Global Digital Divide

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INTRODUCTION

Despite rapidly falling costs of hardware, software and telecommunications services, a wide gap persists between rich and poor nations in terms of their capabilities of accessing, delivering, and exchanging information in digital forms (Carter and Grieco, 2000). According to a report published by the United Nations Conference on Trade and Development in 2006, a person in a high-income country was more than 22 times likely to use the Internet than someone in a low-income country (UNCTAD, 2006). The ratios were 29 times for mobile phones and 21 times for fixed phones.

An estimate suggested that more than 95% of e-commerce transactions in 2003 were industrialized countries (Tedeschi, 2003). Another estimate suggested that 99.9% of business-to-consumer e-commerce in 2003 took place in the developed regions of North America, Europe, and Asia Pacific (Computer Economics, 2000). This is a form of commercial divide (UN Chronicle, 2003). Another estimate suggests that 80 percent of the global trade in high technology products originates from Europe, the U.S., and Japan (Bowonder, 2001) and 92 % of the patents granted in the world are owned by the members of Organisation for Economic Co-operation and Development (Archibugi and Iammarino, 2000).

Whereas high-income countries have income 63 times that of low-income countries, the respective ratios are 97 for PCs, 133 for mobile phones, and over 2,100 for Internet hosts (Dholakia and Kshetri, 2003). While reliable data on e-commerce transactions are not available, the ratio is likely to be even higher for e-commerce transactions since e-commerce is virtually non-existent in many developing countries. The pattern indicates that the gap between developed and developing countries is wider for more recent technologies such as PC, mobile phone, and the Internet than for technologies which were introduced earlier.

This article provides an assessment of three computer networks that redefine the conventional definition of market value by allowing developing nations and communities (Brooks, 2001) reap the benefits of modern ICTs: Global Trade Point Network (GTPNet) and Little Intelligent Communities (LINCOS).

BACKGROUND

The "global digital divide" is the outcome of the complex interactions between information and communication technologies (ICT) and various economic, political, and social factors in the environment. The global digital divide arguably is one of the strongest non-tariff barriers to the world trade with potentially adverse social, economic and other consequences influencing a developing country's ability to take advantage of opportunities provided by modern ICTs (UN Chronicle, 2003). First, a large majority of potential users in developing countries are unable to afford a telephone line, a PC, and the telephone and Internet services provider (ISP) access charges. Whereas the cost of a PC is 5% of per capita GDP in high-income countries, it is as high as 289% in low-income countries (ITU, 2001). Furthermore, monthly Internet access charge as a proportion of per capita GDP in the world varies from 1.2% in the U.S. to 614% in Madagascar (UNDP, 2001).

Second, even if consumers are willing to pay for the connection of a telephone line, there is a big gap between demand and supply in developing countries. For instance, in 2001, 33 million people in the developing world were on the registered waiting lists for telephone connections, the average waiting periods being over 10 years in some countries.

A third problem is related to the lack of skills. A majority of potential users in developing countries lack English language and computer skills, prerequisites to the use of Internet. For instance, in 1998 about 85% of the text on the Internet was in English (Nunberg, 2000). This proportion was estimated at 80% in 1999. Another estimate suggested that about 70% of the world's Web sites were in English in 2003 (UN Chronicle (2003). Although a shift of Internet content to non-English languages is under way, some knowledge of English is still necessary to use the Internet as the bulk of software used in the Internet is in English (Hedley, 1999) and most of the human-computer interfaces favor English language users (Goodman, 1994).

A fourth problem is related to the lack of relevant content or the content divide (UN Chronicle, 2003). Although there are over 17 billion Web pages[1] in existence, the content remains largely geared to the needs of advanced nations. Most of the information available on the WWW is not relevant to

the needs of people in the developing world (UN Chronicl, 2003). Edejer (2000) observes the difficulty of finding reliable health related information relevant to developing countries online:

Few reports of health research from developing countries are published in journals indexed by Western services such as Medline. Western indexing services cover some 3,000 journals, of which 98% are from the developed world. The whole of Latin America accounted for 0.39% of the total number of articles referenced by Medline in 1996... Because only a small number of journals from developing countries are indexed by Medline, research from these countries is almost invisible.

