
Part 3: Information Systems Beyond the Organization

Chapter 11: Globalization and the Digital Divide

Learning Objectives

Upon successful completion of this chapter, you will be able to:

- explain the concept of globalization;
- describe the role of information technology in globalization;
- identify the issues experienced by firms as they face a global economy; and
- define the digital divide and explain Nielsen's three stages of the digital divide.

Introduction

The Internet has wired the world. Today it is just as simple to communicate with someone on the other side of the world as it is to talk to someone next door. In this chapter, we will look at the implications of globalization and the impact it is having on the world.

What Is Globalization?

Globalization is the term used to refer to the integration of goods, services, and culture among the nations of the world. Globalization is not necessarily a new phenomenon; in many ways, we have been experiencing globalization since the days of European colonization. Further advances in telecommunication and transportation technologies accelerated globalization. The advent of the the worldwide Internet has made all nations next-door neighbors.

The Internet is truly a worldwide phenomenon. As of 2012, the Internet was being used in over 150 countries by a staggering 2.4 billion people worldwide, and growing.¹ From its initial beginnings in the United States in the 1970s to the development of the World Wide Web in the 1990s to the social networks and e-commerce of today, the Internet has continued to increase the integration between countries, making globalization a fact of life for citizens all over the world.

1. <http://internetworldstats.com/>

WORLD INTERNET USAGE AND POPULATION STATISTICS
As of June 30, 2012

World Regions	Population (2012 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2012	Users % of Table
Africa	1,073,380,925	4,514,400	167,335,676	15.6%	3,606.7%	7.0%
Asia	3,922,066,987	114,304,000	1,076,681,059	27.5%	841.9%	44.8%
Europe	820,918,446	105,096,093	518,512,109	63.2%	393.4%	21.5%
Middle East	223,608,203	3,284,800	90,000,455	40.2%	2,639.9%	3.7%
North America	348,280,154	108,096,800	273,785,413	78.6%	153.3%	11.4%
Latin America / Caribbean	593,688,638	18,068,919	254,915,745	42.9%	1,310.8%	10.6%
Oceania / Australia	35,903,569	7,620,480	24,287,919	67.6%	218.7%	1.0%
WORLD TOTAL	7,017,846,922	360,985,492	2,405,518,376	34.3%	566.4%	100.0%

Source: *Internet World Stats*

The Network Society

In 1996, social-sciences researcher Manuel Castells published *The Rise of the Network Society*, in which he identified new ways in which economic activity was being organized around the networks that the new telecommunication technologies have provided. This new, global economic activity was different from the past, because “it is an economy with the capacity to work as a unit in real time on a planetary scale.”² We are now into this network society, where we are all connected on a global scale.

The World Is Flat

In 2005, Thomas Friedman’s seminal book, *The World Is Flat*, was published. In this book, Friedman unpacks the impacts that the personal computer, the Internet, and communication software have had on business, specifically the impact they have had on globalization. He begins the book by defining the three eras of globalization³:

- “Globalization 1.0” occurred from 1492 until about 1800. In this era, globalization was centered around countries. It was about how much horsepower, wind power, and steam power a country had and how creatively it was deployed. The world shrank from size “large” to size “medium.”
- “Globalization 2.0” occurred from about 1800 until 2000, interrupted only by the two World Wars. In this era, the dynamic force driving change was multinational companies. The world shrank from size “medium” to size “small.”
- “Globalization 3.0” is our current era, beginning in the year 2000. The convergence of the personal computer, fiber-optic Internet connections, and software has created a “flat-world platform” that allows small groups and even individuals to go global. The world has shrunk from size “small” to size “tiny.”

2. Manuel Castells. 2000. *The Rise of the Network Society* (2nd ed.). Blackwell Publishers, Inc., Cambridge, MA, USA.

3. Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century*. New York: Farrar, Straus and Giroux.

