

# Africa: The mobile data opportunity



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The internet originated in the 1960s under the auspices of the Defense Advanced Research Projects Agency (DARPA) in the US. At that juncture internetworking was limited in reach and was used for sharing research findings between academic institutions. An independent contractor to DARPA, JCR Licklider was one of the people who envisioned the internet as it is now.

In his paper written in January 1960, Man – Computer Symbiosis, he posited that the internet could be;

“A network of such [computers], connected to one another by wide-band communication lines [which provided] the functions of present-day libraries together with anticipated advances in information storage and retrieval and [other] symbiotic functions.”

Based on his vision, the important success factors were:

- Wide band communication lines,
- Information storage & retrieval and
- Other symbiotic functions

#### Wide band communication lines

Wide-band communications lines have been deploying at a frenetic pace globally. Communications satellites, as well as undersea cables, have increased communications throughput capacity significantly. The greatest inflection point happened just before the year 2000 when there was a general belief that an explosion in connectivity and technology convergence was nigh. Billions of dollars were spent in the Northern Hemisphere preparing for this explosion. When it did not materialise immediately, large companies like WorldCom went bankrupt and, in the process, writing off material amounts of capital while leaving all the deployed capacity on the ground. With very low post write off capital invested, the nominal expected returns were quite low allowing for absolute pricing to also be low. This low pricing, specifically for long haul services, as well as pro-competition local loop regulation allowed for an almost instant ubiquitous coverage of most Western/Northern hemisphere countries by broadband lines.

#### Information storage & retrieval

The internet has succeeded in being a dynamic global library. Information storage, as well as retrieval, has improved immensely and related products are widely available globally. The improvements in this area are so amazing that one description of the information storage and retrieval process involved in an iPod was akin to a jet flying one meter above the ground at 30,000 kilometers per hour cataloguing and storing information about each blade of grass it passed.

### Other symbiotic functions

There have even been symbiotic functions ranging from the trivial social networking services, to the highly advanced neural networks based identification systems used for security across the world. The internet is currently a global dynamic library. Wide-band network communications networks are ubiquitous in most developed markets and even in some developing markets. With this prevalence of wide-band penetration, symbiotic functions have also emerged which have led to new and interesting business models. E-commerce, as an example, is a reality in most developed markets. It is as common in Europe, North America and Asia to buy goods and services off the internet as it is for us to go to a Seven Eleven.

### Progress in Africa

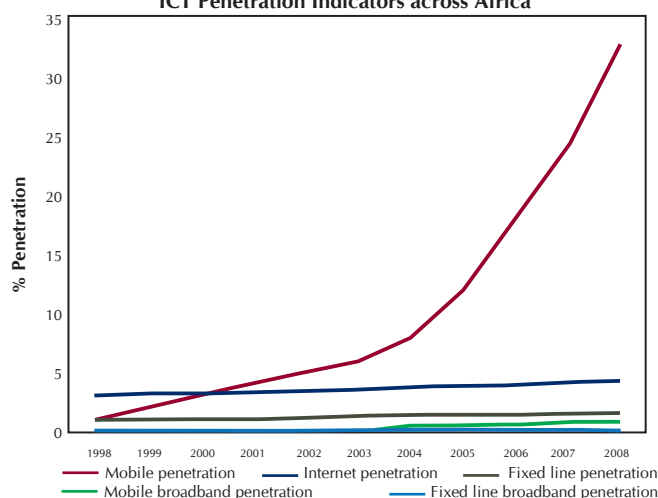
Africa has long been saddled with being the poster child for the concept of "The Digital Divide". Information and Communications Technology (ICT) enablement in Africa has historically been slower than in the rest of the world and going into the 21st century, the divide looked to be widening. The Divide was largely a function of inadequate investment in infrastructure and the resultant low population coverage by predominantly fixed line networks, the expense of broadband services, the lack of easily accessible access devices i.e. computers, as well as an immature regulatory environment.

### The role and impact of mobile telephony

If one casts an eye back to the year 2000, there were roughly eleven million mobile subscribers and three million internet users on the continent, with about 75% of them in South Africa. Eight years hence, mobile subscribers had increased by over twenty times and internet users by almost ten times with penetration being more dispersed across the continent.