CREATIVE WAYS TO BRIDGE THE DIGITAL DIVIDE: SOME EXAMPLES

The effectiveness of a network in bridging the global digital divide is thus a function of (1) the network's ability to identify priorities of digitally excluded populations, and (2) the network's ability to attack the major barriers to Internet and e-commerce adoption. In the following section, we examine three projects aimed to enable e-business systems for the global poor: DDD, GTPNet (Figure 1) and LINCOS (Figure 2).

Digital Divide Data (http://www.digitaldividedata.com/)

Digital Divide Data (DDD), a nonprofit organization, was started in 2001 by a group of North Americans. Canada's Jeremy Hockenstein and Jaeson Rosenfeld of the U.S. came up with the idea for DDD. When Hockenstein visited Cambodia in November, 2000, many Cambodians were in Internet cafes, but he realized that they were not using the technology to increase economic productivity (The Associated Press, 2001). Hockenstein felt that Cambodia should focus on attracting IT-related businesses, rather than factories that produce clothing or other manufacturing goods (Reed, 2001).

The two North Americans invested $25,000 of their own money and received a $25,000 grant. An Indian firm donated technical advice and software (Shih, 2003). In 2002, DDD received another $45,000 grant to support DDD's expansion[2].Its main office is located in Phnom Penh, Cambodia. Subsequently, DDD expanded its operations in Vietnam and Laos also (Fast Company, 2005).

DDD was started with 20 employees and the number grew to about 115 by 2003 (Tedeschi, 2003). By the spring of 2004, DDD had 140 people employed in the three countries (St. John, 2004). The employees digitize data from maps or documents and send them back to the country of origin (e.g., the U.S.). DDD's first project was a $50,000 contract to digitize 100 years of archives of the Harvard Crimson, Harvard University's student newspaper (Shih, 2003). Digital Divide Data generated $178,974 in 2003, a 67% increase over 2002, which covered the operating expenses, with some money left for further business development (St. John, 2004). In 2003, DDD workers earned $1,200 a year, which is four times the average Cambodian's income (Tedeschi, 2003).

Most of DDD's employees are women, polio and landmine victims, orphans and other categories of internally displaced people (Anderton, 2003). Whereas the wage offered at Phnom Penh garment factories exporting clothing to the U.S. was $11.25 for a 48-hour work week in 2003, DDD typists earned $16.25 a week working a 36-hour week (Shih 2003). DDD workers do data entry jobs for six hours a day and get English and computer training for another six hours (Helm and Kripalani, 2006). Thus, the work makes them employable in more challenging and better paying jobs. In addition, if employees set aside $20 per month for educational purposes, DDD matched with a $20 scholarship (St. John, 2004). The company awarded 80 such scholarships by the spring of 2004 (St. John, 2004).

In the beginning, DDD faced a number of problems. For instance, typists did not save their documents, which resulted in every new day's typing erasing the previous day's work, and workers were shy to ask questions and embarrassed to point out errors in their colleagues' works (Shih, 2003). Efficiency and quality were problems attributed to DDD's hiring practices which employed people with little IT experience and very limited English language skills. DDD utilizes a rigorous proofreading system and other quality-control processes such as specialized "double entry" software to minimize typographical errors (St.John, 2004). Accuracy rates gradually improved. Estimates suggest that U.S. companies can save 50-60% by outsourcing works to DDD (Anderton, 2003).

Global Trade Point Network (GTPNet) of the World Trade Point Federation (http://www.wtpfed.org/)

The United Nations Conference on Trade and Development (UNCTAD) launched the Global Trade Point Program in 1992 to facilitate the access to international markets for small and medium-sized enterprises (SMEs). The program was taken over by the World Trade Point Federation (WTPF) in November 2002. In mid-2003, GTPNet had a human network of 121 Trade Points in over 80 countries on the 5 continents[3].

In a trade point, participants in foreign trade transactions (e.g., customs authorities, foreign trade institutes, banks, chambers of commerce, freight forwarders, transport and