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Digital development in Sub-Saharan Africa

In the past decade, the use of information and communication technologies (ICT), especially of mobile communications, has increased exponentially in Sub-Saharan Africa. It has become common to talk of a 'mobile revolution' sweeping the region, with mobile phone use spreading quickly, geographically and socially, accompanied by novel applications, impacting on other areas of economic life. The internet still has to catch up with the mobile sector, but there are encouraging signs that it will do so. Building the necessary connection infrastructure has considerably advanced, and digital devices are becoming more affordable. However, general literacy and digital skills across the population need to be improved in order for African countries to fully reap the benefits of the digitalisation, and this is a more difficult challenge to tackle.

ICT is having an impact on many sectors of the economy, from access to basic amenities like electricity supply and clean water, to financial transactions. It has been a major driver of economic growth and an important contributor to public budgets. A number of digital applications adapted to specific local conditions have been developed in sectors such as agriculture, education, health, and democratic governance. The potential uses of ICT in such sectors promise a transformative impact on economic, social and political life, spurring development in numerous areas. If current trends continue, more and more people will see their life touched by these new technologies. It is also important to remain aware of the potential limitations of the new technologies, which cannot fully substitute, for example, for other major drivers of economic growth, or for real teachers and schools. Digital communications can be used to improve governance, but may also stoke conflict and violence in the absence of appropriate checks. ICT tools can increase public transparency, but cannot on their own eliminate corruption.

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Background

Sub-Saharan Africa (SSA) has undergone a veritable mobile revolution in the past decade. It is a region with an often inexistent or unreliable electricity supply, with very few landlines and limited postal services, and where an important share of the population lives in remote and rural areas. Mobile communications have seen a huge boom there, with the region having one of the highest growth rates in the world. Mobile phones spread quickly, not only addressing the huge demand for communication, but also substituting for products like bank accounts, newspapers, entertainment, medical advice, training, to which many people previously had no access. Today they are transforming people's lives and the way businesses are conducted, generating important spill-over effects in other sectors. The spread of the internet has still to catch up with the mobile sector, as its expansion was slowed by factors like unaffordability of computers and smart devices, insufficient internet and electricity connections, and a lack of general literacy and digital skills in the population. As these hindrances are gradually overcome, the internet will be able to reach its full transformative and developmental impact. However, it should not be expected that ICT alone will fully substitute for other drivers of economic growth like industrialisation, economic diversification and a competitive services sector.

Information and communications technologies (ICT) will play an even more significant role in achieving future sustainable development goals, in particular those established for the post-2015 development agenda. The Sustainable Development Goals adopted by the UN General Assembly on 25 September 2015 recommend significantly increasing access to ICT, and striving to provide universal and affordable access to the internet in least developed countries by 2020. They also propose enhancing the use of information and communications technology to promote the empowerment of women.

## Mobile and internet penetration in Sub-Saharan Africa[1]

Currently there are 386 million unique subscribers to mobile telephony services in SSA, representing a penetration rate of 41%. However, given the large share of very young people in SSA's population, mobile usage among persons older than 15 years is actually much higher – around 70%. The percentage of the population having access to a mobile phone is already bigger than the share of population having access to electricity or sanitation facilities.

The African continent as a whole ranks last among the regions of the world in terms of internet access and usage, with the penetration of fixed broadband subscriptions as low as 0.5%. Most internet access takes place on mobile phones. Across SSA, by mid-2015, 200 million individuals were accessing the internet through mobile devices, a figure that is expected to double by 2020. However, 60% of the population will still lack access to internet by that date. The rapid adoption of mobile internet will be encouraged by the extension of mobile broadband connections (from 24% of the connection base in 2015 to 57% in 2020) and by falling prices for mobile devices; in 2014, 47% of Sub-Saharan users considered mobile internet still too expensive, but prices have been decreasing, with some new products being targeted specifically at the region. As a result, smart phone use is expecting to increase considerably from 160 million users in 2015 to 540 million in 2020. Making mobile services more affordable and extending coverage to rural areas, where a significant share of the population lives, are challenges that still need to be tackled.

