

World Development Report: Digital Dividends

Main Messages

Digital technologies have spread rapidly in much of the world. Digital dividends—that is, the broader development benefits from using these technologies—have lagged behind. In many instances, digital technologies have boosted growth, expanded opportunities, and improved service delivery. Yet their aggregate impact has fallen short and is unevenly distributed. For digital technologies to benefit everyone everywhere requires closing the remaining digital divide, especially in internet access. But greater digital adoption will not be enough. To get the most out of the digital revolution, countries also need to work on the “analog complements”—by strengthening regulations that ensure competition among businesses, by adapting workers’ skills to the demands of the new economy, and by ensuring that institutions are accountable.

Digital technologies can be transformational

By promoting inclusion, efficiency, and innovation

Digital technologies—the internet, mobile phones, and all the other tools for collecting, storing, analyzing, and sharing information—have spread quickly. More households in developing countries own a mobile phone than have access to electricity or clean water; among those in the bottom fifth of the economic scale, nearly 70 percent own a mobile phone. The number of internet users has more than tripled in a decade—to an estimated 3.2 billion at the end of 2015. This has brought immediate private benefits: easier communication, more information sources, and new forms of leisure. Has it also generated large digital dividends in the form of faster growth, more jobs, and better services?

There are indeed many compelling examples of how information and communication technologies (ICTs) have benefited firms, people, and governments. They do so mostly by significantly reducing the costs of economic and social transactions: the costs of searching for and acquiring information, bargaining and making decisions, and monitoring and enforcing transactions. These technologies yield real benefits:

- *They expand the information base.* Many of the poor now have access to financial services because lenders can monitor creditworthiness using mobile phone records. Online traders in remote areas can connect to global markets. And digital identification gives more people access to public services. The most important benefit is greater inclusion.
- *They lower the information cost.* Activities become cheaper, faster, and more convenient as transaction costs fall. Firms can more easily coordinate production, workers can become more productive, and governments can provide services at lower cost. Businesses, people, and governments benefit from greater efficiency.
- *They create information goods.* Something special happens when processes and sometimes production are completely automated and the marginal transaction costs fall to almost zero, as with e-commerce platforms, digital music, and online news. More than inclusion and efficiency, services that rely on near-zero transaction costs to provide matchmaking or information are associated with the new economy, fostering greater innovation

Benefits often remain unrealized

Development impacts have fallen short

While there are many success stories, the aggregate impacts of digital technologies have so far been smaller than expected. Firms are more connected than ever before, but global productivity growth has slowed. Digital technologies are changing the world of work, but labor markets have become more polarized, and within-country inequality is on the rise in many countries. And while the internet facilitates broad discourse, some governance indicators such as the share of free and fair elections are worsening. These trends are worrying not because they are caused by the rapid spread of technologies, but because they have persisted in spite of them. Why? For two reasons (figure 1).

First, the digital divide is still large. Nearly 60 percent of the world's people are still offline and can't fully participate in the digital economy. Second, some of the benefits of digital technologies are offset by emerging risks. Public sector investments in these technologies, in the absence of accountable institutions, amplify the voice of elites, resulting in greater control. New jobs are being created, but the automation of mid-level jobs has contributed to a hollowing out of the labor market. And because the economics of the internet favor natural monopolies, the absence of a competitive business environment is resulting in more concentrated markets, benefiting incumbent firms. Not surprisingly, the better educated, the well connected, and the more capable have received most of the benefits—and the gains from the digital revolution have not been widely shared.

