Digital Transformation in the Age of COVID-19

BUILDING RESILIENCE AND BRIDGING DIVIDES

DIGITAL ECONOMY OUTLOOK 2020 SUPPLEMENT

OECD

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When the COVID-19 pandemic broke out earlier this year, much of the world moved online, accelerating a digital transformation that has been underway for decades. Children with at-home Internet access began attending class remotely; many employees started working from home; and numerous firms adopted digital business models to maintain operations and preserve some revenue flows. Meanwhile, mobile applications were developed to help "track and trace" the development of the pandemic; and researchers employed artificial intelligence (AI) to learn more about the virus and accelerate the search for a vaccine. Internet traffic in some countries increased by up to 60% shortly after the outbreak (OECD, 2020a), underscoring the digital acceleration that the pandemic sparked.

While these activities demonstrate the tremendous potential of the digital transformation, the pandemic has also accentuated the gaps that remain. Although some digital divides have narrowed fast in recent years, others have not followed the same pace, leaving some behind in the COVID-induced digital acceleration. Moreover, the increased reliance on digital solutions has added new urgency to concerns around privacy and digital security.

This presents countries with a major challenge. It is unlikely that economies and societies will return to "pre-COVID" patterns; the crisis has vividly demonstrated the potential of digital technologies and some changes may now be too deep to reverse. Faced with a future where jobs, education, health, government services and even social interactions may be more dependent on digital technologies than ever before, failing to ensure widespread and trustworthy digital access and effective use risks deepening inequalities, and may hinder countries' efforts to emerge stronger from the pandemic.

The *OECD Digital Economy Outlook 2020* (OECD, 2020b) highlights the growing importance of digital technologies and communications infrastructures in our daily lives, and reveals that governments are increasingly putting digital strategies at the centre of their policy agendas. As countries work to respond to and recover from the COVID-19 crisis, now is the moment to ensure an inclusive digital transformation, with co-ordinated and comprehensive strategies that build resilience and bridge digital divides for a post-COVID era.

Widespread connectivity has allowed many businesses and individuals to adapt to the crisis …

Fast and reliable connectivity facilitates interactions between people, organisations and machines, and enables the use of connected devices in critical contexts, including health, manufacturing and transport. Connectivity has steadily improved over time; mobile broadband subscriptions in OECD countries increased from 32 subscriptions per 100 inhabitants in 2009 to nearly 113 subscriptions per 100 inhabitants in June 2019. At the same time, average mobile data usage quadrupled over the course of just four years, reaching 4.6 GB in 2018, and prices for high-usage mobile broadband plans decreased by about 60% from 2013 to 2019. Though rising at a slower pace, by June 2019 fibre accounted for 27% of all fixed broadband subscriptions in the OECD (Figure 1), and no less than 50% in nine OECD countries.

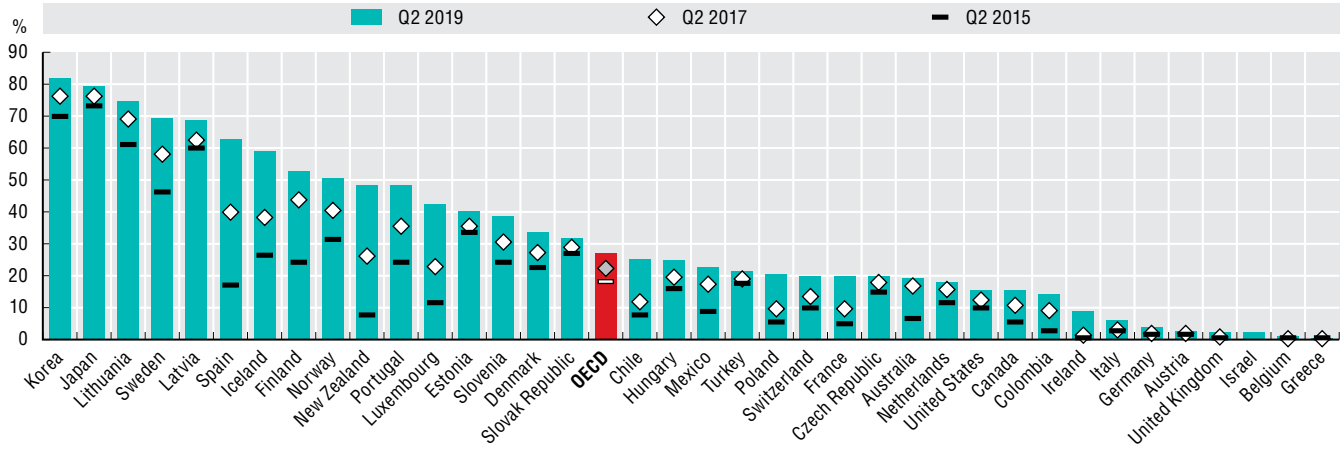
Box 1. The *OECD Digital Economy Outlook 2020*