Substantial progress has already been achieved on linking the continent to the rest of the world and on interconnecting major African cities and countries via internet. Today, submarine data cables run along the entire African coast, providing multiple intercontinental connections. Completion of a number of undersea cable projects has not only increased the speed and quality of internet access, but has also lowered the costs of broadband use, thus removing a major hindrance to internet access. However, large swathes of land are still unconnected, especially in the Sahel region and in central Africa, and much needs to be done in terms of improving connectivity in rural areas in general, as internet use is disproportionately high in large cities.

Differences in ICT penetration among African countries are also significant. While, in some countries, use of mobile phones and the internet is around or not much below the world average (i.e. 97 mobile connections per 100 inhabitants, and 43% of people using the internet, respectively), in other countries rates are very low, as the two figures show.

Figure 1 – Mobile telephone subscriptions per 100 inhabitants
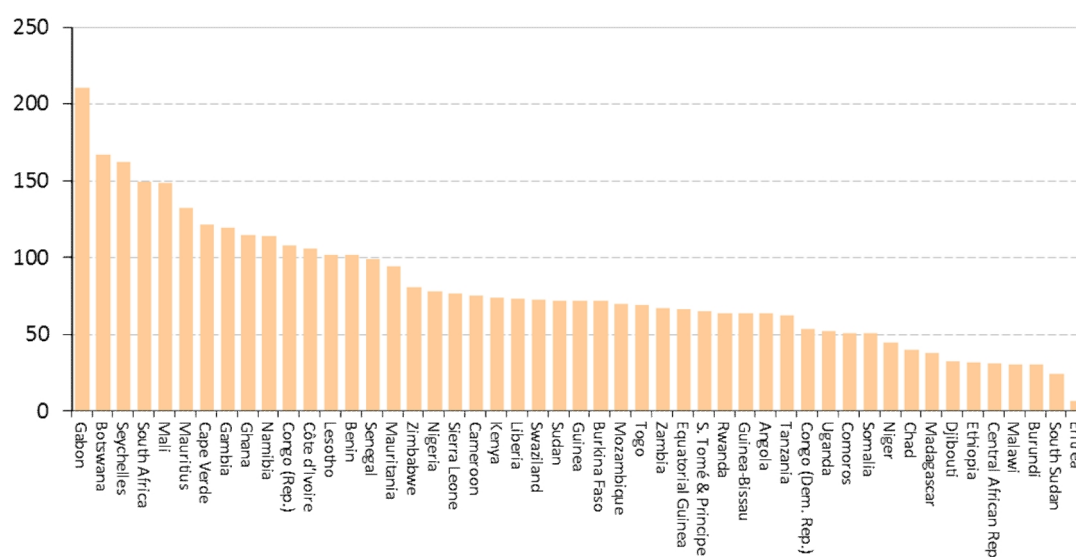
Source: International Telecommunications Union.

Figure 2 – Percentage of individuals using the internet
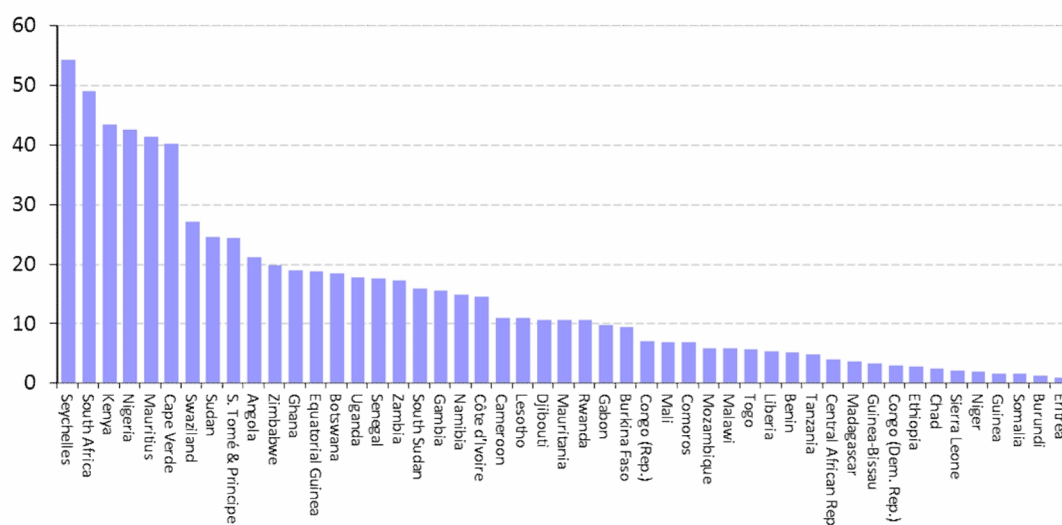
Source: International Telecommunications Union.

