I. Information and communication technology access: a powerful tool for human development

VINCENT BOULANIN

The benefits of ICT for human development

For international development organizations, increased access to information and communication technology (ICT)—encompassing computers, mobile phones, and telecommunication networks and services (including the Internet and digital services such as banking, e-learning, online news or social media)—offers considerable potential for human development.[1] The assumption is that ICT has the capacity to enable extensive socio-economic transformations that will improve various aspects of people's lives—from alleviating poverty to strengthening the democratic polity.[2] The expected benefits of ICT access include the following:

1. *Knowledge and education*. Access to ICT, and the Internet in particular, offers unprecedented opportunities to learn new skills and make informed choices.

2. *Productivity gain*. Access to ICT generates productivity gain that improves the performance of businesses and state organizations, as well as the delivery of health and education services, and thereby enhances people's socio-economic conditions and well-being.

3. *Employment*. Access to ICT creates jobs, directly or indirectly, as it generates a demand for ICT-related goods and services ranging from hardware

[1] 'Human development' was defined by the United Nations Development Programme (UNDP) as the process of widening people's choices and raising the level of their achieved well-being. According to the UNDP, the aim of development is 'not only to boost incomes, but also to maximize human choices—by enhancing human rights, freedoms, capabilities and opportunities by enabling people to lead long, healthy and creative lives'. UNDP, *Human Development Report 2015: Work for Human Development* (UNDP: New York, 2015), p. 1. The UNDP further describes human development as being about 'expanding the choice people have to lead lives that they value. And it is thus about much more than economic growth, which is only a means—if a very important one—of enlarging people's choices. Fundamental to enlarging these choices is building human capabilities—the range of things that people can do or be in life'. UNDP, *Human Development Report 2001: Making New Technologies Work for Human Development* (UNDP/Oxford University Press: New York, 2001), p. 9. See also UNDP, *Human Development Report 1990* (UNDP/Oxford University Press: New York, 1990), p. 1. The importance of information and communication technology (ICT) for development was stressed at the World Summit on the Information Society (WSIS), which took place in 2 phases: phase 1, Geneva, 10–12 Dec. 2003 and phase 2, Tunis, 16–18 Nov. 2005. See also World Bank Group, *ICT for Greater Development Impact: World Bank Group Strategy for Information and Communication Technology 2012–2015* (World Bank Group: 15 June 2012); and Dutta, S., Geiger, T. and Lanvin, B. (eds), *The Global Information Technology Report 2015: ICTs for Inclusive Growth*, World Economic Forum Insight Report (World Economic Forum: Geneva, 2015).

[2] Increased ICT access was a target of United Nations Millennium Development Goal 8, Global Partnership for Development, Target 8.F: In cooperation with the private sector, make available benefits of new technologies, especially information and communications.

retail, technical support and maintenance to various kinds of online-based services.

4. *Trade*. Access to ICT, in particular digital services such as mobile banking, provides unprecedented opportunities for people to conduct business, notably in remote rural areas.

5. *Empowerment*. Access to ICT, and to social media in particular, offers new capabilities and opportunities for people to engage socially and politically. These include accessing and verifying information, and also mobilizing around ideas, values and interests. The Arab Spring of 2011 is regularly used as an illustrative example of how ICT could serve the purposes of social inclusiveness and political participation. Reportedly, the Internet, mobile phones and social media were essential instruments to the mobilization of millions of people, who demonstrated in support of human rights, justice and democratic reform across the Middle East.[3]

It appears that currently there are no large-scale empirical studies that systematically and comprehensively assess the impact of ICT access for human development in developing countries. The discourse of international organizations on the positive transformative power of ICT has, however, been questioned by some scholars, who claim that access to ICT does not automatically result in socio-economic gains at the local level.[4] These scholars suggest that the aforementioned benefits of ICT access are largely conditioned by the context of particular underlying cognitive and socio-political factors. In some cases increased ICT access has not led to effective life improvements of the population; in others, it has had disruptive effects as it reinforced existing domination and inequality between categories of the population, and thereby generated tension or conflicts.[5]

Large-scale studies covering the impact of ICT for development have primarily attempted to consider the relationship between access to ICT and economic growth.[6] These studies generally find a correlation between increased access to ICT and economic development. A study by the McKinsey Global Institute on 13 major economies notably found that, on average, the Internet accounted for 3.4 per cent of their gross domestic product (GDP)

[3] This narrative has actually been contested in some instances. For a critical account of the role of ICT see Eriksson, M. et al., *Social Media and ICT during the Arab Spring*, Swedish Defence Research Agency (FOI) Report, FOI-R—3702—SE (FOI: Stockholm, July 2013); Stepanova, E., 'The role of information communication technologies in the "Arab Spring"', *Ponar Eurasia Policy Memo*, no. 159 (May 2011); and Wilson, M. and Corey K. E., 'The role of ICT in Arab Spring movements', *Network and Communication Studies*, vol. 26, no. 3–4 (2012), pp. 343–56.

[4] Avgerou, C., 'Discourses on ICT and development', *Information Technologies & International Development*, vol. 6, no. 3 (Fall 2010), p. 7.

[5] Avgerou (note 4), p. 8.