According to Friedman, this third era of globalization was brought about, in many respects, by information technology. Some of the specific technologies he lists include:

- *The graphical user interface for the personal computer popularized in the late 1980s.* Before the graphical user interface, using a computer was relatively difficult. By making the personal computer something that anyone could use, it became commonplace very quickly. Friedman points out that this digital storage of content made people much more productive and, as the Internet evolved, made it simpler to communicate content worldwide.
- *The build-out of the Internet infrastructure during the dot-com boom during the late-1990s.* During the late 1990s, telecommunications companies laid thousands of miles of fiber-optic cable all over the world, turning network communications into a commodity. At the same time, the Internet protocols, such as SMTP (e-mail), HTML (web pages), and TCP/IP (network communications) became standards that were available for free and used by everyone.
- *The introduction of software to automate and integrate business processes.* As the Internet continued to grow and become the dominant form of communication, it became essential to build on the standards developed earlier so that the websites and applications running on the Internet would work well together. Friedman calls this “workflow software,” by which he means software that allows people to work together more easily, and allows different software packages and databases to integrate with each other more easily. Examples include payment-processing systems and shipping calculators.

These three technologies came together in the late 1990s to create a “platform for global collaboration.” Once these technologies were in place, they continued to evolve. Friedman also points out a couple more technologies that have contributed to the flat-world platform – the open-source movement (see chapter 10) and the advent of mobile technologies.

The World Is Flat was published in 2005. Since then, we have seen even more growth in information technologies that have contributed to global collaborations. We will discuss current and future trends in chapter 13.

The Global Firm

The new era of globalization allows any business to become international. By accessing this new platform of technologies, Castells’s vision of working as a unit in real time on a planetary scale can be a reality. Some of the advantages of this include the following:

- The ability to locate expertise and labor around the world. Instead of drawing employees from their local area, organizations can now hire people from the global labor pool. This also allows organizations to pay a lower labor cost for the same work based on the prevailing wage in different countries.

- The ability to operate 24 hours a day. With employees in different time zones all around the world, an organization can literally operate around the clock, handing off work on projects from one part of the world to another. Businesses can also keep their digital storefront (their website) open all the time.
- A larger market for their products. Once a product is being sold online, it is available for purchase from a worldwide consumer base. Even if a company's products do not appeal beyond its own country's borders, being online has also made the product more visible to consumers within that country.

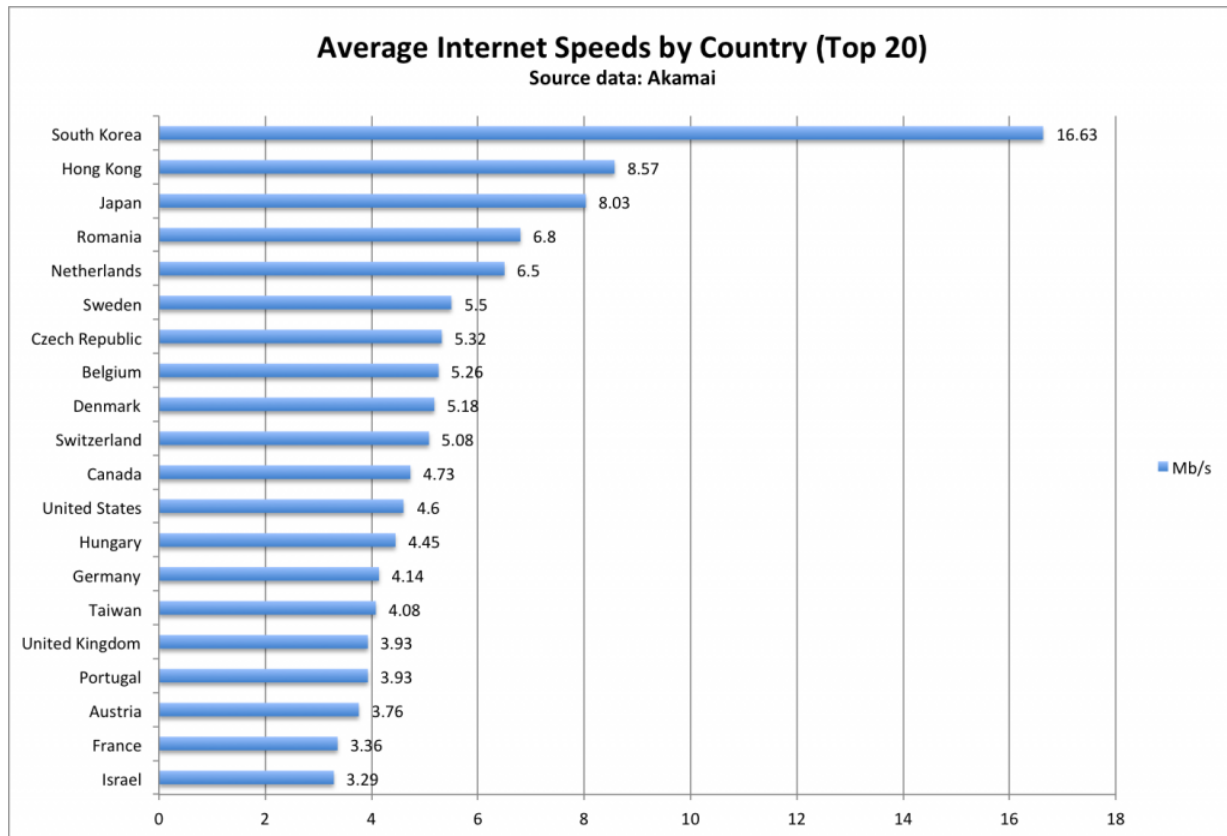
In order to fully take advantage of these new capabilities, companies need to understand that there are also challenges in dealing with employees and customers from different cultures. Some of these challenges include:

