

Management Information Systems

MANAGING THE DIGITAL FIRM

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Chapter 7: Telecommunications, the Internet, and Wireless Technology

Learning Track 1: Broadband Network Services and Technologies

Telecommunications is the digital plumbing that holds the modern digital firm together, and makes it possible for all the computers, telephones, and Internet devices to work. Closely tied to the evolution of the modern computer and processing chips, telecommunications capacity has expanded nearly as fast as computing power, while costs have radically dropped. The cost of moving a 6 gigabit DVD movie over the Internet to your home has dropped exponentially from 1995 when it cost \$1.75/kilobit, to 2013 when it cost one one-hundredth of a penny per kilobit. Today, over 25 million people in the U.S. are VoIP digital phone subscribers (provided by Cable companies who are not “traditional” phone companies), and there are 245 million mobile phone subscriptions, not to mention nearly 84 million home broadband subscribers who can effectively use VoIP along with other Internet applications like video and television.

About 193 million adults (18+) use the Internet in the U.S. and about 60% of them have a wireless Wi-Fi access capability. Wi-Fi is more of a technology than it is an industry provider—there are very few firms that specialize in the delivery of Wi-fi service and they are not consequential in terms of revenue. That said, Wi-fi technology (whoever installs and operates it) has to be a part of the decision calculus for managers who are trying to build an appropriate telecommunications infrastructure for their firms.

These developments in telecommunications have complicated the decision making of managers in some respects, while simplifying their lives at the same time. Decisions about telecommunications service providers and services is more complex simply because there are so many providers. On the other hand, the solutions being provided are both incredibly powerful and inexpensive when compared to the past. In some instances, management decisions have been simplified by the emergence of clear winners. For instance, if you have a distributed, high value labor force that needs to stay in close touch with customers and vendors 24 hours a day, 7 days a week, there really is no better device or service than a smartphone with text, email, voice, and Internet functionality built into a computer you can fit in your pocket.

This revolution in telecommunications technology and services was facilitated by a regulatory environment that sought to break up old monopolies, encourage new market entrants, and reduce barriers to competition. Until about 25 years ago, the American Telephone and Telegraph (AT&T) Company provided virtually all telecommunications services in the United States, with monopoly status granted by the Communications Act of 1934. In return for the right to provide a single national telephone and

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telegraph network, Congress regulated the prices that AT&T could charge and required universal service to be extended to all regions of the country, including rural America, at a “reasonable price.”

Starting in the mid-1950s, the U.S. Department of Justice started antitrust action to end the AT&T monopoly and promote more competition in telecommunications. A 1982 court order, implemented in 1984, broke up AT&T into a long-distance company and seven independent, regional telephone companies (Regional Bell Operating Companies, known as RBOCs) that were ordered to permit long-distance competitors such as Sprint and MCI to offer service to local customers. The court order stimulated competition in manufacturing, long-distance, and information services, while retaining regulated monopoly in local telephony.

Competition ultimately drove four of the RBOCs out of business, and today there are only three RBOCs left:

- ◆ Qwest: created by the merger of US West and Qwest Communications International Inc.
- ◆ AT&T: created by the merger of SBC, Ameritech, and Pacific Telesis, AT&T and Bell South. In 2004, Cingular Communications merged with AT&T. In 2006, the new company dropped the Cingular name and is now called AT&T.
- ◆ Verizon - created by the merger of Bell Atlantic, Nynex, and GTE.

The Telecommunications Act of 1996 unleashed even more competition in telecommunications by permitting long-distance companies to offer local service and by requiring RBOCs to lease local last-mile lines to competitors at a deeply discounted rate. The act also allowed RBOCs to enter the long-distance market.

The combined impact of technological change and deregulation was to create a much more complex, diverse, and competitive telecommunications environment. Table 7-1 illustrates the complexity of today’s telecommunications environment and the options available to business firms and individuals as a result of deregulation and new technologies.

Privatization and the removal of legal barriers to market entry (all loosely referred to as “deregulation”) have dramatically reshaped the global telecommunications industry over the past two decades. The old monopolies have lost large chunks of market share in data services and in long-distance and international telephone calls. Prices in many segments have plummeted. But this situation has evolved once again, taking us back to the days of large monopolies and oligopolies.

