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# THE GLOBAL DIGITAL DIVIDE – WITHIN AND BETWEEN COUNTRIES

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## ABSTRACT

*The diffusion of the Internet (and its accompanying digital divides) has occurred at the intersection of both international and within-country differences in socioeconomic, technological and linguistic factors. Telecommunications policies, infrastructures and education are prerequisites for marginalized communities to participate in the information age. High costs, English language dominance, the lack of relevant content, and the lack of technological support are barriers for disadvantaged communities using computers and the Internet.*

*The diffusion of Internet use in developed countries may be slowing and even stalling, when compared to the explosive growth of Internet access and use in the past decade. With the proliferation of the Internet in developed countries, the digital divide between North American and developed countries elsewhere is thus narrowing, but remains substantial. The divide also remains substantial within almost all countries, and is widening even as the number and percentage of Internet users increases, as newcomers to the Internet are demographically similar to those already online. People, social groups and nations on the wrong side of the digital divide may be increasingly excluded from knowledge-based societies and economies.*

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The digital divide involves the gap between individuals (and societies) that have the resources to participate in the information era and those that do not. Although there are no reliable data on the size of the world's online population, estimates suggest that the number of Internet users around the globe has surged from 4.4 million in 1991 to 10 million in 1993, to 40 million in 1995, to 117 million in 1997, to 277 million in 1999, to 502 million in 2001, and to more than 600 million in 2002. Thus, the global penetration rate of the Internet has increased from less than 0.1 percent in 1991 to 2 percent in 1997, 7 percent in 2000, to over 10 percent of the total world population in 2002. Projections for 2004 place the number of global Internet users between 700 million and 945 million, which translates to a global penetration rate between 11 percent and 15 percent.

Despite rapid worldwide diffusion of the Internet, a disproportionate number of users are concentrated in more developed countries, especially the United States. In 2001, 169 million Americans were online, accounting for about 60 percent of the country's total population and 29 percent of the world's Internet population. There were 172 million users in Europe (28 percent diffusion), 182 million in Southeast and East Asia, including 145 million in China, Japan, and Korea (23 percent). South America was home to 29 million users (5 percent), while there were 11 million in Oceania (2 percent) and 10 million in Africa (just over 1.5 percent).

Although there have been many individual-country analyses of the digital divide and some international statistical series (such as those issued by the OECD), there has been little research to compare, synthesize and interpret the worldwide digital divide. In this article, data from national representative surveys -- conducted by government agencies, scholarly researchers, and policy reports issued by international organizations -- are used to examine the digital divide in terms of access and use of the Internet across eight developed and developing countries: the United States, the United Kingdom, Germany, Italy, Japan, the Republic of Korea, China and Mexico. This short article summarizes some of the main findings in Chen and Wellman (2003).

## A NARROWING DIVIDE BETWEEN NATIONS

Among developed countries the digital divide between first-movers and latecomers is narrowing. Countries such as the U.K., Korea and Japan have caught up to the level of Internet connectivity in the U.S., as shown in Table 1, columns 1 and 2. To some extent, the Internet is expanding in developed countries in similar ways to its expansion in the U.S., although with a time lag (Bazar and Boalch 1997). For example, the demographic profile of users in developed countries looks roughly similar to that of American Internet users a half-decade earlier: younger, higher-educated males.

On the other hand, different dynamics are influencing the use and the impact of the Internet in different developed countries. Thus, Japan is leading

**TABLE 1: PERCENTAGE (AND NUMBER) OF POPULATION ONLINE IN THE EIGHT COUNTRIES**

| Country | Month[a] | 1) Percent of population online in 2002[a] | 2) Percent of population online in 2001[b], (in Millions) | 3) # of PC in 2001 (Million)[b] | 4) Percent of female users in online population [b] |
|---|---|---|---|---|---|
| **U.S.** | April | 59% (166M) | 50% (143M) | 178M | 51% (2001) |
| **U.K.** | Sept | 57% (34M) | 40% (24M) | 22M | 43% (2001) |
| **S. Korea** | July | 54% (26M) | 52% (24M) | 12M | 45% (2002) |
| **Japan** | June | 44% (56M) | 44% (56M) | 44M | 41% (2001) |
| **Germany** | August | 39% (32M) | 37% (31M) | 32M | 37% (2001) |
| **Italy** | Aug. 01 | 33% (19M) | 28% (16M) | 11M | 37% (2001) |
| **China** | December | 4.8 (58M) | 2.5% (34M) | 25M | 39% (2002) |
| **Mexico** | NA | NA | 3.6% (3.4M) | 7M | 42% (2002) |

Sources: [a] NUA, http://www.nua.ie/surveys/how_many_online/, 2003; [b] ITU, 2002b. SOURCE OF DATA FOR EACH COUNTRY – U.S.: NITA 1995, 1998, 2000, 2001; UCLA Internet Report, 2001-2003; Pew Internet and American Life Studies. U.K.: U.K. Online Annual Report, 2002. Germany: ARD/ZDF Online surveys, 1999-2002. Italy: OECD and the World Economic Forum; Supplemented by scholarly research. Japan: Japanese Statistics Bureau, MPHPA (Ministry of Public Management, Home Affairs); World Internet Project Japan, 2002. South Korea: National Computerization Agency, 2002; National Statistical Office; Supplemented by scholarly research. China: CNNIC, 1997-2003. Mexico: World Economic Forum, 2002; OECD, 2002, NUA; Supplemented by scholarly research.

the development of *mobile Internet*; Korea is the world leader of *broadband connections*, while the U.K. has the highest rate of *digital TV* diffusion in the world. Further, while most countries are lagging behind the U.S. in PC-based Internet use, they are quickly adopting mobile phones.

