

Executive summary

Governments are waking up to the opportunities and challenges brought by digital transformation

With its potential to galvanise economies, digital transformation is now high on the global agenda. OECD countries have set their objectives at the 2016 Cancún Ministerial on the Digital Economy. To maximise the benefits of digital transformation for innovation, growth and social prosperity, they are focusing efforts on the policy implications of the digital transformation, improving measurement, and developing an integrated policy framework for a whole-of-government approach. Despite good progress in the implementation of national digital strategies (NDSs) across the OECD co-ordination remains a major challenge. Only few countries have charged a high-level official or body dedicated to digital affairs with the co-ordination of their NDS.

Despite the ongoing effects of the crisis, information technology services continue to grow and spur a positive outlook

Since the global economic crisis, value added in the information and communication technology (ICT) sector as a whole has decreased in the OECD in line with total value added. Within the ICT sector, however, value added in telecommunication services and in computer and electronics manufacturing has decreased while it has increased in information technology (IT) services and remained constant in software publishing. These contrasting trends, which are being reflected in OECD ICT employment, are expected to continue in the coming years as the share of venture capital investment in ICTs – an indicator of business expectations – is back to its 2000 peak. The ICT sector remains a key driver of innovation, accounting for the largest share of OECD business expenditure on research and development and for over one-third of total patent applications worldwide.

Developing space, communication infrastructures and services are upgrading for a new surge of data

Growth in communication markets is driven by demand and, in many countries, by adapted regulatory frameworks that spur competition, innovation and investment. Telecommunication investments as a share of revenue have increased and operators further deploy fibre optics into their networks. For both fixed and mobile broadband, average prices have fallen and subscriptions increased, while mobile data usage grows exponentially in some countries. Convergence in telecommunication and broadcasting drives mergers and acquisitions and triggers revisions of regulatory frameworks and institutions. Broadband speeds of 1 Gigabit per second (Gbps) are no longer outliers and the first 10 Gbps commercial offers are being deployed in view of a new surge of data such as from connected and autonomous vehicles.

ICT usage keeps growing but remains unequally distributed across countries and among firms and individuals

Average ICT usage among individuals is at a new high but still unequally distributed across countries and social groups, in particular for more sophisticated mobile Internet usage such as online purchases or banking. Elderly and less educated are lagging most. Governments are focusing on vocational training, primary or secondary education, and target public expenditures on devices and connectivity in schools. Meanwhile, users are concerned about online security and privacy, both of which are key barriers for Internet usage, including amid the highly educated. Among firms, small and medium-sized enterprises (SMEs) are lagging behind in basic and more advanced ICT usage. Usage of cloud computing and big data analysis is growing fast, albeit from a small base. Robots are increasingly used in production, but concentrated in a few countries so far.

Digital innovation and new business models are driving transformation, including of jobs and trade

Data-driven innovation, new business models, and digital applications are changing the workings of science, governments, cities, and sectors like health and agriculture. Policies to support digital innovation tend to focus on innovation networks, access to finance, and data (re-)use, but pay less attention to investment in ICTs, knowledge-based capital and data analytics. The effects of the digital transformation manifest in job destruction and creation in different sectors, the emergence of new forms of work, and a reshaping trade landscape, in particular for services. In response, many governments are reviewing labour laws and trade agreements.

Effective use of ICTs in life and for work requires more specialist and generic skills in ICTs complemented by better foundational skills

Effective use of ICTs in life and for work requires adequate skills. “IT staff” ranks second among the top ten jobs that employers have difficulties filling, notably in services, although shortages of ICT specialist skills seem limited to only a few countries, at least in Europe. Meanwhile, generic ICT skills are insufficient among many workers using ICTs every day, as are ICT foundational skills, such as problem solving and communication, which are increasingly necessary to adapt to changing jobs. A few countries are implementing programmes to match current ICT training priorities with expected skills needs, but only few have adopted a comprehensive ICT skills strategy to date.

Concerns about digital security and privacy restrain ICT adoption and business opportunities

With growing intensity of ICT use, businesses and individuals face greater digital security and privacy risks. SMEs in particular need to introduce or improve digital security risk management practices. Many countries respond with national digital security strategies, but few have a national privacy strategy so far. Meanwhile, privacy risks add to consumers’ concerns about online fraud, redress mechanisms, and online product quality, which limit trust and might slow business-to-consumer e-commerce growth. Most consumer protection policies still focus on trust in e-commerce generally and are only beginning to grapple with new issues emerging in peer platform markets.

The promises of artificial intelligence are accompanied by important policy and ethical questions

Artificial intelligence (AI) is going mainstream, enabling machines to perform human-like cognitive functions. Enhanced by machine learning, big data and cloud computing, algorithms can identify increasingly complex patterns in large data sets and already outperform humans in some cognitive functions. While promising gains in efficiency and productivity, AI may amplify existing policy challenges and raise new policy and ethical questions, for example in relation to its potential effects on the future of work and skills development or its implications for oversight and transparency, responsibility, liability, as well as safety and security.

The potential of blockchain hinges on grappling with technical hurdles and policy challenges

Blockchain enables transactions without any trusted party. Bitcoin, for example, a virtual currency based on blockchain, operates independently of any central bank or any other financial institution. Beyond bitcoin, blockchain applications create opportunities in many areas, including in the financial and public sectors, education, and the Internet of Things, by reducing transaction costs, facilitating accountability, and enabling guaranteed execution through smart contracts. Much of this potential still hinges on grappling with technical hurdles and policy challenges such as how to enforce law in the absence of any intermediary or how and to whom to impute legal liability for torts caused by blockchain-based systems.



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