Great expectations

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Can digital communications (laptops, broadband and mobiles) help lift millions of Africans out of poverty in the near future? Technological optimists believe so. Technology's supporters assert that if the right tools are provided, then Africa's human resources will begin to create far more wealth and attract greater foreign investment. This article, written by senior A-level and IBO examiner Simon Oakes, takes a critical look at such claims.

African nations have frequently endured conflict born from power struggles linked with the ownership of natural resources. Past troubles in Sierra Leone, for instance, were related to the opposing efforts of different groups of people determined to take possession of the lucrative diamond trade. West Africa is especially rich in natural resources (the soils contain gold, ores and gems; the valuable crops that grow there include cocoa, coffee and timber). Yet, this is also a region with a history of great unrest and bloodshed, where vying factions have tried to wrest control of the sources of natural wealth. It has even been suggested that the entire continent suffers from a "resource curse".

In many African nations, agriculture, minerals and oil extraction can contribute 80% or more of government income. This has sometimes led to political leaders neglecting national education and infrastructure improvements. Maintenance of cosy relationships with foreign mining and oil companies has instead become the main political priority. It is easy to see why corruption has flourished in states like Democratic Republic of Congo.

One way to break this cycle is to nurture alternate sectors of industry that are based on extracting high value from human resources, rather than natural ones. Thus, the skills and creativity of local people becomes the means for generating wealth, rather than the geology or plant life. But for this vision to succeed, reliable online connectivity is needed for Africa's states and citizens. Local people must be equipped with the necessary tools and skills to help them develop the capabilities required for service sector work (especially high-value work in media or creative industries).

Delivering the right tools for the job

Providing Africa with the connectivity it needs - both for education as well as new forms of commerce - has become a much more realisable goal in recent years with the advent of digital technologies. Notably, the recent arrival of the 10,625-mile Seacom cable in 2009 drastically lowered the cost of high-speed internet services and telephone calls for Kenya and East Africa. Previously, this region was dependent on expensive and often unreliable satellite links, denying local people affordable internet access.

The £360 million Seacom cable, which is owned mainly by African investors, links South Africa, Tanzania, Kenya, Uganda and Mozambique with London, Marseille and Mumbai. In Kenya, the cheaper bandwidth has boosted the nascent call-centre industry. With major internet hubs now in place in Dar es Salaam, Johannesburg, Maputo, Marseille, Mombasa and Mtunzini, African countries are finally independently communicating with one another through a single seamless network (without internet traffic being transferred via Europe). Although the majority of internet content consumed in Africa is still non-African (it flows instead from European and North American sites such as Google, Yahoo and Facebook into Africa), a rapid increase in African content is predicted by 2015.

Providing connectivity is only part of the puzzle though. People need a platform from which to access the internet. They also require training in how to use computer software. The "One Laptop Per Child" (OLPC) initiative has helped address this shortfall by distributing laptops directly to schools. This Miami-based NGO, which aims "to empower the world's poorest children through education" is part-funded by TNCs such as Google and News Corp. Roughly 1.6 million children and teachers in Latin America are currently part of an OLPC project. In Africa, the total now stands at 500,000, including a significant venture in Ethiopia.

Simultaneously, the spread of mobile services is making "great strides towards connecting the previously unconnected" according to the International Telecommunications Union (ITU), an agency of the UN. In countries where the lack of any effective communications infrastructure has traditionally been one of the biggest obstacles to economic growth, mobile technology is helping change lives for the better, leading many commentators to view it as the most important digital technology for low-income nations (Table 1).

The mobile phone currently plays a leading role in creating "switched-on" places across the planet, including many of the world's poorest societies. There are around 4.8 billion mobile subscriptions worldwide: roughly seven per ten people alive today. Africa currently shows the fastest growth rate for mobile uptake of any continent. Market penetration there has soared from just one in 50 people in 2000 to 41% in 2011. Cheap mobiles are increasingly affordable to all but the world's very poorest subsistence and slum communities, with tangible benefits:

- Fishermen and farmers throughout Africa and Asia increasingly use mobiles to check market prices before selling produce, in order to check they are being offered a fair price by commodity traders.
- Greater mobile uptake can support democracy: political parties finally have a means of getting their message across to more people. Many political commentators argued that ICT and social networks such as Facebook played an important role toppling autocratic regimes in north Africa during the 2011 "Arab Spring".
- Money is directly transferred between phone users, helping businesses to grow. Many millions of Kenyans regularly use Vodafone's M-Pesa money transfer service.

