

Closing the Digital Divide: From Promise to Progress

A Special Focus on The Commonwealth*

Sarah Cleeland Knight and Catherine L. Mann
Georgetown University and Institute for International Economics

Introduction

Once the user-friendly Internet burst onto the scene in 1993, this information-rich network spread to more people more quickly than any other technological innovation in history. The ensuing hype about how the Internet would revolutionize individual, business, and government activities spurred global stock markets to unrealistic valuations—the so-called dot.com boom. It also spurred policymakers and aid officials to assess the consequences of a gap between those countries, communities, and individuals that use the Internet and those that do not—the so-called domestic and international digital divides.

Do the collapse of the dot.com bubble and the more sober assessment of the Internet as measured by global stock markets lessen the urgency for policymakers and aid officials to face the digital divides? No. First, networked information, communication, and commerce represent a fundamental change that creates new opportunities to broaden the market, increase choice, and enhance transparency and efficiency. In this way the Internet carries the potential for greater prosperity. But even more important, the policy environment in which the benefits of the Internet are maximized is the same environment that enhances overall development prospects. The Internet therefore can be seen a catalyst for broad-based and equitable development, rather than as a technological gimmick that widens the traditional disparities between the “haves” and “have nots.”

Each country faces unique challenges to achieve widespread diffusion and effective use of the Internet, but there are some commonalities. To maximize the positive effects, a multi-faceted approach is needed: from “top-down” policies that create an enabling environment, to “bottom-up” policies that encourage individuals, businesses, and policymakers themselves to grasp the opportunities. This vision and commitment to closing the digital divides is consistent with and complementary to narrowing more traditional development disparities.

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The many faces of the digital divide

The digital divide is both a global and a domestic phenomenon. Internationally, the divide tends to separate developed from developing countries, as Internet penetration is positively correlated with GDP per capita.¹ Although virtually all countries now have some level of Internet connectivity, for many least developed countries this connectivity amounts to little more than a few Internet service providers (ISPs) operating out of a capital city. In marked contrast stand those countries where a majority of the population is connected, and the Internet is used not just for email or Web surfing, but also for purchasing goods and services, collecting taxes, maintaining inventory systems, and updating production processes.

This international divide is mirrored within the British Commonwealth, as Commonwealth countries include some of the most connected and least connected countries in the world. For instance, Australia and Canada are two frontrunners, with over 50 percent of their adult populations using the Internet in 2000. Compare that figure to less than one percent for nearly 20 Commonwealth countries (the majority of which are in Africa and include Malawi, Lesotho, Uganda, and Zambia). Such disparities necessarily translate into differences in electronic commerce use and the ability of governments to interact with their populations via the Internet.

The picture for less connected Commonwealth countries is not totally grim: more people throughout the Commonwealth are using the Internet. In fact, annual growth in the number of Internet users in some of these least connected countries is taking place at rates well above 100 percent. One country that is seeing an explosion in use is Nigeria. Even though only 0.3 percent of the adult population is connected, the national telecom regulator has licensed over 50 Internet service providers (ISPs) – of which 20-30 are currently active – and there are now thousands of cybercafes run by small entrepreneurs. Among other activities, these offer voice-over Internet protocol (VOIP) services that allow customers to talk long-distance for a fraction of the price of a telephone call.²

Two factors that are critical for Internet growth are access to personal computers (PCs) and affordable telephone density. Even as other technologies exist to connect to the Internet (mobile phones and personal digital assistants) and are being developed (Simputer), the vast majority of the world's population still accesses the Internet by dialing up to an ISP through a PC modem and via a telephone landline. In terms of PC ownership, low- and middle-income Commonwealth countries fare far better than the world's low- and middle-income average – signifying that in this respect they are poised to narrow the digital divide – but in terms of telephone density, low-income Commonwealth countries are worse off than the world's low-income countries. Also important is the price of a local telephone call, which is quite high for certain

Commonwealth countries (without any apparent connection to the country's income level), including in the UK (measured as US \$.17 for three minutes of local call time), Seychelles (\$.14), Vanuatu (\$.14), and Uganda (\$.13).