Role of ICT in economic development

ICT has been a major driver of economic growth in SSA in the past decade, with the mobile sector being considered by far the most important contributor. According to GSMA (the GSM Association), in 2014, the broader mobile ecosystem generated 5.7% of GDP in Sub-Saharan Africa or, in absolute terms, over US$100 billion in economic value. The mobile ecosystem supported 4.4 million jobs in the region in 2014, contributing around US$15 billion in general taxes to public budgets. The sector still has huge untapped potential. To give one example, in Kenya, one of the leading nations for ICT uptake in SSA, the ICT contribution to GDP was estimated at 12% in 2014. ICT's contribution to SSA's economy also includes the transformative impact on other sectors. It facilitates communication – often across borders – and access to information, increases productivity and efficiency, and simplifies operations for SMEs. It can also generate innovative products, responding to unfulfilled needs in the society.

A major obstacle to digital development is the lack of general and specialised ICT skills in the population. This is considered a challenge which is difficult to solve.[2] The number of university graduates is generally low in SSA and digital skills are insufficiently widely taught in schools; a large share of the adult population lacks basic literacy skills. However, with an appropriate eco-system making optimal use of available resources, digital innovation can flourish. Unlike in many other sectors, in which the region is merely a consumer of products made elsewhere, digital development in SSA is increasingly home grown; the region's mobile subscribers use many services and applications that are provided and developed locally. Moreover, there are already a number of innovation incubators in several SSA countries focused on the development of mobile and web applications. Most of these are informal spaces where people can meet to exchange ideas, to work together or to find partners in order to fund and develop projects on a commercial scale. Centres like Co-creation hub in Nigeria and the iHub innovation in Nairobi, Kenya, provided the template spurring Africa's innovation hub movement. Often developed through cooperation among telecommunications operators, government and foreign donors, digital applications for the mobile market in particular have started demonstrating their transformative impact on diverse sectors of the economy.

ICT and sectoral developments

Electricity and water supply
Access to electricity is vital for the development of ICT in SSA, a region of the world well known for its limited access to energy. Only 24% of the population has access to electricity, and even for those connected the supply is often unreliable. Mobile technology uptake is not necessarily prevented by this situation. On the contrary, it can help tackle the issue. Several systems (e.g. Off Grid in Tanzania, M-Kopa in Kenya) apply the mobile phone business model to the provision of electric power to off-grid homes. They provide small solar panels for powering lamps and recharging phones in exchange for the regular payment of a small sum over the phone. By facilitating the same payment model and by enabling the monitoring of small installations, mobile technology also has an impact on improving clean water supply.

M-banking
The sector in which mobile technology has been most successful in developing a novel service is that of financial transactions. In SSA, few people have a bank account and this gap has been filled by mobile transactions. The first system to spur this development

was M-Pesa – a system for payments over mobile phones, born out of an initiative of the UK's Department for International Development (DFID) and developed by the local mobile service provider, Safaricom. Launched in 2007, it has since been introduced in many countries in and outside Africa, including in the EU. In Kenya, it is used by more than two thirds of the adult population for transferring money, making payments in stores, paying bills, and making online purchases. Similar mobile money services have proliferated in SSA and in other developing countries with varying degrees of success, but SSA remains the region in which mobile money is most widely spread.