The *OECD Digital Economy Outlook 2020* examines trends and analyses emerging opportunities and challenges in the digital economy. It highlights how OECD countries and partner economies are taking advantage of information and communication technologies (ICTs) and the Internet to meet their public policy objectives. Through comparative evidence, it informs policy makers of regulatory practices and policy options to help maximise the potential of the digital economy as a driver for innovation and inclusive growth.

This third edition of the *OECD Digital Economy Outlook* provides a holistic overview of converging trends, policy developments and data on both the supply and demand sides of the digital economy. It illustrates how the digital transformation is affecting economies and societies. Finally, it provides a special focus on how the COVID-19 pandemic is amplifying opportunities and challenges from the digital transformation.

Figure 1. Fibre broadband connections, June 2019

As a percentage of total fixed broadband subscriptions



Notes: Fibre subscriptions data include fibre-to-the-home, fibre-to-the-premises and fibre-to-the-building and exclude fibre-to-the-cabinet and fibre-to-the-node. In Australia, a new entity using a different methodology is collecting data reported for December 2018 and onwards. Figures reported from December 2018 comprise a series break and are incomparable with previous data for any broadband measures Australia reports to the OECD. The OECD definition of fibre differs from fibre classifications commonly used in Australian reporting. These figures treat connections known in Australia as "fibre-to-the-node" and "fibre-to-the-curb" as DSL connections, while "fibre-to-the-premises" and "fibre-to-the-basement" are treated as fibre connections. Data on technology type prior to Q2 2016 should be treated as indicative until further notice. Data for Israel are OECD estimates. Data for Switzerland and United States are preliminary.

Source: OECD (2020c), *Broadband Portal* (database), *www.oecd.org/sti/broadband/oecdbroadbandportal.htm* (accessed on 14 March 2020).

StatLink https://doi.org/10.1787/888934191331

This high level of connectivity enabled many businesses and households in the OECD to transition online after governments implemented national lockdowns to stem the initial spread of COVID-19. In France, for example, it allowed businesses to operate remotely following a national lockdown order in early 2020, and industries with the highest levels of teleworking were able to maintain business activity at 70% to 80% of normal levels.

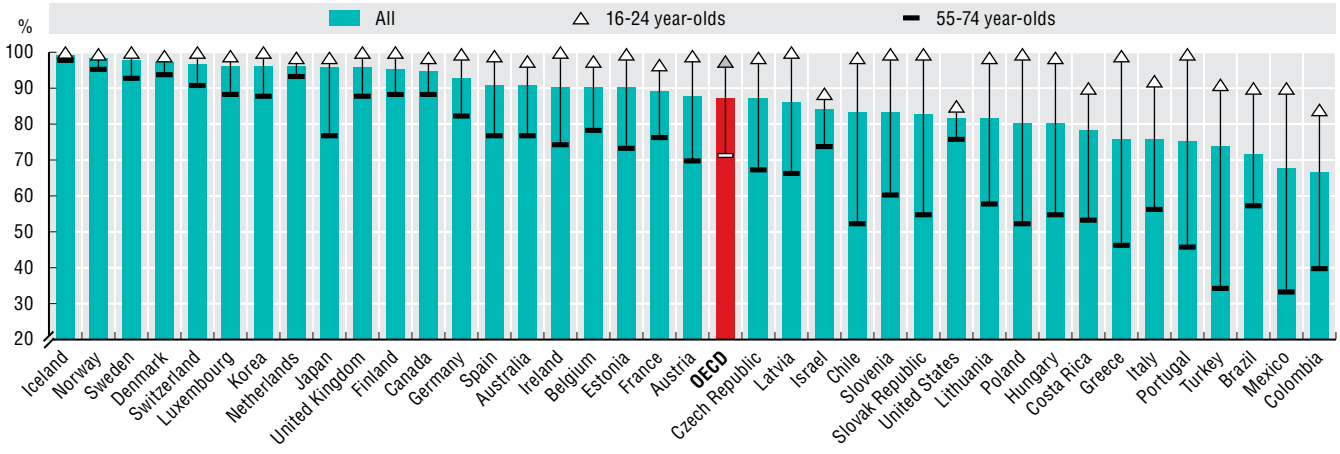
… but COVID-19 has raised the bar and may open new divides