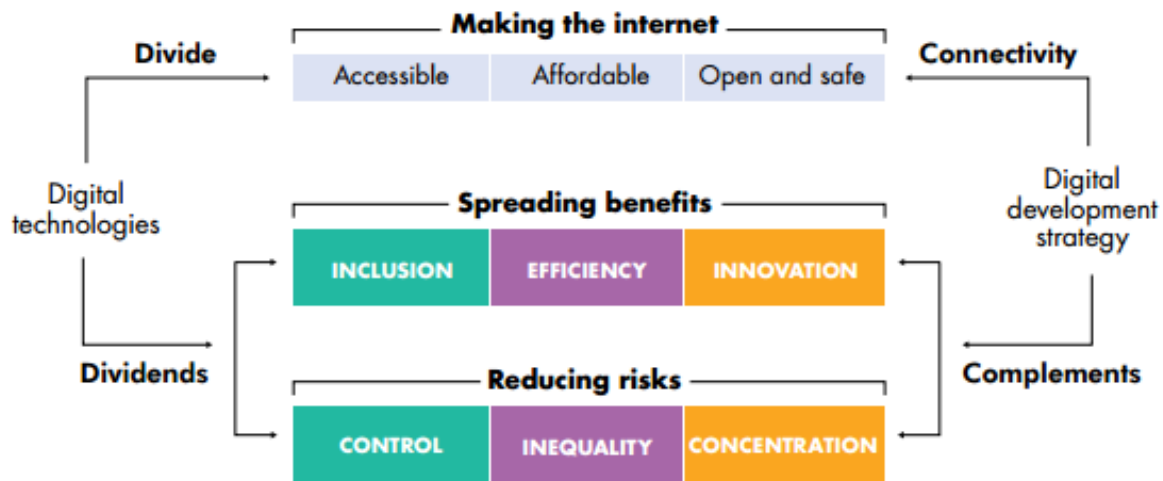
The digital divide is still wide

Both in access and in capability

Six billion people do not have high-speed broadband internet, almost four billion do not have any internet access, and nearly two billion do not have a mobile phone. Digital divides persist across income, age, geography, and gender. In Africa, the richest 60 percent are almost three times more likely to have internet access than the bottom 40 percent, and the young and urban have more than twice the access of older and rural citizens. Among those connected, digital capabilities vary greatly. In the European Union, three times more citizens use online services in the richest countries than in the poorest, with a similar gap between the rich and the poor within each country.

Making the internet universally accessible and affordable thus remains an urgent priority. Technology costs have dropped, but consumer access costs still vary greatly. In 2013, the price of typical mobile phone services in the most expensive country was 50 times that in the cheapest. For broadband, the charges vary a hundredfold. The main reason: policy failures, such as troubled privatization, excessive taxation, and monopoly control of international gateways. What works in overcoming the failures? Competitive telecom markets, public-private partnerships, and effective sector regulation. Reforms must start at the point the internet enters a country (the first mile) and continue when it passes through the country (the middle mile) to reach the end user (the last mile) and must also include broader policy issues such as managing spectrum and taxation of ICT products (the "invisible mile").

Figure 1 Why digital dividends are not spreading rapidly—and what can be done



Source: WDR 2016 team.

More difficult is keeping the internet open and safe. Content filtering and censorship impose economic costs and, as with concerns over online privacy and cybercrime, reduce the socially beneficial use of technologies. Must users trade privacy for greater convenience online? When are content restrictions justified, and what should be considered free speech online? How can personal information be kept private, while also mobilizing aggregate data for the common good? And which governance model for the global internet best ensures open and safe access for all? There are no simple answers, but the questions deserve a vigorous global debate.

The largest barriers are not in technology

The digital revolution brings benefits— but also risks

To maximize digital dividends requires better understanding of how technology interacts with other essential elements of development. When technology is applied to automate tasks without matching improvements in other factors—what the Report calls “analog complements”—broad-based gains will remain elusive.

- A country’s business environment shapes how firms adopt and use technology. Among non-ICT sectors, a poor business climate and vested interests often hold back digital adoption. Among online firms, the economics of the internet may enable natural monopolies to exploit their dominant position, hurting consumers and suppliers. And where online and offline firms compete, regulators struggle to safeguard consumer and worker interests in a world where the largest taxi company has no cars and the largest hospitality firm owns no real estate. This nexus between technology and regulation implies that governments need to ensure a business climate in which all firms can easily connect and compete.
- The shift of income from labor to capital and the fall in the share of mid-level jobs in many countries is at least in part due to the rising automation even of many white-collar jobs. When

workers have the skills to leverage technologies, they become more productive and their wages increase. When they do not, they compete with others for low-level jobs, pushing wages even lower. This is the latest stage in the race between technology and skills, in which education, social protections, and labor markets need to adapt to a world of work that demands different skills and much more flexibility

- Many governments have used digital technologies effectively for better information provision, easy-to-monitor services such as issuing business licenses, and running elections. But they have not solved two of the most difficult governance problems: how to improve service provider management and how to increase citizen voice. A significant gap remains between technology and institutions, and where public sector accountability is low, digital technologies often help control rather than empower citizens.