Agriculture

As the largest sector of the African economy, agriculture can benefit hugely from new digital applications. M-Farm, a text message service from Kenya, and Esoko, a mobile communication platform, launched in Ghana in 2004 and now in use in several African countries, inform farmers about market prices and link them with potential buyers. Digital platforms can also be used to provide practical information about growing methods, market trends, weather information, and warnings and advice about plant and animal diseases. Mobile phones can be used for financial transactions related to agriculture, for example for transferring government subsidies to farmers, and for many other purposes such as traceability of livestock (Namibia) and improving the efficiency of irrigation systems (Niger).

Education

Access to ICT remains deficient in many parts of SSA: many schools are still not connected to the electricity grid and digital devices are unaffordable to many children. However, even when digital devices are made available to schools they are not always used effectively. Equipping schools with IT material has been an objective pursued by the NEPAD e-schools Initiative, a continent-wide initiative launched in 2003 with the aim of equipping school pupils with adequate digital skills. The first school tablet designed specifically for Africa was launched in 2014. However, providing digital equipment to schools should not be at the cost of neglecting general literacy skills, teachers' pay and competences, or conditions in schools, as has sometimes happened in the region. Teachers themselves are often not sufficiently skilled in using digital technologies.

ICT can provide a solution to the problem of shortage of teachers in schools, through use of digital devices and platforms, and by overcoming physical distance. Digital devices, including mobile phones, can be attractive educational tools for children, and provide them with free access to information sources and pedagogical materials. There is however an important gender gap in access to mobile phones between boys and girls. Programmes based on internet and mobile phones can be very effective in fighting illiteracy, including among adults (e.g. Unesco's PAJEF Project).

Established by the World Bank in 1997, the African Virtual University (AVU) is a success story for ICT use in university education. It is a pan-African intergovernmental organisation, whose charter has been signed by 19 African states. The university links students with African universities and foreign institutions, helping them get degrees online from these partner universities in ICT, maths and sciences. From 2016, it will offer its own degrees. AUV also provides materials for teachers to be used in schools.

Health

Mobile technology has the potential to profoundly transform the way healthcare is delivered in SSA, a region with an acute shortage of medical staff, but m-health is still

far from reaching its full impact. Numerous projects have been developed, providing health information for pregnant women, advice to youth on sexuality, helping identify counterfeit medicine, helping with self-diagnosis and the search for a physician, and even managing the fight against Ebola. ICT can also provide an e-learning and communication platform for medical staff. The RAFT project implemented in French-speaking countries in west Africa represents the largest telemedicine project in Africa, facilitating distance diagnosis and e-learning.

Democratic governance

Digital communications, especially social media and news platforms, can help citizens mobilise and coordinate their protest actions, but can also help improve governance, by enabling access to public information online, increasing transparency and accountability, and promoting better interaction between citizens and government. Governments could also obtain significant efficiency gains from digitisation if they provide their services to citizens online.

ICT can be used in various ways to improve governance. Technology can raise awareness about social issues: Ushahidi, a geo-mapping open source application, was developed to establish the location of violence committed after the Kenyan 2007 presidential elections and continues to be widely used in many countries to track social issues. Digital platforms can also improve communication between citizens and government: in Kenya a digital platform provides citizens with a channel to interact with their government. Digital communication channels can help safely report cases of corruption: Kenya has also implemented the Business Keeper Monitoring System, which enables whistle-blowers to report cases of corruption anonymously online.

Digital technology can also empower weaker social groups, enabling them to speak out. Giving young people a voice is the objective of the UReport – a free text-message-based platform, created by Unicef and first implemented in Uganda and extended to other African countries.

Digital communications can play an important role in elections. Digital channels are increasingly used in elections by candidates to reach voters. They also contribute to guaranteeing transparency, improving organisation and reducing electoral fraud. In the SSA region, many citizens are not registered at birth and do not have identification cards. For this reason, more and more SSA countries use an electronic system of voter registration based on biometric identification. The system should contribute to restoring faith in the fairness of the electoral process, but it still needs technical improvement. In November 2014, Namibia organised the first electronic elections in Africa without paper ballots, which were considered a success.