By 2013 a more concentrated marketplace has emerged. As in nearly all market situations requiring huge capital investments, scale is one of the driving forces of firm success. The larger the scale of firms, the lower their fixed capital costs per customer. Hence, in the telecommunications industry there are inherent structural forces which lead to industry concentration and the elimination of competition. While new entrants poured into local communications markets—from wireless cellphones and networks for wireless Internet access to long-distance carriers, VoIP Internet telephone service

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providers, and cable companies—many of these new entrants have either gone out of business or been bought by the large national and global players.

Prior to deregulation and the technology device explosion, telecommunications decisions were comparatively simple. AT&T was the only choice for telephone service, and for data communication, managers chose IBM, Digital Equipment, or another networking/computer firm. Now managers must make decisions that involve comparing many competitors and many different technologies, all of which promise to provide effortless connectivity. Over time, as industry concentration proceeds, management decisions will once again be more simplified and huge service providers can provide the entire spectrum of telecommunications services from cellular phone, to Internet connectivity, and high speed data services. This development parallels what has happened in the home communications market with Cable and national phone companies offering packages of bundled services (the so-called “triple play” bundle).

TABLE7.1 The Largest Telecommunication Providers to U.s. Homes and Businesses

Providers	Services
INTEGRATED TELEPHONE CARRIERS	
AT&T	AT&T Inc. is the largest communications holding company in the United States and worldwide, by revenue. It is the leading worldwide provider of IP-based communications services to businesses and the leading U.S. provider of wireless, high speed Internet access, local and long distance voice, and directory publishing and advertising services. AT&T along with other “telephone” carriers is moving aggressively to compete with integrated cable providers by expanding video entertainment offerings to include fiber optic home service (U-verse) for Internet distribution of video and television. Major Internet backbone provider.
Verizon Communications	Second largest wireless and landline local and long distance telephone carrier; Internet access, VOIP Internet telephone, Internet video, business continuity and transaction-based voice and data services; Internet backbone provider. Now offering high performance fiber optic service to homes (FIOS) for broadband Internet applications like video and television
Sprint Nextel	Third largest wireless and landline local and long distance telephone carrier; Internet access, VOIP Internet telephone, Internet video, business continuity and transaction-based voice and data services; Internet backbone provider.
Century Link	Smallest of the integrated national providers of voice, video, and data services using both wireless and landlines.
INTEGRATED CABLE PROVIDERS	
Comcast, Time Warner Cable, CableVision digital cable TV, high-speed Internet access, Internet telephone	Analog and high definition digital television and video; triple play service: telephone, Internet, and television (both analog and digital)

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Providers	Services
PURE WIRELESS PROVIDERS	
Virgin Mobile	Virgin is an international brand of mobile cell service popular in Europe but also with a small U.S. presence. Offers wireless data and voice service, picture and text messaging, downloaded music and movie clips on mobile phones; mobile Web access, downloadable games.
T-Mobile	T-Mobile is a subsidiary of Deutsche Telecom (120 million customers in Europe). In the U.S. it is a smaller national provider of wireless voice, messaging, and data services. Offers wireless data and voice service, picture and text messaging, downloaded music and movie clips on mobile phones; mobile Web access, downloadable games.
Sprint Nextel	Sprint Nextel offers a range of wireless and wireline communications services; Nextel is widely recognized for developing, engineering and deploying innovative technologies such as instant national and international push-to-talk capabilities.
Research in Motion (RIM)	Research In Motion (RIM) is the designer, manufacturer and marketer of the BlackBerry, a proprietary email and Internet access network. Aside from email, RIM provides phone, text messaging (SMS and MMS), and Internet access.
INTERNET TELEPHONY (VOIP) PROVIDERS	
Skype	Skype (owned by eBay) provides free instant messaging, voice calling, and video conferencing among the more than 700 million registered Skype users. It makes money by selling premium features, such as SkypeOut (cheap calls from Skype to traditional landlines or mobile phones anywhere in the world) and SkypeIn (a personal and portable Skype number that people can call you on wherever you are in the world). Originally designed to be used on client PCs, Skype now offers support for cell phones and is beginning to distribute in 2008 its own Skype device called Skypephone, a 3G wireless handset that lets users make Skype-to-Skype calls and send Skype instant messages from their mobile phone to other Skype users no matter where they are.

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