The digital revolution needs a strong analog foundation

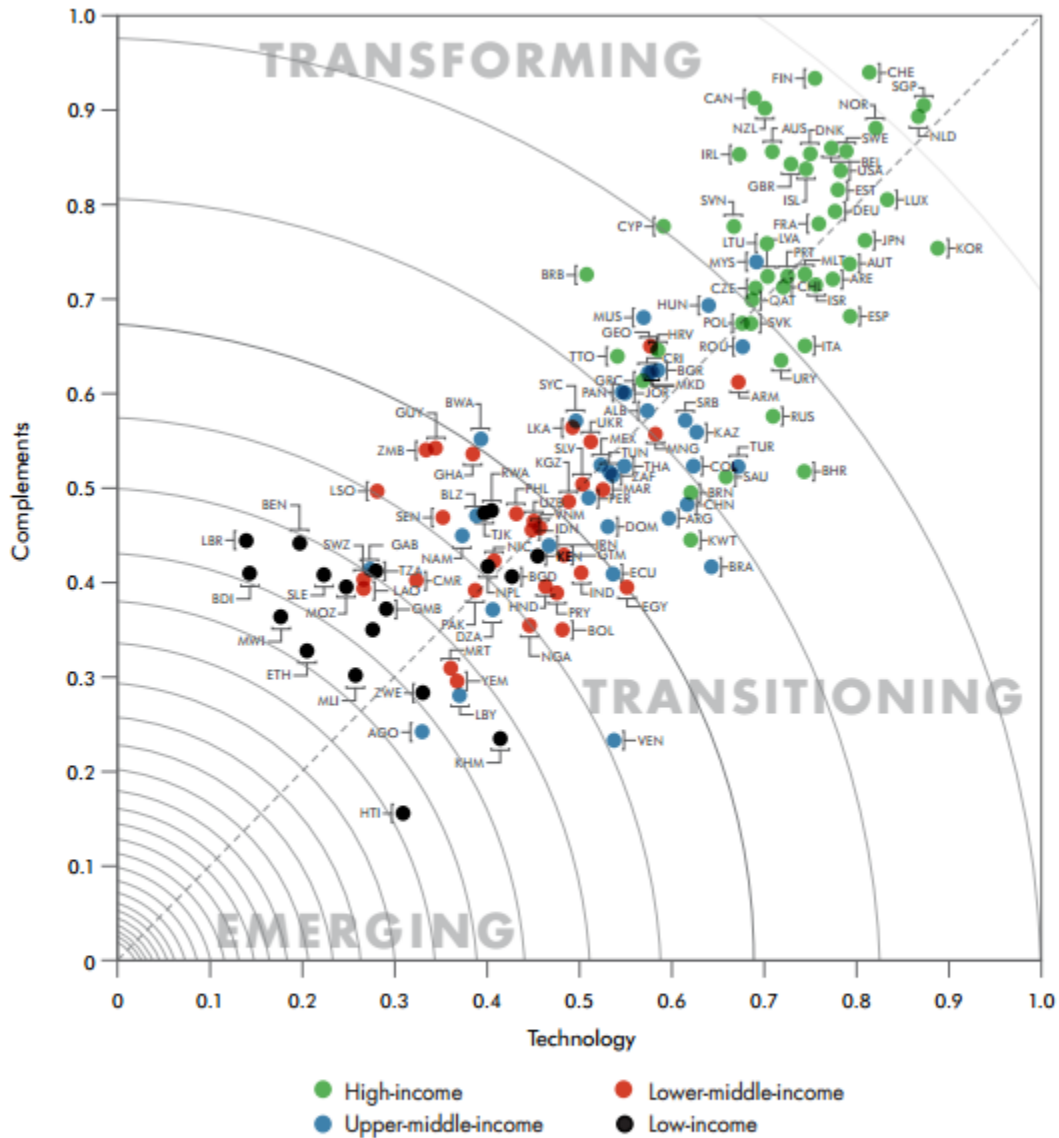
Regulations, skills, and institutions

Closing the remaining digital divide is necessary for taking full advantage of the opportunities that the internet and related technologies present. But it is not sufficient. Countries also need to strengthen important analog complements: regulations that allow firms to connect and compete; skills that technology augments rather than replaces; and institutions that are capable and accountable. Policy priorities change as countries advance through the digital transformation (figure 2):

- For countries with low internet access where the digital economy is still emerging, the task is to create the conditions for greater adoption and use. Reforms include removing such fundamental barriers as a lack of basic ICT and supporting infrastructure, excessive regulation of product markets, and high tariffs for digital goods—more than 25 percent in some countries. Education systems need to focus on basic literacy and numeracy skills, connect teachers to content, and promote adult literacy. And small steps to promote institutional change in the public sector include providing simple information services using mobile phones, strengthening monitoring, and leveraging nonstate provision.
- For countries transitioning to a digital economy with fairly high technology use, the task is to ensure that opportunities are open to all. For effective competition, countries should develop regulations that open protected sectors and strengthen enforcement. The skills agenda needs to focus on teaching advanced cognitive and socioemotional skills—preparing for careers rather than specific jobs—since fewer than half of today’s schoolchildren can expect to work in an occupation that exists today. And governments can introduce or strengthen such e-government tools as digital IDs, financial management systems, and e-services for citizens and businesses while also changing provider incentives and increasing transparency.
- For countries already transforming into a digital economy, the main task is to address the difficult problems that the internet causes. In the business sector, this involves tasks such as ensuring that digital platforms do not abuse their dominant position and promoting fair competition between the online and offline services. Education and training systems should put more emphasis on advanced ICT skills and—especially in rapidly aging societies— offer

more opportunities for lifelong learning. And where basic e-government functions are already effective, digital tools can facilitate closer collaboration between all parts of government, enable full integration of public and private services, and bring greater involvement of citizens in truly participatory policy making.

Figure 2 The quality of complements and technology rises with income



Source: WDR 2016 team. For more details see figure 5.3 in the full Report. Data at http://bit.do/WDR2016-Fig5_3.

Note: *Technology* is measured by the Digital Adoption Index (DAI). DAI is based on three sectoral subindexes covering businesses, people, and governments, with each subindex assigned an equal weight: $DAI (Economy) = DAI (Businesses) + DAI (People) + DAI (Governments)$. Each subindex is the simple average of several normalized indicators measuring the adoption rate for the relevant groups. Similarly, *Complements* is the average of three subindicators: starting a business; years of education adjusted for skills; and quality of institutions.