Of course, traditional socioeconomic variables are also important for diffusion of the Internet. Positive correlations between the Human Development Index, GDP per capita, and Internet indicators point to synergies between a country's development status and its Internet activity. It is in looking at these socioeconomic variables that the international digital divide meets the domestic digital divide: Within each country, those individuals that use the Internet tend to have certain characteristics, such as higher levels of education. By examining the digital divide within countries, we can gain a more precise indication of what is needed to close the international digital divide.

For instance, is education more or less important than income when predicting who has access to the Internet? Is education important apart from basic skills such as literacy? What impacts do gender, age, geography, and race have? Does the importance of these variables change as time passes? And perhaps most important from a multilateral development perspective: are the same variables equally important for all countries, or is there a unique set of variables for each country? Answers to these questions can help policymakers and aid officials devise both cross-cutting and country-specific strategies to increase diffusion and usage of the Internet.

The challenge to answering these questions is one of data collection. While the domestic digital divide has been studied most closely in the United States, and other countries such as Canada, Australia, and New Zealand are beginning to publish similar (albeit less extensive) studies, for much of the developing world, including many countries in the Commonwealth, researchers have very little data (and often only anecdotes) about Internet use in the countries.

The US data demonstrate that the domestic digital divide can change over time, as some barriers to technology adoption and usage are more easily overcome than others. Initial studies showed that a digital divide in the US existed along gender, racial, geographic, education, income, and age lines. Since 2000, however, the gender and geographic divides have disappeared, and the racial divide is closing quickly. But an individual's age, education and income levels are still significant predictors of their Internet use, with education having an independent effect apart from income.³

Other reports suggest that the character of the domestic digital divides differs from country to country. For instance, the gender divide is more pronounced in India (where women account for less than 30% of Internet users) than South Africa (where Internet users are evenly divided between women and men).⁴ Basic infrastructure problems can cause geography to be more of a factor in certain countries, such as many countries in sub-Saharan Africa where regular power outages outside the capital cities interrupt

Internet connections.⁵ Finally, language can be a significant barrier even in Commonwealth countries with an English-speaking heritage. In Bangladesh, for example, the majority of the population speaks Bangla, and very little Internet content exists that individuals can use in their native language.⁶

Importantly, as use of the Internet and of information communication technologies (ICTs) more broadly has developed and matured, we understand better that access alone does not necessarily lead to effective use of these technologies. Specific barriers exist (such as concerns about privacy or lack of electronic means of payment) for certain individuals and businesses to move beyond email to transforming the nature of their activities in response to the new opportunities. As a result, it is important not only to have good data on the number of Internet users, but how, when, and for what purposes individuals, businesses, and governments use the Internet.

Given the dot.com collapse, why should we still worry about the digital divides?

Even as the hype about the Internet has quieted, use of the Internet is soaring and is infiltrating the activities of individuals, businesses, and governments. Evidence from early adopters, including the United States and Australia, show that the combination of ICT capital and the environment in which it can be used effectively raises economic potential, increases business opportunities, and reduces inflation.⁷ Competitiveness in international markets and a coveted position on the global value chain increasingly depend on using the Internet effectively. Multinational partners in key sectors such as electronics, processed foods, and consumer goods demand networked technology capital and internal process transformations.⁸ Further to traditional development goals, evidence indicates that reduced infant mortality and improved rural outcomes can come with effective use of networked ICTs.⁹ All told, however, whereas the potential gains for developing economies are large, they have only barely been realized.¹⁰

Numerous multinational efforts—from the United Nations to the World Bank to the G-8 to the Global Business Dialogue on E-commerce—have responded to the sense of urgency about the digital divide and are now leveraging attention as well to the traditional development divide and the relationship between the two. An important characteristic of many initiatives is the partnership between public and private sectors, which is key given the rapid pace of technological change and the enormity of the task of closing digital and development divides.¹¹ For its side, the private sector recognizes that the results of the partnerships-- policy reforms, entrepreneurship, and skill training-- will create the businesses and workers who will work and create new value in the Internet economy.

