

MOBILE PHONES AS THE MISSING LINK IN BRIDGING THE DIGITAL DIVIDE IN AFRICA

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Abstract

The digital divide—or inequalities in access to Information and Communication Technologies (ICTs)—is a familiar concept. Indeed, the earliest ITU statistics on telecommunications (published in 1871 recording data on telegraph operations since 1849) show a clear divide between the Member States of the Union, mainly within Western Europe at that time. Such gaps have narrowed and, in some cases, even reversed over time, but other disparities have arisen. This suggests that:

- ⇒ The digital divide is a dynamic concept, which evolves over time;
- ⇒ Older technologies tend to be more evenly diffused than newer ones;
- ⇒ There is not a single divide, but multiple divides: for instance, within countries, between men and women, between the young and the elderly, etc.
- ⇒ The main factor causing these divides is differences in wealth, between countries and within countries (between individuals).

African economies, especially Least Developed Countries in sub-Saharan Africa, have historically been among the lowest-ranked economies worldwide in terms of penetration of ICTs, and therefore, on the wrong side of the digital divide.

The Rise of Mobile Communications

However, the prospects of bridging this gap have never seemed brighter. In 2002, ITU made the bold claim in its World Telecommunication Development Report that mobile communications could provide the “missing link” that would help to bridge the digital divide, and to date, this claim has been largely fulfilled. Mobile communications have grown fastest among developing economies. In developing economies, the number of mobile phones rose from a mere 12 million in 1995 to over 1.15 billion in 2005, at a compound annualised growth rate of 58 per cent. Worldwide, the total number of mobile subscribers was 2.17 billion at the end of 2005 and is projected to surpass 3 billion by late 2007 and to reach 4 billion by 2010, with 80 per cent of new growth expected to come from lower-income emerging markets.

Arguably, Africa’s greatest success story to date in telecommunications is the remarkable spread of mobile telephony throughout the continent. Africa’s mobile market has been the fastest-growing of any region over

the last five years and has grown twice as fast as the global market (Figure 1, left). Africa took over a hundred years to accumulate 28 million fixed lines; an average penetration rate of just 3 lines per 100 inhabitants, and still below 1 in many countries. However, the stunning growth of mobile led mainly by private operators resulted in mobile phones overtaking fixed lines in 2001. Mobile phones now outnumber fixed by nearly five to one, with 137.2 million mobile subscribers in Africa in 2005. The ratio of mobile to fixed phones is even higher in Sub-Saharan Africa, where nine out of every ten subscribers with access to a phone are using a mobile. Mobile penetration has doubled from 6.5 per 100 inhabitants in 2003 to 13.1 per 100 inhabitants in 2005. This remarkable growth has been driven by the private sector and is greatest where the mobile market is competitive. Prepaid has also been another major driver of mobile growth, with some 92 per cent of African subscribers using a prepaid package in 2005.

