure Layer**—companies that manufacture or provide products and services that make up the I-infrastructure which is being built of telecommunications and computer networks, dial up access, PC's, servers, modems, and other components necessary for the Internet to function. Such companies can be considered here: AT&T, Cisco, Dell, IBM, HP, Compaq, Sun, Oracle, and others.
2. **Application Layer**—companies that provide e-commerce application software and tools. For example: applications (e.g., Netscape, IBM, Microsoft, Sun), multimedia applications (e.g., Macromedia), Web development software (e.g., NetObjects, Allaire, Vignette), search engine software (e.g., Inktomi, Verity), Web-enable databases (e.g., Oracle, IBM DB2, Microsoft SQL Server, Sybase, Informix), Internet consulting services (e.g., USWeb/CKS, Scient, EDS, Ernst & Young), training services (e.g., Sylvan Prometric, Assymetrix). Products and services in this layer make it technologically possible to perform business activities online.
3. **Intermediary Layer**—companies that increase the efficiency of e-markets as Internet middlemen by facilitating the meeting and interaction of buyers and sellers via the World Wide Web. For example: online

brokerages, Internet ad brokers (e.g., Yahoo!, Geocities), market makers in vertical industries (e.g., VerticalNet, PCOrder), content aggregators (e.g., Cnet, ZDnet, Broadcast.com), and online travel agencies (Priceline.com).

4. **Commerce Layer**—companies that generate product and service sales to consumers (B2C) or businesses (B2B) over the Internet. For example: eBay, VerticalNet, Amazon, Toysrus, AmericanAirlines, and others.

The model of The Internet Ecosystem is illustrated in Figure 6-1.

The 1999 Internet Economic Indicators are provided in Table 6-1.

The largest subsector of the Internet Economy is the 1-Infrastructure Layer which employs the largest number of workers who produce endless

Figure 6-1: The Internet Ecosystem Model

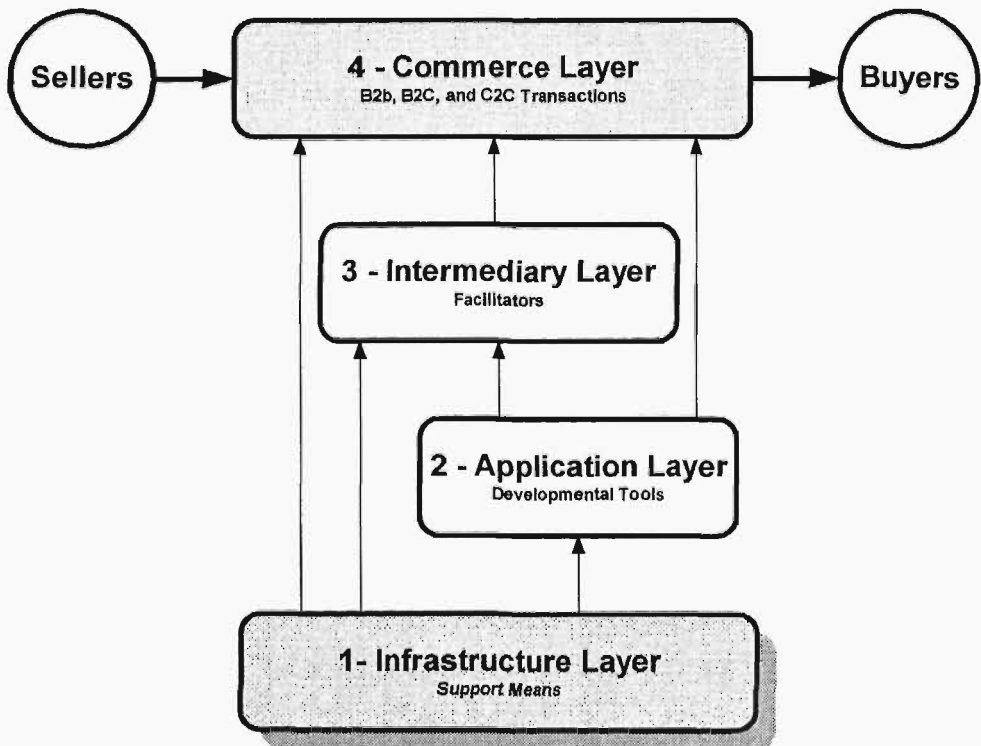


Table 6-1

Layer	Revenues in \$Billion	Employment	Revenues Per Em- ployee in \$	Percentage of Revenues
4-Commerce	171	726,000	253,987	30%
3-Intermediary	96.81	340,600	284,143	17%
2-Application	101	681,568	148,628	18%
1-Infrastructure	200	778,602	254,174	35%
Total	568.81	2,189,576	259,780	100

numbers of hardware, software, telecommunications components and services. However, the largest revenue per employee (productivity) generates the 3-Intermediary Layer, which according to the trade tradition of a middleman makes the most money. Productivity of Information Economy is about two times higher than productivity of The Industrial Economy.

The Internet Ecosystem has evolved from an alternative marketing channel and 4th medium to a complete economic system consisting of (The University of Texas's Center for Research in Electronic Commerce in Austin):

1. Communication networks using the Internet technologies and standards (L1);
2. Applications and human capital that enable business to be conducted over this network infrastructure (L2);
3. Interconnected electronic markets that operate over the network (L4);
4. Producers (L4) and intermediaries (L3) providing a variety of digital products and services to facilitate market efficiency and liquidity; and
5. Emerging policy and legal frameworks for conducting business over the Internet.

The prevailing model of competition in the Internet Economy is more like a web of inter-relationships than the hierarchical, command-and-control model of the Industrial Economy. This economy is inclusive and has low barriers to entry, and possesses the ability to self-organize.