The International Digital Divide and Its Local Subdivisions

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To many of us, the Internet is a critical work tool. Most people we know in I-O—academics, practitioners, and students alike—typically access the Internet multiple times a day to communicate, to research, to work, and to relax. The Internet is a rich, "free" resource—provided you can get online, there is no additional charge to access a good deal of useful news and information and to use popular tools such as e-mail. To that end, we tend to regard high-speed access to the Internet as not unlike a utility, like electricity or water: It's a big pipe that provides all the access we can use, and, like a utility, it is a basic necessity of modern life and work. It is not too far a stretch to say that if we were shut out of access to high-speed Internet while everyone else continued to have it, we could not work efficiently or collaborate effectively.

This idea forms the heart of the concept of the digital divide. The term was coined to denote international disparities in access to information and communication technologies (ICTs) in general, and to the Internet in particular (OECD, 2001). The logic goes like this: Wealthy nations have greater access to and make more extensive use of ICTs than developing nations. To the degree that access to ICTs is a necessity to do business, developing nations would be correspondingly shut out and suffer economically as a result, a notion that has led to considerable consternation among think tanks and international agencies. In recent years, however, it appears that the adoption rate of technology has increased considerably in developing countries, so the fear that they might be permanently left behind now appears overblown (Fink & Kenny, 2003).

International differences in access to the Internet have some relevance for I-O, at least for those involved in the implementation of global staffing systems. However, as we researched this article, we found that the broad-brush painting of some countries as technological "haves" and others as "have nots" is a gross oversimplification. The underlying state of Internet access and use within countries is much more variable and subtle. This latter finding holds considerable implications for I-O. Specifically, it poses important challenges

to assumptions that a given online hiring process is equally accessible to anyone who might be qualified to apply for a position. In the following section, we review available research across a number of variables that are associated with computer and Internet use to help evaluate this assumption.

The Digital Subdivisions

Access Speed and Quality

Speed and quality of access create further distinctions within the have/have not camps (Crews & Feinberg, 2002; Fillip, 2001). The standard distinction is made between broadband and dial-up Internet connections, though there are many technologies for each. Broadband is the faster and more expensive of the two, enabling users to access the richest, most graphic- and media-heavy content. Dial-up, which is cheaper and more prevalent, offers a slow connection that is not conducive to Web-surfing. As a result, broadband users are most likely to use the Internet more often and for a wider variety of activities. In contrast, households with dial-up access perform fewer activities online compared to those with broadband. A third group, who do not have computers at home and must access the Internet at work or use publicly available computers at libraries or community centers, lag behind both of these groups (National Telecommunications and Information Administration, 2004).

Location

For a number of reasons, rural areas have less of an Internet presence, proportionally speaking, than do urban areas. One reason is technological, as the two most popular broadband technologies do not favor rural deployment. Cable Internet connections, which use the same communication line as cable television, is less common in rural areas due to the expense of running the cables to relatively few homes. DSL, the other popular broadband technology, requires that users be located within a relatively short distance of a central office. As a result, rural Internet users in the United States overwhelmingly remain on slower dial-up connections (National Telecommunications and Information Administration, 2004). This finding is replicated in the European Union (CEC, 2005) and among other geographically spread nations surveyed by the Organization for Economic Cooperation and Development (OECD, 2001).

Age

The OECD's survey of computer use found that the most active users of the Internet were in the 35–45 year age group (OECD, 2001), though more recent data would help clarify whether this specific age range still remains dominant or whether the dominance is a function of the people who inhabited that age range at the time of the survey, and who now occupy the 40–50 year interval. Unsurprisingly, age is negatively correlated with level of Inter-

net skill (Hargittai, 2002). Young adults are increasingly confronted with the need to develop an adequate set of computer skills in order to compete for jobs. Older adults, however, often start work in jobs that, as technology changes and grows, add computer-interaction components. Organizations typically have little desire to invest time and money into educating older workers on computer skills (Perry, Simpson, NicDomhnaill, & Siegel 2003), leaving the workers in a sort of technology no-man's land.

Education and Socioeconomic Status

The higher the education level within a household, the more likely that household is to have access, largely through the effects of education on income (OECD, 2001). In fact, households with an annual income of US$50,000 are significantly more likely to have a computer than are lower income households (Crews & Feinberg, 2002; Looker & Thiessen, 2003). Higher income is associated with a greater tendency to have Internet access (OECD, 2001).

Race

Asian and White households are more likely to have computer access than African-American or Hispanic households (National Telecommunications and Information Administration, 2000). However, though African Americans were less likely to have computers at home or Internet access, regardless of socioeconomic status, they were more likely to know where to find publicly available computer facilities (Wilson, Wallin, & Reiser 2003).

Gender

The effects of gender are fairly straightforward. Ono and Zavodny (2003) and the OECD (2001) reported that women used the Internet less frequently than men. This finding was corroborated by Looker and Thiessen (2003) who also found that school-age females had lower self-reports of computer skills.

Implications for I-O

Applicant Mix

If the assumption can safely be made that the proportion of people searching for jobs and entering the hiring process online is roughly equivalent to the proportions of adult Internet users overall, the findings above bode poorly for efforts to spur a more representative mix of applicants. The findings outlined above suggest that the mix may suffer a reduced presence of people in rural areas, older workers, African Americans, Hispanics, and women. This effect is further exacerbated given that individuals living in rural areas are significantly less likely to apply for a job online anyway (Wilson et al., 2003).

Rich Hiring Processes

Individuals who lack routine, broadband access are further disadvantaged in the job application process. The advent of online testing has provided a boost for rich, high-bandwidth simulations and other assessment solutions requiring high-speed connections. Individuals with broadband access clearly have an advantage in this scenario. In order to help address these disadvantages, some companies have positioned kiosks in their corporate or retail locations where applicants can apply online. A comparison between applications completed in-house (at such kiosks) versus offsite is ripe with research questions related to differences in testing environment (noise and other distractions), familiarity with the interface and the hardware, and ergonomic challenges, to name a few.

Making Accommodations

Though broadband is making significant inroads, dial-up connections remain considerably more widespread among home users, at least according to the available data reviewed above. For many elements of the hiring process, dial-up just means that process information moves that much more slowly. However, as the debate continues to evolve around unproctored testing on the Internet, it seems likely that access to such critical selection processes will open up. If these are rich and bandwidth intensive, all manner of delivery nightmares are bound to crop up. Following are some considerations to help think through appropriate approaches:

- Put the test (or other component of assessment) on a CD-ROM that is only accessible using an encrypted key that can be easily passed through a dial-up connection;
- Enable participants to download all materials prior to starting the test and just pass responses back up the connection;
- Make the bandwidth requirements for all aspects of the test suitable for dial-up;
- Provide alternate, paper forms of the tests; or
- Provide alternate locations where the test can be taken online in a suitable environment.

A Caveat

It is important to remember that the Internet is still extremely new and dynamic, and has only existed in the popular consciousness since approximately 1995. Technologies are spawning quickly (witness the newfound popularity and success of voice over IP services such as Vonage and AT&T CallVantage), and the rollout of broadband access is moving at an incredible rate. As such, survey data on usage must be recognized as having an extremely short shelf life. We feel comfortable in the conclusions that we have drawn; however, we must warn that the relationships that we have char-

acterized above as the "digital subdivisions" may be completely different several years' hence. Indeed, that's what keeps technology so interesting.

Questions? Comments? Suggestions?

We welcome your feedback. Please contact us at hpayne@qwiz.com or jason.weiss@ddiworld.com.

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