The Commonwealth is focusing its initiatives on bridging the digital divide through education, particularly distance education to reach rural areas and marginalized groups, as well as the provision of scholarships for students to obtain advanced degrees in computer science. Part of this effort is focused on enhancing cooperation among Commonwealth educational institutions, as well as outreach to the private sector.

What opportunities exist for closing the digital and development divide?

While rapid innovation and falling prices for technology products reduces the “entry cost” to gaining a foothold in using the Internet, broad-based and equitable benefits that come from actually investing in technology and effectively using it require supportive services infrastructures, openness to trade and investment, fiscal transparency and efficiency, and an environment that promotes flexibility in the way that resources are used within the economy. These “top-down” areas for policy reform are not new, but they are more urgent to reap the gains of the Internet and avoid widening the digital divides.

Why are traditional reforms more urgent now and how does the Internet change the mix? First, in a world where effective use of technology matters, the entire policy package matters more—stronger synergies among policies raise the cost of inaction. For example, the cost to the economy of a limited financial system is greater when transformation through innovation, education, and business entry and exit is key. Progress on creating a competitive and flexible domestic environment is undercut if foreign competition is limited. Poor fiscal management undermines the environment for business investment and growth.

Second, whereas technology cannot serve as a short-cut around reforms, it does open up new possibilities for policymakers to enable reforms. For example, new telecommunications technologies can enable better price and performance of this sector. One positive development that is taking place in many Commonwealth countries, including Malaysia, is the pricing of dial-up Internet access at rates far lower than voice telephone calls.¹² Telecom regulators in other Commonwealth countries, including several in Africa such as Malawi, Mauritius, Namibia, South Africa, Uganda, and Zimbabwe, have instituted local call charges for dial-up Internet access regardless of distance, which substantially reduced costs for individuals and businesses in rural areas to access the Internet.¹³ Cross-border provision of key services may be promoted by new technologies. Technology can significantly improve fiscal administration and free up resources for other government activities such as targeted efforts to close the domestic divide.