- Infrastructure differences. Each country has its own infrastructure, many of which are not of the same quality as the US infrastructure (average 4.60 MBps). For every South Korea (16 MBps average speed) there is an Egypt (0.83 MBps) or an India (0.82 MBps). A business cannot depend on every country it deals with having the same Internet speeds. See the sidebar called “How Does My Internet Speed Compare?”
- Labor laws and regulations. Different countries (even different states in the United States) have different laws and regulations. A company that wants to hire employees from other countries must understand the different regulations and concerns.
- Legal restrictions. Many countries have restrictions on what can be sold or how a product can be advertised. It is important for a business to understand what is allowed. For example, in Germany, it is illegal to sell anything Nazi related; in China, it is illegal to put anything sexually suggestive online.
- Language, customs, and preferences. Every country has its own (or several) unique culture(s), which a business must consider when trying to market a product there. Additionally, different countries have different preferences. For example, in some parts of the world, people prefer to eat their french fries with mayonnaise instead of ketchup; in other parts of the world, specific hand gestures (such as the thumbs-up) are offensive.
- International shipping. Shipping products between countries in a timely manner can be challenging. Inconsistent address formats, dishonest customs agents, and prohibitive shipping costs are all factors that must be considered when trying to deliver products internationally.

Because of these challenges, many businesses choose not to expand globally, either for labor or for customers. Whether a business has its own website or relies on a third-party, such as Amazon or eBay, the question of whether or not to globalize must be carefully considered.

Sidebar: How Does My Internet Speed Compare?

How does your Internet speed compare with others in your state, country, or around the world? The chart below shows how Internet speeds compare in different countries. You can find the full list of countries [by going to this article](http://royal.pingdom.com/2010/11/12/real-connection-speeds-for-internet-users-across-the-world/) (<http://royal.pingdom.com/2010/11/12/real-connection-speeds-for-internet-users-across-the-world/>). You can also compare the evolution of Internet speeds among countries [by using this tool](http://www.akamai.com/stateoftheinternet/) (<http://www.akamai.com/stateoftheinternet/>).



Internet speeds by country. Click to enlarge.

So how does your own Internet speed compare? There are many online tools you can use to determine the speed at which you are connected. One of the most trusted sites is speedtest.net, where you can test both your download speeds and upload speeds.