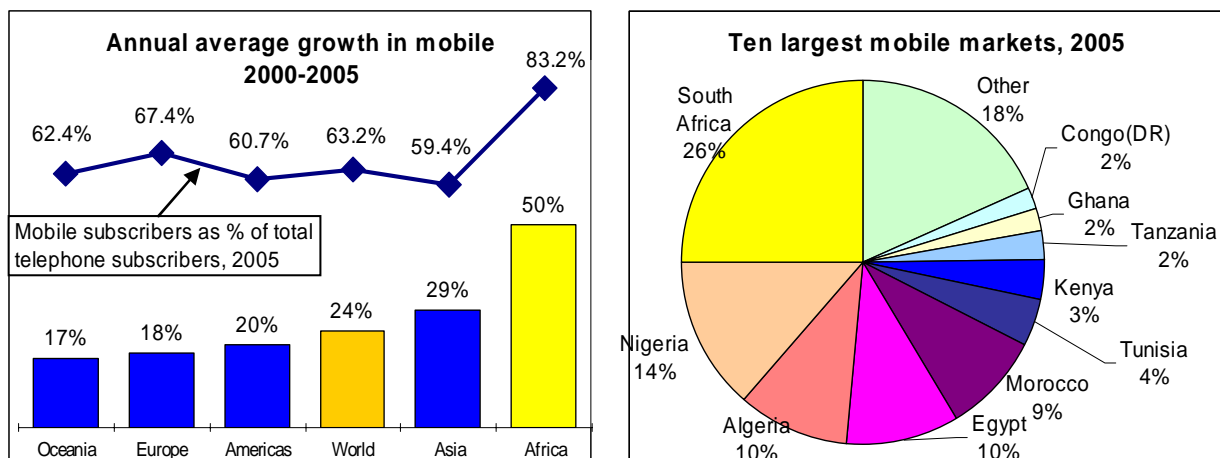
The future growth potential for mobile communications in Africa lies in making mobile telephony more affordable for the huge untapped market of lower-income consumers. Operators that can follow high-volume/low-cost strategies, combined with innovative pricing and payment methods, stand to make big gains in Africa (as the rise of indigenous African strategic investors—such as MTN, Vodacom, Orascom or Celtel—has proven). Making mobile communications affordable includes reducing both the total cost of ownership (for example, by introducing ultra low-cost handsets at below twenty dollars each), as well as addressing cash-flow (“cash-barrier”) aspects. If operators can match payment profiles to incomes through micro-financing, shared phones and micro-prepaid schemes (for example, by using low denomination top-ups and balance transfers between subscribers), then rapid growth and large profits can be made in the African market. Furthermore, due to the limited personal finance sector in Africa and low levels of credit card ownership, there are tremendous opportunities for mobile operators in exploring Internet access and financial services over mobile phones, such as m-commerce and banking.

Market competition

The three essential ingredients of telecommunication sector reform, and the recipe for future growth, are market liberalisation, private sector participation and effective regulation. Although Africa embraced reform relatively late, compared with some other regions of the

Figure 1: African Mobile Markets

Annual average percentage growth in mobile network subscribers, Compound Annual Growth Rate, 2000-2005, world regions (left); Ten largest mobile markets in Africa, 2005 (right chart).



Source: ITU World Telecommunication Indicators Database.

world (for example, Latin America), it is now pressing ahead with telecommunication liberalisation, especially in the mobile sector.

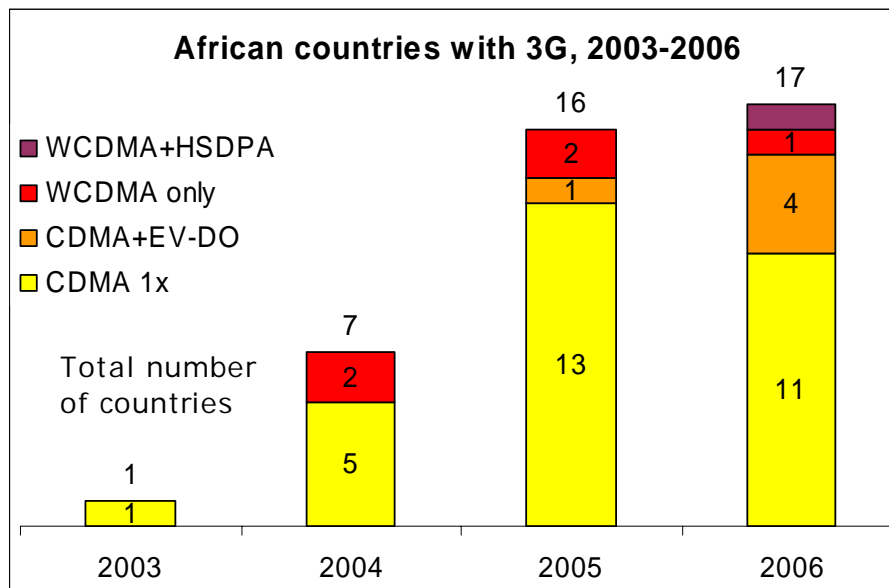
Back in 1995, only four African economies allowed for competition in mobile communications. By 2006, this had increased to 44 out of 54 economies (75 per cent), which is a comparable percentage to the Americas (76 per cent) and Asia-Pacific (78 per cent). Greater competition and private ownership in the mobile sector compared with the fixed-line market are the main reasons for Africa's success in mobile. The liberalisation process needs to go further: for instance, by permitting greater competition in the fixed-line market, in the ownership of private payphones, in the use of very small aperture terminals (VSAT) and/or in the liberalisation of the international gateway. Nevertheless, Africa's experience with mobile communications has been a driving force for transformation.