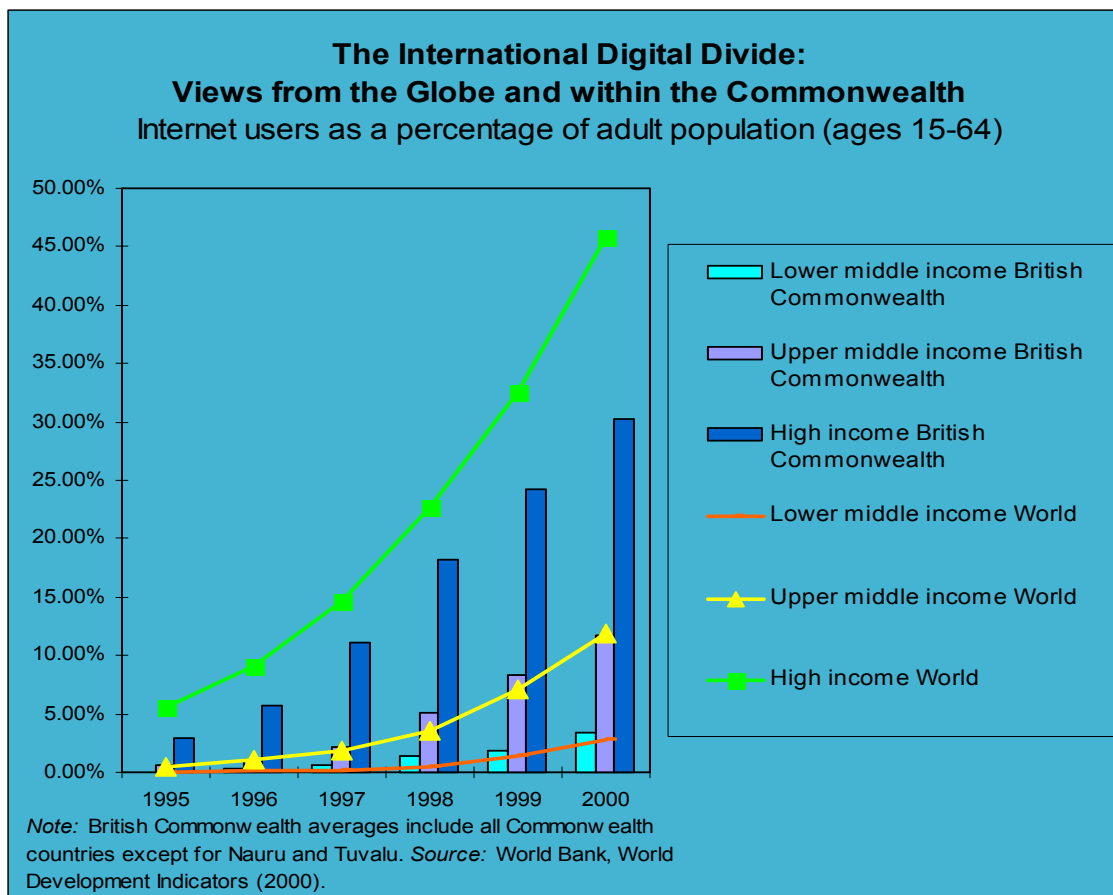
But to get the full benefits of the Internet, “bottom-up” policies to create an enabling environment, such as skill training for entrepreneurs, are also needed. Entrepreneurs are the leaders in the region, forum, or community. Their ideas of how to use effectively ICTs for the benefit of a local community will only come from the local community, when they have the skills to make their visions a reality.

Pilot projects build awareness and incubators can help businesses and individuals give shape to local vision and show success. Governments and NGOs can play a role. In Sri Lanka, for example, the private incubator conceptnursery.com is linked to the public Sri Lanka Institute of Information Technology. Importantly, government and multilateral

assistance in this process need to be light-handed in order to preserve private sector incentives and interests, to avoid creating projects that require ongoing subsidies, and to ensure diffusion of new ideas and best practices into the local economy.

Conclusion

The combination of “top-down” and “bottom-up” policies create the right policy environment to narrow the international and domestic *digital divides* – including those that exist among and within the Commonwealth countries – but it also alleviates traditional socioeconomic disparities – the *development divides*. The promise of the Internet is not as a cure-all but as a catalyst for making the policy reforms that improve transparency, promote efficiency, encourage transformation, and propel countries along the development path.



¹ Pearson's $r = .2652^{**}$. Correlation run for all countries, 1995-2000, between GDP per capita and Internet users. The source for this and all subsequent data cited in this article (unless otherwise noted) is World Bank, World Development Indicators, 2000. Data include all Commonwealth countries except for Nauru and Tuvalu.

² Mike Jensen, "The African Internet – A Status Report," updated July 2002. Available at <http://www3.wn.apc.org/africa/afstat.htm>.

³ U.S. Department of Commerce, "A Nation Online: How Americans Are Expanding Their Use of the Internet," February 2002; and U.S. General Accounting Office, "Characteristics and Choices of Internet Users," February 2001.

⁴ International Telecommunication Union, World Telecommunications Indicators, 2002.

⁵ Mike Jensen, *ibid*.

⁶ Mohd. Anwar Ali sarker, "Bridging the Digital Divide: Specific Plans for Bangladesh," February 2002, available at <http://www.aptsec.org/ict/APT-ICT.htm>.