The Digital Divide

As the Internet continues to make inroads across the world, it is also creating a separation between those who have access to this global network and those who do not. This separation is called the “digital divide” and is of great concern. An article in *Crossroads* puts it this way⁴:

Adopted by the ACM Council in 1992, the ACM Code of Ethics and Professional Conduct focuses on issues involving the Digital Divide that could prevent certain categories of people — those from low-income households, senior citizens, single-parent children, the undereducated,

4. Kibum Kim. 2005. Challenges in HCI: digital divide. *Crossroads* 12, 2 (December 2005), 2-2. DOI=10.1145/1144375.1144377
<http://doi.acm.org/10.1145/1144375.1144377>

minorities, and residents of rural areas — from receiving adequate access to the wide variety of resources offered by computer technology. This Code of Ethics positions the use of computers as a fundamental ethical consideration: “In a fair society, all individuals would have equal opportunity to participate in, or benefit from, the use of computer resources regardless of race, sex, religion, age, disability, national origin, or other similar factors.” This article summarizes the digital divide in its various forms, and analyzes reasons for the growing inequality in people’s access to Internet services. It also describes how society can bridge the digital divide: the serious social gap between information “haves” and “have-nots.”

The digital divide can occur between countries, regions, or even neighborhoods. In many US cities, there are pockets with little or no Internet access, while just a few miles away high-speed broadband is common.

Solutions to the digital divide have had mixed success over the years. Many times, just providing Internet access and/or computing devices is not enough to bring true Internet access to a country, region, or neighborhood.

One Laptop per Child

One attempt to repair the digital divide was the One Laptop per Child effort. As stated on the organization’s website, “The mission of One Laptop per Child (OLPC) is to empower the children of developing countries to learn by providing one connected laptop to every school-age child. In order to accomplish our goal, we need people who believe in what we’re doing and want to help make education for the world’s children a priority, not a privilege.”⁵ Announced to great fanfare in 2005 by Nicholas Negroponte, the OLPC project seemed destined for success.



The XO laptop. Click to enlarge. (CC-BY: Mike McGregor)

The centerpiece of the project was the laptop itself: an inexpensive computer designed to withstand a lot of punishment. It utilized a revolutionary “mesh” network, allowing the laptops to act as repeaters, extending a Wi-Fi network far beyond their normal range. They also used minimal power, making them practical for remote areas with limited access to the electrical grid.

Unfortunately, the OLPC project failed to live up to expectations, running into many of the problems related to globalization discussed above: different cultures, corruption, and competition. In an article that examined the success and failures of OLPC, the authors state, “Expecting a laptop to cause such a revolutionary change showed a degree of naivete, even for an organization with the best of intentions and the smartest of people.”⁶ Today, OLPC is evolving their methods and their technology, trying to deliver an OLPC tablet computer.

5. <http://laptop.org/en/vision/mission/>

6. One Laptop Per Child: Vision vs. Reality By Kenneth L. Kraemer, Jason Dedrick, Prakul Sharma Communications of the ACM, Vol. 52 No. 6, Pages 66-73

A New Understanding of the Digital Divide

In 2006, web-usability consultant Jakob Nielsen wrote an article that got to the heart of our understanding of this problem. In his article, he breaks the digital divide up into three stages: the economic divide, the usability divide, and the empowerment divide⁷.

What is usually called the digital divide is, in Nielsen's terms, the *economic divide*: the idea that some people can afford to have a computer and Internet access while others cannot. Because of Moore's Law (see chapter 2), the price of hardware has continued to drop and, at this point, we can now access digital technologies, such as smartphones, for very little. This fact, Nielsen asserts, means that for all intents and purposes, the economic divide is a moot point and we should not focus our resources on solving it.

The *usability divide* is concerned with the fact that "technology remains so complicated that many people couldn't use a computer even if they got one for free." And even for those who can use a computer, accessing all the benefits of having one is beyond their understanding. Included in this group are those with low literacy and seniors. According to Nielsen, we know how to help these users, but we are not doing it because there is little profit in doing so.