In a very short space of time, Pan African mobile voice communication penetration has improved by orders of magnitude. This has allowed new and uniquely African business models and services (e.g. the prepaid mobile package which was effectively 'invented' in South Africa) to emerge, while creating massive shareholder value. Africa's geographic mobile network population coverage is now north of 60% of the continental landmass, up from 20% in the year 2000.

ICT Penetration Indicators across Africa

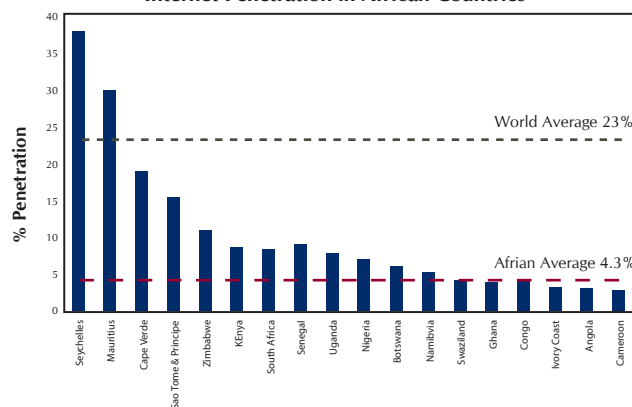


Source: ITU, ICT Indicators Database

The chart above shows just how slow the overall growth in internet penetration is relative to mobile penetration. Illiteracy, low population density, scarcity of skills and resources, lack of consistent electricity, low fixed line broadband penetration, the scarcity of access devices and the cost of internet access have been some of the barriers to improving internet penetration. It is not all bleak though. Some African countries have made amazing improvements in their internet penetration.

The chart below shows the spread of internet penetration across the continent.

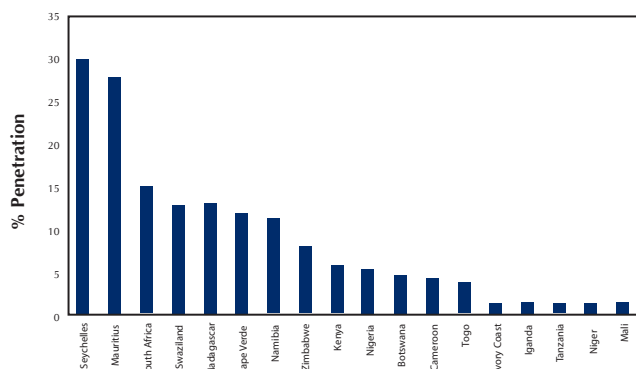
Internet Penetration in African Countries



Source: ITU, ICT Indicators Database

The African average has continued to lag the global average by a significant margin of almost 20%. Low fixed line broadband penetration, as shown in the previous chart, is largely responsible for this. The other component to this is that to connect to fixed line broadband networks, one typically requires a computer. Computer penetration is notably low on the continent due to the low income levels which make computers unaffordable. Below is a chart indicating computer household penetration.

Computer Penetration in African Countries

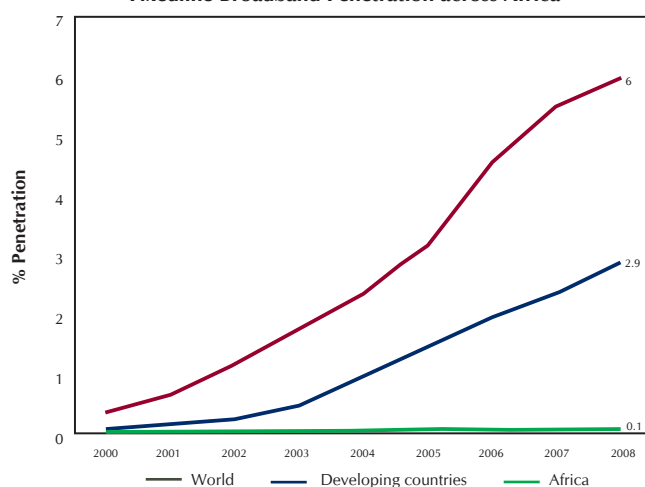


Source: ITU, ICT Indicators Database

The factors discussed above point to fixed line broadband penetration being significantly low and unlikely to change materially going forward. Not a lot of new capital is going into improving traditional fixed line networks. New mobile broadband products are now available for desktop and laptop computers with speeds that are equivalent or better than those of fixed line services.