Like traditional media, ICT can also be misused to manipulate and incite violence. This happened in Kenya in 2007, where text messages and internet blogs distributed during the disputed presidential elections campaign were considered responsible for causing the deaths of over a thousand people and the displacement of many more in the post-electoral violence. In an effort to prevent such abuses, the Kenyan government introduced a text service to report hate speech before the 2010 referendum on a new constitution and the 2013 elections; the main telecom operator in the country, Safaricom, adopted its own guidelines to restrict the spread of bulk hate messages.

Digital tools can also improve the efficiency of government operations, for example tax collection, which is very low in SSA. Digital tools can help manage the public accounting

system in order to improve efficiency, transparency and fiscal discipline: integrated financial management information systems have been implemented in several African countries, but such a system could not prevent large scale misuse of public money in Malawi, for example.

Sub-Saharan African-EU cooperation in the ICT area

Cooperation in ICT between the EU and the African continent takes place under the framework of the Joint Africa-EU Strategy adopted in 2007. According to this, cooperation in the ICT area should aim at eliminating the digital divide, by providing wide access to telephony and internet services, and at supporting regulatory harmonisation and investment in broadband infrastructure. The creation of the Pan-African Programme for the 2014-2020 period provides the EU with the necessary financial means to achieve the objectives of the Strategy. The Multiannual Indicative Programme 2014-2017 for the first phase of the Pan-African Programme mentions development of ICT infrastructures among its objectives. EU actions in this sector will also aim at the harmonisation of e-communications policies and regulatory frameworks between Africa and the EU, including cyber-security and the governance of the internet.

The EU Africa Infrastructure Trust Fund (EU-AITF), created in 2007, promotes infrastructure projects in Sub-Saharan Africa with a regional impact, including in the digital sector. The fund blends loans from European financial development institutions and the African Development Bank with grants from European partners, including the European Development Fund and 12 EU Member States, with the aim of leveraging significant private funding. The ICT sector had received grants amounting to €18.7 million by 2013.

Some examples of recent EU support in the ICT area are: The AfricaConnect project, rolled out between 2011 and 2015, aimed at building high-capacity internet networks for research and education in southern and eastern Africa. Some 80% of its €14.75m budget was provided by the European Development Fund. In the framework of the Horizon 2020 programme – the EU framework programme for research and innovation – the ICT-39-2015 component running between October 2014 and April 2015 provided funding to low and middle income countries in Sub-Saharan Africa for launching collaborative research projects, with the aim of developing ICT products adapted to national conditions and characteristics.

Main references

Lions go digital: The Internet's transformative potential in Africa, McKinsey & Company, November 2013

Mobile connectivity in Africa has already arrived, Borko Handjiski, Brookings, March 2015

Sub-Saharan Africa, Ericsson Mobility Report Appendix, Ericsson, June 2014

The Mobile Economy – Sub-Saharan Africa 2015, GSMA, 2015

The Synergies between Mobile, Energy and Water Access: Africa, GSMA, 2014

The Transformational Use of Information and Communication Technologies in Africa, World Bank and Africa Development Bank, 2012

The World in 2015: ICT Facts and Figures, International Telecommunications Union, October 2015

Transforming Africa. The promise of broadband, International Telecommunication Union, March 2014

[1] Unless otherwise specified, the data in this chapter are from the GSMA report, The Mobile Economy – Sub-Saharan Africa 2015.

[2] According to a WB&ADB report (2012), p. 31, 'The challenge to raise digital or ICT literacy is likely to be a greater challenge than deploying infrastructure and creating robust and innovative markets for private operators to thrive in.' A McKinsey report (2013) takes a similar stance, awarding specialised ICT skills the lowest score among five factors enabling the internet impact on the economy, on a sample of 14 countries representing 90% of African GDP.

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