With the swell of digitally enabled economic and social activity, COVID-19 has raised the stakes around digital access and engagement, reinforcing the fact that connectivity and use of digital technologies are dynamic goals. Although some online activity may decline as COVID-19 treatments begin to emerge and enable greater in-person interactions, it is likely to remain high in areas for which the pandemic has acted as a catalyst, including telework, e-commerce, e-health and e-payments. This maintains pressure on establishing high-quality connectivity as well as boosting the ability of people and firms to use increasingly sophisticated digital solutions.

As governments adjust their strategies in response, they should keep in mind that increased reliance on digitalisation could risk opening new digital divides and/or exacerbating those that have proved persistent over the years. Across OECD countries, for example, Internet users ranged from over 95% to less than 70% of the adult population in 2019 (Figure 2), and there are important demographic differences in Internet use. Although 58% of those aged 50-74 used the Internet daily in 2019 – up from only 30% in 2010 – this remains well below the average share of daily Internet users aged 16-24 (the so-called "digital natives"), which was close to 95%. There are also persistent skills gaps across demographic groups and countries, with people of higher skill or income levels making better use of the Internet and online activities, and being better able to access knowledge, job opportunities, and health and education services. Addressing the digital gender divide remains an important policy goal, as well: women more frequently experience job stress associated with frequent computer use at work (OECD, 2020d), and skills in high demand in digital intensive sectors are more frequently displayed by men (OECD, 2018).

Figure 2. Internet users by age, 2019

As a percentage of the population in each age group



Notes: Internet users are those having used the Internet in the last 3 months, except for Colombia and Japan (last 12 months) and the United States (any time). Data refer to 2019 except for Australia (the fiscal year ending 30 June 2017), Brazil, Canada, Colombia, Costa Rica, Japan and Mexico (2018) and Chile, Israel, Switzerland and the United States (2017). Data refer to age groups 16-74, 16-24 and 55-74 except for Israel (20-74 and 20-24), Japan (15-74 and 55-74). OECD data figures are based on a simple average of the available countries.

Source: OECD (2020e), *ICT Access and Usage by Households and Individuals Database*, *http://oe.cd/hhind* (accessed in April 2020).

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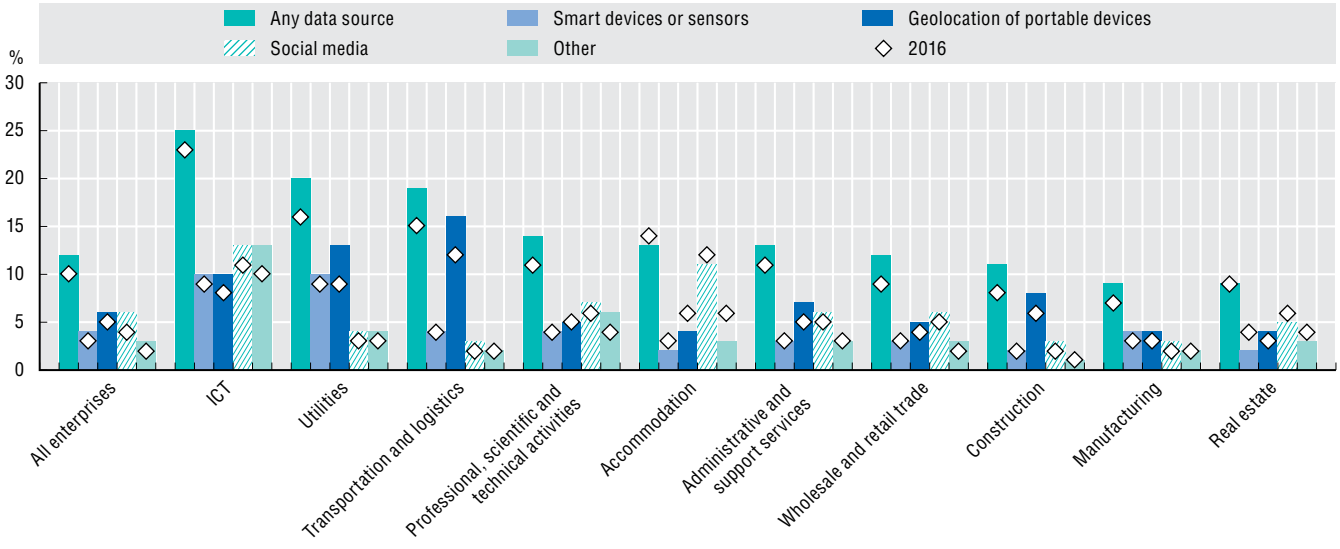
There are also stark differences in digital diffusion and uptake across businesses. Before the pandemic, e-commerce accounted for 19% of firms' turnover in the OECD (largely through business-to-business transactions), albeit with significant discrepancies between large firms (24%) and small firms (9%). And although the use of big data has increased over time, it remains highly variant across both countries and sectors. In 2018, more than 25% of all information and communication technology firms in the European Union used big data, compared to just 10% of all firms (Figure 3).