[6] Avgerou, C., 'The link between ICT and economic growth in the discourse of development', eds M. Korpela, R. Montealegre and A. Poulymenakou, *Organizational Information Systems in the Context of Globalization* (Kluwer: Dordrecht, 2003), pp. 373–86.

and the creation of 2.6 jobs for each job lost as a result of technology-related efficiencies.[7] The study also found that the Internet's total global contribution to GDP is larger than the GDP of Canada or Spain, and that global Internet-driven growth is outstripping the level of GDP growth in Brazil. In addition, a report by the World Bank found that in low- and middle-income countries every 10 per cent increase in broadband penetration accelerates economic growth by 1.38 per cent.[8]

Access to ICT: the persistence of a 'digital gap'

According to the International Telecommunication Union (ITU)—the United Nations agency dedicated to ICT—access to ICT is progressing rapidly on a global level, but remains unequal between developed countries and developing countries, regardless of the indicator used to measure access to and use of ICT.[9] The ITU's statistics illustrate that individuals using the Internet in 2015 represented just over 35 per cent of the total population in developing countries, and just over 82 per cent of the total population in developed countries (see table 10.1). The ITU estimates that only just under 33 per cent of the households in developing countries owned a computer in 2015, while in developed countries the figure reached just under 81 per cent. The gap is not as wide in terms of access to mobile phones. In 2015, just under 92 per cent of the total population in developing countries had a mobile phone subscription. In developed countries there were 1.2 mobile phone subscriptions per inhabitant. Mobile phones are the primary interface for accessing the Internet in developing countries. Only just over 7 per cent of the total population in developing countries had a fixed broadband subscription (in comparison, just over 39 per cent had an active mobile-broadband subscription).[10]

Although the digital gap between developed countries and developing countries persists, access to ICT has increased rapidly in developing countries. The share of individuals using the Internet within the total population in developing countries rose from just under 8 per cent in 2005 to just over 35 per cent in 2015, while ownership of a computer per household also increased over the same period from just under 15 per cent to just under

[7] Pélissié du Rauses, M. et al., *Internet Matters: The Net's Sweeping Impact on Growth, Jobs and Prosperity* (McKinsey Global Institute: May 2011).

[8] Kim, Y., Kelly, T. and Raja, S., *Building Broadband: Strategies and Policies for the Developing World* (World Bank: Washington, DC, 2010).

[9] Regional definitions as listed by the United Nations Statistics Division. International Telecommunication Union (ITU), 'Country classifications', [n.d.]. To monitor access to ICT, the ITU tracks subscriptions for fixed telephone lines and mobile phones as well as the number of personal computers in use and Internet users. The ITU's Statistics database is available at: <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>.

[10] ITU, Statistics database (note 9).

Table 10.1. Key indicators of ICT access in developed and developing countries (total and penetration rate) according to the International Telecommunication Union

	Millions		Per 100 inhabitants (%)	
	2005	2015	2005	2015
Individuals using the Internet				
Developed countries	616	1 035	50.9	82.2
Developing countries	408	2 139	7.8	35.3
World	1 024	3 174	15.8	43.4
Household with a computer				
Developed countries	. .	. .	55.5	80.8
Developing countries	. .	. .	14.6	32.9
World	. .	. .	26.2	45.4
Mobile-cellular telephone subscriptions				
Developed countries	992	1 517	82.1	120.6
Developing countries	1 213	5 568	22.9	91.8
World	2 205	7 085	33.9	96.8
Fixed broadband subscriptions				
Developed countries	148	365	12.3	29.0
Developing countries	71	429	1.3	7.1
World	220	794	3.4	10.8

. . = not available or not applicable.

Note: Developed and developing country classifications are based on the UN Statistics Division M49 standards for area codes, <http://www.itu.int/en/ITU-D/Statistics/Pages/definitions/regions.aspx>.

Source: International Telecommunication Union (ITU), Statistics database, <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>.

33 per cent. Of individuals using the Internet worldwide in 2015, 67 per cent were based in developing countries.[11]

The reduction of the 'digital gap' is, however, not uniform between regions. Africa is lagging behind all other regions in terms of access to ICT, regardless of the indicator. The other least connected regions were the Arab States and Asia–Pacific (see table 10.2).

There is also a 'digital gap' within developing countries. According to the United Nations Development Programme (UNDP), people with access to ICT, and the Internet in particular, commonly have a very specific profile. They are predominantly young males with a higher education and income, living in urban areas.[12] In Pakistan, for instance, 80 per cent of the population remain offline. Some areas in the western part of Pakistan still lack

[11] ITU, Statistics database (note 9).
[12] UNDP (2001) (note 1), p. 40; and UNDP (2015) (note 1), p. 59.

Table 10.2. Individuals using the Internet (Internet use) by region according to the International Telecommunication Union (total and penetration rate)

	Millions		Per 100 inhabitants (%)	
	2005	2015	2005	2015
Africa	17	193	2.4	20.7
Americas	316	651	35.9	66.0
Arab States	26	141	8.3	37.0
Asia–Pacific	344	1 506	9.4	36.9
CIS	29	170	10.3	59.9
Europe	277	487	46.3	77.6

CIS = Commonwealth of Independent States.

Source: International Telecommunication Union (ITU), Statistics database, <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>.

Internet access, partly due to underdevelopment or ongoing conflict.[13] When they have access to the Internet, remote areas generally lack broadband and rely instead on dial-up connections (i.e. Internet access via a standard telephone line) or early mobile Internet network technology. Most of the broadband subscriptions are concentrated in urban areas. A case study on Pakistan by Freedom House found that ICT access is limited to an exclusive class and that most women remain unable to use the Internet.[14] According to the study, ICT usage by girls and women is gradually increasing but is affected by online harassment, which tends to discourage women—particularly those under 30—from making greater use of the Internet.[15]

[13] Freedom House, *Freedom on the Net 2015*, Country Report: Pakistan (Freedom House: Washington, DC, Oct. 2015), p. 626.

[14] Freedom House (note 13), p. 637. See also Khan, A., 'Gender dimensions of the information communication technologies for development', ed. J. S. Pettersson, *Defining the 'D' in ICT4D: Graduate Papers on Development, Globalisation, and ICT* (University of Karlstad Press: Karlstad, 2011), pp. 94–103.

[15] Freedom House (note 13), p. 637.