While access to mobile communications is vital for access to voice services for today's African consumers, in the future, wireless could also provide access to Internet and other data-based services. In this context, it is the ability to upgrade to high-speed or broadband access that will enable Africa to compete most effectively in the global market. Given Africa's headstart in mobile telephony, broadband Internet access is most likely to be delivered over a mobile platform than a fixed line. Third-generation (3G) mobile services with higher transmission speeds and enhanced data services promise a range of new applications for users and new revenues

for operators. ITU recognises the following 3G services as compliant with the IMT-2000 family of standards:

- ⇒ Wideband Code Division Multiple Access (W-CDMA), which can reach maximum data download speeds of 2 Mbit/s when fully implemented. It is sometimes known as UMTS or 3GSM in Europe;
- ⇒ High Speed Downlink Packet Access (HSDPA), an upgrade to W-CDMA allowing a theoretical peak downlink rate of 14.4 Mbit/s, although this is not currently widely available on commercial handsets.
- ⇒ CDMA 2000 1x, which delivers speeds of up to 144 kbit/s. This does not qualify as "broadband" as it is below the threshold speed of 256 kbit/s.
- ⇒ CDMA EV-DO (Evolution Data Only) enhances 1x speeds up to 2.4 Mbit/s.
- ⇒ Time Division Synchronous CDMA (TD-SCDMA), which has not yet been commercially launched, but may be the preferred choice for 3G systems in China.

3G services have been commercially available since 2001 worldwide and in Africa since 2003, when the first Wireless Local Loop (WLL) CDMA 1x networks were rolled out in Nigeria. South Africa and Mauritius launched W-CDMA networks in 2004, with South Africa already implementing a HSDPA network in 2006. A total of seventeen African countries now boast IMT-2000 mobile networks (Figure 2). Eleven countries have CDMA 1x networks, while operators in Angola, Cote d'Ivoire, Nigeria and Rwanda have launched EV-DO networks. Further 3G launches are expected in

Figure 2: 3G networks in Africa*(Number of African countries with 3G (IMT-2000) networks commercially available, 2003-2006.)*

Source: ITU.

2007, including Etisalat and Vodafone in Egypt (in Q1 and Q3 respectively) and Vodacom in Tanzania.

The future digital divide

As noted at the start of this article, the digital divide is not, and never has been, a stable concept. It continues to evolve over time, both in terms of geography and in terms of the nature of services. Africa is well on the way to addressing some of the disparities in access to basic voice telecommunications, through investment in mobile phones. However, as the world becomes increasingly dependent on ICTs, the digital divide may come to be measured more in terms of the "quality", rather than simply the "quantity", of access to ICTs. Africa has decisively opted for a mobile future in voice communications, and this is likely to be reflected too in its choice of a wireless platform for high-speed Internet access. This suggests that coverage can be expanded more rapidly through wireless platforms, rather than fixed-line solutions (based on fibre optics, copper wires - such as asymmetric digital subscriber lines - or cable modems). However, there will still be an important geographic element to the digital divide, as coverage is initially pro-

vided to capital cities and other large urban areas at higher speeds, rather than to rural Africa. That is where the future digital divide will lie.

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