Figure 1 Diverging views on technology and society

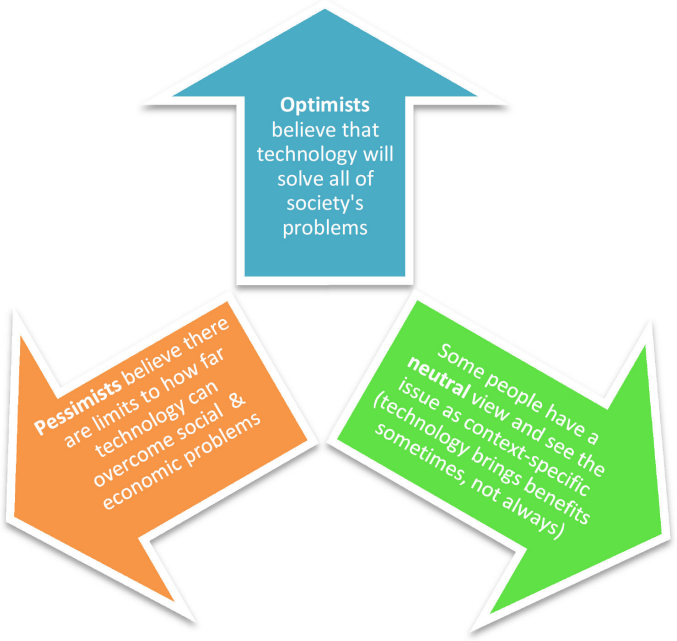

Table 1 Changing people's lives with ICT

Uganda's Community Knowledge Workers	Ghana's SOFTtribe
About 400 so-called Community Knowledge Workers (CKWs) in Uganda are using Android phones loaded with an open-source data-collection application that feeds data into a system called Salesforce. The phones are loaded with information about when and how to plant crops, care for farm animals and find markets for products. They are powered by batteries that can be recharged in a variety of ways, including solar and bicycle. The CKWs now serve as experts in their villages. Other people turn to them with questions about crops or farm animals. This new interaction is helping farmers optimise their crop-planting activities based on weather information. They can also research the real value of their crops at markets, helping them to negotiate better prices. Online veterinary advice helps them provide better care for livestock.	Herman Chinery-Hesse is the chairman of Ghana's SOFTtribe company, one of the leading software houses in Africa. Described by the BBC as "Africa's Bill Gates". Chinery-Hesse believes that technology is vital if the value of African human resources is to be unblocked: "If Africa misses the global IT boat, there may never again be an opportunity for rapid wealth creation on the continent." His company, Black Star Line, is an e-commerce company. Recently, SOFTtribe helped the chief of a Ghanan village to realise a clever business plan. The village has four huts that have been modernised and are now marketed online to newly-married Europeans who are in search of an "eco-honeymoon" destination. Thanks to SOFTtribe, the village now earns up to £1000 a week - an "unthinkable" amount of money previously.

Images of the Kibera slum in Nairobi

Using mobiles and broadband in Kenya

Nairobi, the capital city of Kenya, is a two-speed society. In 2011, a BBC press release described the Kibera slum as a place where "the highest paid job... is cleaning out the public pit latrine toilets". Only 1.6% of Kenya's 41 million people can afford to spend more than $10 a day, one of the lowest figures for the continent. Rising fuel and food prices threaten to push many people deeper into poverty and the Kenyan economy is highly dependent on the $1.9 billion in remittances sent home by those who are working abroad.

Kenya is a place that desperately needs new investment and higher-paid employment opportunities. Can digital connectivity help deliver these? Optimists are hopeful that change is coming quickly. There are now 22 million mobile users in Kenya, up from 8 million in 2006. Over half the country's population have "leapfrogged" from having no means of communication whatsoever to owning mobile phones, around a quarter of them with internet access. Mobile coverage is available across 87% of Kenya and texts cost one fifth of what they did five years ago.