Figure 3. Business use of big data by data source and industry in the European Union, 2018

As a percentage of enterprises



Source: OECD based on Eurostat (2019), *Digital Economy and Society Statistics* (database), *http://ec.europa.eu/eurostat/web/digital-economy-and-society/data/comprehensive-database* (accessed in December 2019).

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If not addressed, such uneven diffusion may have important implications for firms' productivity performance as the pandemic continues to accelerate digitalisation, potentially widening the productivity gap between digital adopters and digital laggards. An important factor in this divide is the skills gaps among workers that may inhibit a wider range of firms from fully leveraging the potential of digital technologies. The business environment is also critical; the economic crisis triggered by the pandemic is challenging the creation and survival of start-ups (OECD, 2020f) – a key source of job growth and innovation and often keen digital adopters – and may contribute to increased market concentration that could dampen digital diffusion (OECD, 2020g).

Governments are increasingly putting the digital transformation at front and centre of policy agendas …

Many governments had strengthened their strategic approach to the digital transformation prior to the COVID-19 pandemic. As detailed in the *OECD Digital Economy Outlook 2020*, 34 OECD countries had put in place a national digital strategy co-ordinated at the highest level of government as of mid-2020, with an additional five OECD countries (Chile, Colombia, Japan, Italy and Turkey) reporting co-ordination at the prime minister/chancellery level since 2016.

Governments are also devoting more attention to emerging digital technologies such as AI, blockchain and 5G infrastructure, the latter of which is critical to support enhanced mobile broadband, Internet of Things (IoT) devices and AI applications. By mid-2020, 60 countries had a national AI strategy, and in the last three years several OECD countries – including Australia, Austria, Colombia, France, Germany, Korea, Spain, the United Kingdom and the United States – have issued national 5G strategies. Blockchain and quantum computing are attracting increasing policy attention, as well. Several countries have issued a blockchain strategy (Australia, People's Republic of China, Germany, India, Switzerland), while others (France, Italy) are developing one.

The virtuous circle between digital innovation and digital transformation is a fundamental driver of new business models and markets, and digital technologies hold the potential to strengthen the science and research systems that are proving so critical to countries' COVID-19 response and recovery. Yet countries are also recognising that the way in which these technologies are used can pose risks to human-centred values, as well as privacy, security and consumer protection. This gives added impetus to their efforts to set strategic directions, including at the international level, where the OECD AI Principles is just one example of like-minded countries collaborating towards trustworthy technologies.

… but must do more to build an inclusive digital future

This strategic trend is encouraging, but may not be enough to ensure a resilient and more inclusive digital future. The COVID-19 crisis reinforces the need for a co-ordinated, whole-of-government policy approach to digital transformation. This requires a balancing act that will not be the same for all countries, as cultural, social and economic factors influence the most suitable policy environment.

The OECD Going Digital Integrated Policy Framework (Figure 4) (OECD, 2020h) provides a way forward. Oriented around seven building blocks – access, use, innovation, trust, jobs, society and market openness – the framework brings together the policies that governments must consider in order to shape a common digital future that improves lives and boosts economic growth and well-being. These pillars, and the indicators and policy guidance that underpin them, have become even more critical to policy decisions in light of the COVID-19 crisis.