⁷ Martin Brookes and Zaki Wahhaj (2000) "The Shocking Economic Effect of B2B," Goldman Sachs Economics Paper No. 37, 3 February. Robert Litan and Alice Rivlin (2001) Beyond the Dot-Coms: The Economic Promise of the Internet. Washington: The Brookings Institution. Gruen, David (2001) "Australia's Strong Productivity Growth: Will It Be Sustained?" Reserve Bank of Australia Bulletin, February.

⁸ See Chapter IV "Case Studies..." in Mann, Catherine L., Daniel H. Rosen and APEC Economic Committee (2001) The New Economy and APEC, reprinted by Institute for International Economics for the APEC Secretariat. See also Mann, Catherine L. (2002), "Electronic Commerce, Networked Readiness, and Trade Competitiveness" in Geoffrey Kirkman, Peter C. Cornelius, Jeffrey D.Sachs, and Klaus Schwab eds. Global Information Technology Report 2001/2002, World Economic Forum, Oxford University Press.

⁹ Human Development Report 2001, Making New Technologies Work for Human Development, Table 2.1 page 29 on technology as a source of mortality reduction; Eggleston, Karen, Robert Jensen, Richard Zechhauser, , "Information and Communications Technologies, Markets, and Economic Development," in Global Information Technology Report 2001-2002 Readiness for the Networked World Geoffrey S.

Kirkman, Peter K. Cornelius, Jeffrey D. Sachs, Klaus Schwab. World Economic Forum, New York: Oxford University Press.

¹⁰ UNCTAD (2001), E-commerce and Development Report 2001. UNCTAD Secretariat: Geneva for the potential gains. See Kraemer, Kenneth L. and Jason Dedrick, (2001), “Information Technology and Productivity: Results and Implications of Cross-Country Studies” and Matti Pohjola, (2001) Information Technology and Economic Growth: A Cross-Country Analysis,” both in Matti Pohjola ed. Information Technology and Development, Cambridge: Oxford University Press for failure to see much relationship between technology investment and growth. Also Carke, George RG. (2001) “How the Quality of Institutions Affect Technological Deepening in Developing Countries,” Working Paper 2063, Washington: World Bank, April 25.

¹¹ For example, the United Nations Task Force on ICT and Development is focusing on how the “3 C’s-- improved, increased, low-cost Connectivity; adequate, localized Content; and enhanced Human Capacity” help overcome barriers and reduce disparities. The World Bank’s various programs range from the *InfoDev* grant program that supports “innovative projects on the use of information and communication technologies (ICTs) for economic and social development” to the Development Gateway network of 41 locally-owned and managed public-private partnerships whose objective is to “facilitate innovative and effective use of the Internet and other information and communication technologies (ICTs) in the country to reduce poverty and promote sustainable development.”

The G-8 countries at the Okinawa Summit in June 2000 created the Digital Opportunity Task (DOT) Force to identify and implement means of bridging the digital divide. Launched at the same time, the Digital Opportunity Initiative (the public-private partnership of Accenture, the Markle Foundation, and the United Nations Development Program) is synthesizing developing country experiences to identify the roles that ICTs can play in supporting sustainable economic development and enhancing social equity.

The private sector is also involved, through both organizational groups as well as individual corporate efforts. For example the Global Business Dialogue on Electronic Commerce’s Digital Bridges Working Group and the World Economic Forum’s Digital Divide Initiative are contributing to the assessment of the digital divide, the role that market forces and regulatory policies play, as well as communicating what types of projects their members have underway. In concrete terms, Cisco Learning Academies and AOL Toolkits work to meet specific needs of individuals and businesses.

¹² Minges, Michael and Vanessa Gray, “Multimedia Malaysia: Internet Case Study,” International Telecommunication Union, March 2002. Available at <http://www.itu.int/ITU-D/ict/cs/malaysia/material/MYS%20CS.pdf>.

¹³ Mike Jensen, *ibid*.