With the arrival of the new international fibre broadband cables, there is widespread speculation that English-speaking Nairobi could, in a short time, become a global call centre and media hub. Often-cited success stories include:

- Kencall, a company that has been in business since 2006 and now provides call centre services for a wide variety of companies in the UK and USA, including Orange. The new international cables have provided them with unlimited bandwidth, the price of which has fallen by 90% (allowing them to offer cheaper services, thereby competing favourably on a cost footing with established out-sourcing countries like India). The company has a 250-seat call centre in Nairobi.
- The Nairobi iHub, founded by Erik Hersman, is a modern version of the 1990s European telecottage ideal (a shared space where ICT facilities have been made available to local people). iHub is described as "an open space for the technologists, investors and tech companies in the area". Young entrepreneurs, web and mobile phone programmers and designers are encouraged to use the iHub's super-fast broadband connection and

Charging a mobile phone with pedal power

WiFi services. It is freely available for use by "any tech person in Nairobi" (the only requirement is that members should be actively carving out a career as a programmer, web designer or mobile application developer). Crucially, it is also intended as a space where ICT entrepreneurs and start-up firms can meet with potential funding partners.

Optimism or pessimism?

Not everyone shares the view that digital technology can provide an immanent solution for all of Africa's problems (Figure 1). Some observers are less optimistic, a view that is shared by Kenya's satirical cartoonist Gado (Figure 2).

Amongst the challenges that lie ahead include:

- **Energy security** In many areas, intermittent electricity supplies continue to prejudice the usefulness of broadband. Businesses and schools struggle to deliver the services they want to when beset by power cuts. It is essential that government and energy companies improve supplies and can guarantee reliability - but this is not a readily achievable goal for many states, especially where there has been a history of corruption.
- **Social performance** According to some research, although ICT facilities have been delivered to schools, they are not always used and may therefore not represent value for money. This can be described as poor "social performance" (meaning that society does not interact with the technology in a particularly beneficial way). For instance, at one school in Malawi, new computers were left in their wrappers and not turned on for over one year after they were delivered.
- **Literacy levels** In many countries, literacy needs to be improved before some people can use computers or even text messaging. Prioritising the delivery of technology, rather than greater numbers of teachers, could be "putting the cart before the horse" (according to one estimate, it would $2.4 billion to provide every Ethiopian child with a laptop, whereas a complete set of school textbooks for every child would cost merely £38 million. This is just 3% of the projected laptop cost).

Despite these reservations, however, there is plenty of evidence showing progress has been made in delivering new ICT-led work opportunities to Kenya and other countries. Although ICT currently contributes only a small proportion of the GDP of most African nations, investment and innovation in technology has begun to increase the value of human resources across the continent.

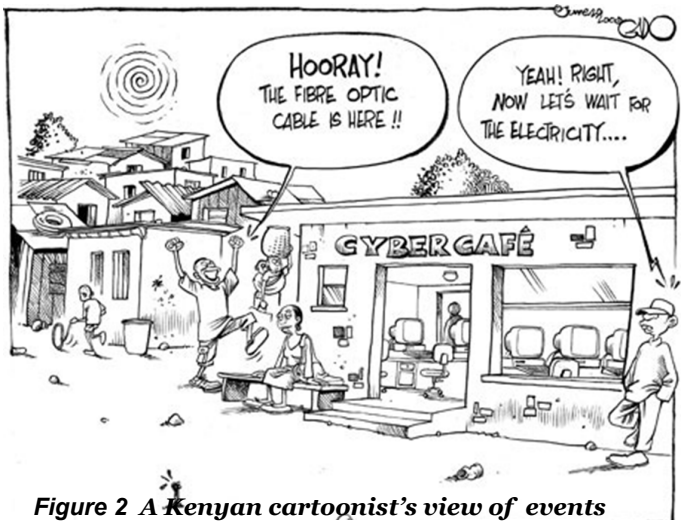

Figure 2 A Kenyan cartoonist's view of events

However, it remains to be seen whether future progress will comes at the fast pace that some technological optimists have predicted.

Key points

- Africa is rapidly becoming "switched-on" to digital technology. The continent shows extremely high uptake rates for mobile phone adoption in particular.
- Human resources are beginning to play a greater role in wealth creation. This is helping move some African countries away from their over-reliance on natural resources (a state of affairs which has sometimes had damaging effects on human welfare).
- The provision of technology does not automatically mean that social and economic improvements must follow, but there are strong grounds for optimism that they may do.
- However, several obstacles still need to be overcome if the benefits of digital technology are to become more widespread. These include unreliable energy supplies and poor basic literacy levels in some countries.

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A local IT crowd gathering at the Nairobi iHUb