The *empowerment divide* is the most difficult to solve. It is concerned with how we use technology to empower ourselves. Very few users truly understand the power that digital technologies can give them. In his article, Nielsen explains that his (and others') research has shown that very few users contribute content to the Internet, use advanced search, or can even distinguish paid search ads from organic search results. Many people will limit what they can do online by accepting the basic, default settings of their computer and not work to understand how they can truly be empowered.

Understanding the digital divide using these three stages provides a more nuanced view of how we can work to alleviate it. While efforts such as One Laptop per Child are an excellent start, more work needs to be done to address the second and third stages of the digital divide for a more holistic solution.

Sidebar: Using Gaming to Bridge the Digital Divide

Paul Kim, the Assistant Dean and Chief Technology Officer of the Stanford Graduate School of Education, designed a project to address the digital divide for children in developing countries.⁸ In their project, the researchers wanted to understand if children can adopt and teach themselves mobile learning technology, without help from teachers or other adults, and the processes and factors involved in this phenomenon. The researchers developed a mobile device called TeacherMate, which contained a game designed to help children learn math. The unique part of this research was that the researchers interacted directly with the children; they did not channel the mobile devices through the teachers or the schools. Another important factor to consider: in order to understand the context of the children's educational environment, the researchers began the project by working with parents and local nonprofits six months before their visit. While the results of this research are too detailed to go into here, it can be said that the researchers found that children can, indeed, adopt and teach themselves mobile learning technologies.

What makes this research so interesting when thinking about the digital divide is that the researchers found that, in order to be effective, they had to customize their technology and tailor their implementation to the specific group they were trying to reach. One of their conclusions stated the following:

7. <http://www.nngroup.com/articles/digital-divide-the-three-stages/>

8. Kim, P., Buckner, E., Makany, T., & Kim, H. (2011). A comparative analysis of a game-based mobile learning model in low-socioeconomic communities of India. *International Journal of Educational Development*. doi:10.1016/j.ijedudev.2011.05.008.

Considering the rapid advancement of technology today, mobile learning options for future projects will only increase. Consequently, researchers must continue to investigate their impact; we believe there is a specific need for more in-depth studies on ICT [information and communication technology] design variations to meet different challenges of different localities.

To read more about Dr. Kim's project, locate the paper referenced in this sidebar.

Summary

Information technology has driven change on a global scale. As documented by Castells and Friedman, technology has given us the ability to integrate with people all over the world using digital tools. These tools have allowed businesses to broaden their labor pools, their markets, and even their operating hours. But they have also brought many new complications for businesses, which now must understand regulations, preferences, and cultures from many different nations. This new globalization has also exacerbated the digital divide. Nielsen has suggested that the digital divide consists of three stages (economic, usability, and empowerment), of which the economic stage is virtually solved.

Study Questions

1. What does the term *globalization* mean?
2. How does Friedman define the three eras of globalization?
3. Which technologies have had the biggest effect on globalization?
4. What are some of the advantages brought about by globalization?
5. What are the challenges of globalization?
6. What does the term *digital divide* mean?
7. What are Jakob Nielsen's three stages of the digital divide?
8. What was one of the key points of *The Rise of the Network Society*?
9. Which country has the highest average Internet speed? How does your country compare?
10. What is the OLPC project? Has it been successful?

Exercises

1. Compare the concept of Friedman's "Globalization 3.0" with Nielsen empowerment stage of the digital divide.
2. Do some original research to determine some of the regulations that a US company may have to consider before doing business in one of the following countries: China, Germany, Saudi Arabia, Turkey.

3. Go to speedtest.net to determine your Internet speed. Compare your speed at home to the Internet speed at two other locations, such as your school, place of employment, or local coffee shop. Write up a one-page summary that compares these locations.
4. Give one example of the digital divide and describe what you would do to address it.
5. How did the research conducted by Paul Kim address the three levels of the digital divide?