The digital divide reflects the broader context of international social and economic relations: a center-periphery order marked by American dominance. There are large disparities of Internet access between the affluent nations at the core of the Internet-based global network on the one hand, and the poor countries at the periphery which lack the skills, resources, and infrastructure to log on in the information era on the other. For instance, Italy has the lowest rate of Internet penetration among the developed countries reviewed in the study. Yet, Italy's rate is seven times as high as China's and nine times as high as Mexico's. The average Internet penetration rate in developed countries was 30 percent in 2001, ten times as high as that in the developing nations (ITU 2003; International Labor Office 2001). Therefore, it seems that without intervention, the global digital divide will take a long time to close.

By contrast to the progress in the developed world, the digital divide is widening and deepening within *developing countries*, in spite of efforts at bridging it (see also Kubicek 2004). It is widening in the sense that few people actively use the Internet, and deepening in the sense that the consequences for not being online may be greater when moving beyond a subsistence level. There is a stark contrast between those who are living in major urban centers with better education, higher income and closer connections to developed countries (both culturally and economically), and those who are even more on the periphery. Only about one-half of the world's Internet users are native English speakers, and only about three-quarters of all websites are in English (World Economic Forum, 2002).

**DIVERSE DIGITAL DIVIDES WITHIN COUNTRIES**

Across the eight countries in Table 2, socioeconomic status, gender, life stage, and geographic location significantly affect people's access to and use of the Internet.

*1) Socioeconomic status*: Internet users are more likely to be well-off and better educated than non-users in all eight countries surveyed. In general, the lower the Internet penetration rate in a country, the more elite the online population. While the socioeconomic divide is to some extent declining in the U.S. and Japan, the digital divide elsewhere seems to be increasing along the lines of income and education. This is because, although poorer and less-educated people are accessing the Internet, the rate of increased access is higher among the more affluent and better-educated segments of society in developing countries in Table 2.

*2) Gender:* Men are more likely than women both to access and to use the Internet. With the exception of the U.S., the share of female Internet users is lower than their share in the general population in each of the countries surveyed. Yet, this gender divide is narrowing, except in Germany and Italy in Table 2.

*3) Life stage:* In both developed and developing countries, the Internet penetration rate among younger people is substantially higher than that among older people. Students who can get online via school connections make up a big share of Internet users in developing countries. In general, the life-stage divide in Table 2 is declining in most countries, except Korea.

*4) Region:* Geographic location also affects access to and use of the Internet, with more affluent regions having higher Internet penetration rates than poorer ones. Except for Mexico, the overall trend across the eight countries in Table 2 shows a narrowing yet persistent digital divide in terms of geographic location. The digital divide has diverse manifestations along these fault lines.

**TABLE 2: SUMMARY OF INTERNET ACCESS IN THE EIGHT COUNTRIES**

| Country | 1) Socioeconomic Status | 2) Gender | 3) Life Stage | 4) Region |
|---|---|---|---|---|
| **U.S.** | Declining yet persistent | No appreciable divide | Declining yet persistent | Declining yet persistent |
| **U.K.** | Increasing | Declining yet persistent | Declining yet persistent | Declining yet persistent |
| **Germany** | Increasing | Increasing | Declining yet persistent | Declining |
| **Italy** | Large divide based on education. | Increasing | Younger use the Internet more | Northern Italy leads the south |
| **Japan** | Declining yet persistent | Declining yet persistent (reversed digital divide in mobile Internet) | Younger use the Internet more | Major cities have higher Internet diffusion than smaller cities. |
| **Korea (Rep.)** | Increasing | Persistent | Increasing | Declining. Seoul is still the most wired area in the country. |
| **China** | Huge yet slightly declining | Declining yet persistent | Slightly declining | Huge, yet slightly declining |
| **Mexico** | Huge | 42 percent of Internet users are women | Younger make up the majority of Internet users | Very uneven. Users are concentrated in the center, Guadalajara, and Monterrey |

For instance, the gender divide is especially wide in Germany and Italy. The proportions of female Internet users in both countries are lower than in all other countries reviewed in this analysis -- not only the developed ones, but also in China and Mexico, as shown in Table 1. Moreover, the intersection of socioeconomic status, gender, age, language and geographic location tend to

increase the digital divide in mutually reinforcing ways within, and between, countries. The largest gap is between better-educated, affluent, younger, English speaking men in developed cities and less-educated, poor, older, non-English speaking women in underdeveloped rural areas.

## THE DIFFUSION OF THE INTERNET IN INTERNATIONAL CONTEXT

The diffusion of the Internet (and its accompanying digital divides) has occurred at the intersection of both international and within-country differences in socioeconomic, technological and linguistic factors. Telecommunications policies, infrastructures and education are prerequisites for marginalized communities to participate in the information age. High costs, English language dominance, the lack of relevant content, and the lack of technological support are barriers for disadvantaged communities using computers and the Internet.

The diffusion of Internet use in developed countries may be slowing and even stalling. Currently, Internet penetration rates are not climbing in several of the developed countries with the most penetration. Compared to the explosive growth of Internet access and use in the past decade, this is a new phenomenon. It is too soon to tell if this is a true leveling-off of the penetration rate, or a short-term fluctuation as Internet use continues its climb to triumphant ubiquity.

With the proliferation of the Internet in developed countries, the digital divide between North American and developed countries elsewhere is narrowing. However, the digital divide remains substantial between developed and developing countries. The divide also remains substantial within almost all countries, developed as well as developing. In some countries, the digital divide is widening even as the number and percentage of Internet users increases. This happens when the newcomers to the Internet are demographically similar to those already online. The diffusion of the Internet is not merely a matter of computer technology, but has profound impacts on the continuation of social inequality. People, social groups and nations on the wrong side of the digital divide may be increasingly excluded from knowledge-based societies and economies.

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