- **Access**: With lockdowns and social distancing measures forcing many businesses and schools online, the COVID-19 crisis has reinforced the importance of communications infrastructures and services, as well as access to and robust governance of data. Addressing rural/urban divides in access to broadband and underserved socio-economic groups, upgrading networks to the next evolution of fixed and wireless broadband, and enhancing access to and the sharing of data can help spur economic and social benefits.
- **Use**: As more people and firms "go digital" following the COVID-19 crisis, governments must work to ensure that all workers are equipped with the skills necessary to succeed in the digital economy and must do more to enhance use across small- and medium-sized enterprises (SMEs). Individuals with a well-rounded skill set in terms of literacy, numeracy and problem solving in technology-rich

environment can be expected to use digital tools more efficiently, carry out more sophisticated activities online and better adapt to digital transformations.

- **Innovation**: As a fundamental driver of digital transformation, digital innovation gives rise to new goods and services, creates opportunities for new business models and markets, and can drive efficiencies in the public sector and beyond. Boosting entrepreneurship, enabling further digital transformation of scientific research and incentivising investment in research and development can support a robust response to and recovery from the crisis.
- **Trust**: Given the greater reliance on digital tools following COVID-19, further attention is needed for ensuring trust in the digital environment, notably with respect to digital security, but also for privacy, data and consumer protection. Coronavirus-related scams and phishing campaigns rose as the pandemic broke out, as malicious actors took advantage of the massive switch to online activity. Most OECD countries have adopted whole-of-government digital security strategies, yet these strategies often lack an autonomous budget, evaluation tools and metrics, and are not integrated with the overall national digital plans.
- **Jobs**: The digital transformation has already begun to change organisations and markets, raising profound questions around what the future of work will look like. The outlook has grown even more uncertain amid the pandemic, which has sparked an increase in teleworking across many firms and raised doubts about the future of some jobs. As policy makers grapple with the economic fallout of the crisis, and as automation continues to spread across economies, they will need to take a fresh look at labour market structures and regulations, while working to ensure that displaced workers are not left behind.
- **Society**: As people spend more time online during the pandemic – whether for work, school, or social interaction – extra attention is needed to support their well-being. Governments should seize this opportunity to address the diverse range of social issues that the digital transformation raises, including questions around data-driven healthcare, disinformation and screen addiction, among many others.
- **Market openness**: The COVID-19 crisis has raised concerns around market consolidation, as start-ups and SMEs struggle to stay afloat, and as large technology companies exert growing influence over our digital lives. Governments need to consider the implications for business dynamics and inclusion as increasingly fewer companies mediate access to the online world.

Figure 4. OECD Going Digital Integrated Policy Framework

Source: OECD (2019b), *Going Digital: Shaping Policies, Improving Lives*, *https://doi.org/10.1787/9789264312012-en*.

Regardless of how the crisis and its aftermath unfold, there is no doubt that digital technologies will continue to transform the way we live and work. The emergence of 5G and the IoT will further fuel the production of data, adding urgency to ongoing policy discussions around data governance, privacy and security. These issues may become even more acute as firms weigh the costs and benefits of increasing automation – especially in manufacturing facilities – to increase resilience against future health crises and, in doing so, boost the importance of data flows between firms.

As governments re-evaluate existing digital policies in light of the COVID-19 crisis, they will face complex, inter-related issues that demand concerted international co-ordination, co-operation and dialogue. The *OECD Digital Economy Outlook 2020*, together with the Going Digital Toolkit (OECD, 2020i) and other OECD work on the digital transformation, can help inform their decisions on a wide range of policy areas. Through its evidence-based analysis, policy advice, and development of international standards in areas such as AI and privacy, the OECD will continue to actively work with countries to support their digital transformation and help them navigate the post-pandemic future.

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Digital Transformation in the Age of COVID-19

BUILDING RESILIENCE AND BRIDGING DIVIDES

The COVID-19 pandemic is amplifying opportunities and challenges from the digital transformation. Building on the analysis in the new *OECD Digital Economy Outlook 2020*, which examines trends and analyses emerging opportunities and policy options in the digital economy, this supplement discusses the steps required to build resilience and bridge digital divides in a post-COVID world.

The *OECD Digital Economy Outlook 2020* highlights how OECD countries and partner economies are taking advantage of information and communication technologies and the Internet to meet their public policy objectives. Through comparative evidence, it informs policy makers of regulatory practices and policy options to help maximise the potential of the digital economy as a driver for innovation and inclusive growth.

This publication is a contribution to the OECD Going Digital project which aims to provide policymakers with the tools they need to help their economies and societies prosper in an increasingly digital and data-driven world.

For more information, visit ***www.oecd.org/going-digital***

#GoingDigital

Consult the full publication on line at ***https://doi.org/10.1787/bb167041-en***.