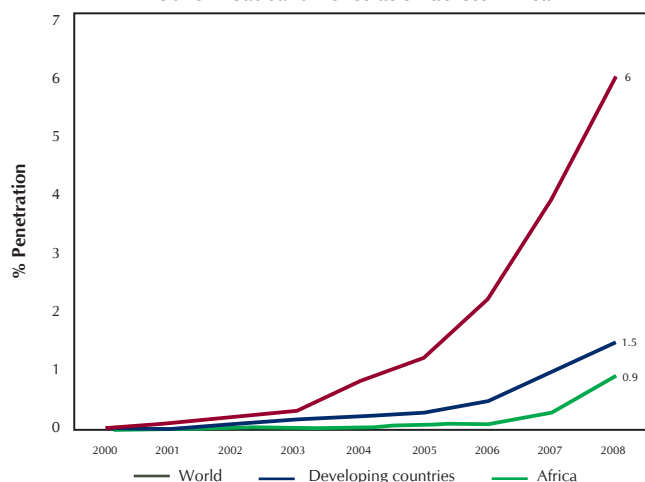
Mobile phones have improved in complexity and functionality and come with the added benefits of portability, ease of utility as well as multiple functionality. Mobile broadband penetration is about nine times the penetration of fixed line broadband penetration, notwithstanding the fact that mobile broadband deployment in Africa started in 2004 vs. 2000 for fixed.

Fixedline Broadband Penetration across Africa



Source: ITU

Mobile Broadband Penetration across Africa



Source: ITU

**The opportunity**

What is still obviously lagging is mobile broadband penetration relative to overall mobile penetration. The pace at which this penetration has been improving does seem to imply that it is likely to tend towards

overall mobile penetration. Third Generation (3G) services are only now being deployed in earnest across the continent and with the increased speed and functionality comes greater opportunities across different Internet Communication and Technology spaces.

Firstly, the deployment of the infrastructure presents a highly lucrative opportunity. The continued installation of base stations for 2G, 3G as well as LTE or 4G represents great growth opportunities for companies like Africa Cellular Towers and Dimension Data owned Plessey, whose role is to deploy capacity on the ground.

Secondly, companies like Blue Telecom, whose role is to facilitate the distribution of airtime, stand to gain markedly as mobile and mobile broadband penetration improve.

Thirdly, in the internet space, e-commerce is lagging materially. We have seen Naspers buying and developing successful e-commerce businesses across the globe yet have been largely quiet on the continent. They state that of interest to them are countries where broadband penetration is increasing towards or past the 25% penetration levels. This has led them to own Tencent, one of the best monetized social networks in Asia. They also own Tradus and Mail.ru in Eastern Europe where penetration has passed the 25% tipping point. They have just acquired Buscape in Brazil where penetration is also north of 25%. Africa has a sub 25% aggregate broadband penetration but mobile penetration is picking up at a frenetic pace. Naspers is definitely in the lead when it comes to capturing e-commerce opportunities across the continent.

Fourthly, there are symbiotic services such as Kagiso Media owned Lexus Nexus – a legal journal business that they are currently digitizing. Increased broadband penetration will allow for greater access to this highly profitable service. Other access based businesses such as Internet Service Providers owned by Dimension Data as well as Telkom also stand to benefit materially as broadband penetration increases. Mobile TV services that are being incubated by Naspers' Multichoice also depend on the improving mobile penetration.

The greatest beneficiaries though, are mobile operators on the continent such as MTN, Vodacom, Millicom and Zain. There are material tailwinds that are in their favor. Overall mobile penetration is still lower than global averages. Broadband penetration is even lower. We are already seeing above average growth in penetration which should drive sustained profitability over time. The symbiotic

services mentioned in the previous paragraphs will be a function of penetration but they will increase utility of these services.

Africa has 29 of the 43 least developed countries in the world. These countries are beholden to the Millenium Development Goals which state quite clearly that Africa's fate will be changed by the internet. The internet's penetration, as well as the commensurate symbiotic services, will be carried by the improvements in mobile broadband penetration. Long term shareholder value will be unlocked by this closing of the Digital Divide on the continent.