This is a prepublication draft of a paper to be presented at the 2nd International Conference on M4D - Mobile Communication Technology for Development, Kampala, Uganda. 10-11 November, 2010. http://m4d.humanit.org/

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Citation format:

Donovan, Kevin., & Donner, Jonathan. (2010). A note on the availability (and importance) of pre-paid mobile data in Africa. In J. Svensson & G. Wicander (Eds.), 2nd International Conference on Mobile Communication Technology for Development (M4D2010) (pp. 263-267). Karlstad, Sweden: Karlstad University. www.jonathandonner.com/prepaydata_M4D.pdf

A Note on the Availability (and Importance) of Pre-Paid Mobile Data in Africa

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Abstract: We argue that clear and easy access to prepay data will be as essential to the widespread adoption and use of the mobile internet in developing countries as access to prepay airtime is/was to the adoption of the mobile telephone. In late 2009, we conducted a desk assessment of the availability of pre-pay (pay-as-you-go) data from major operators in 53 African countries. We identified at least one operator in 38 countries which offered pre-pay data, and in 3 cases we could determine that no prepay data was available. Information available from many operators was vague, incomplete, and hard to obtain, suggesting that a threshold of mainstream promotion of the service by operators may not yet have been crossed. We suggest topics for further research, both on the demand and supply sides of the prepaid data equation.

Introduction

The mobile internet is going global (Morgan Stanley Research, 2009). In the first decade of the 21st century, most mobile Internet use was concentrated in Japan, South Korea, North America, and Europe. But another chapter in mobile internet adoption is beginning to unfold in the developing world (Boyera, 2007; Chigona, Beukes, Vally, & Tanner, 2009), particularly in China, where market researchers estimate that a hundred million people or more go online via their handsets (Elkin, 2010), and in South Africa, where mobile internet users are more prevalent than traditional PC-based internet users (Goldstuck, 2010).

Of course, voice and SMS remain king in Africa, with mobile data (other than SMS) accounting for a low proportion of operator revenue. Given that many older and entry-level handsets are not data-enabled, most ICT4D research and practice also remains focused on voice and SMS; studies exploring mobile Internet use among resource-constrained

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communities are relatively rare (Bosch, 2008; Boyera, 2007; Chigona, et al., 2009; Gitau, Marsden, & Donner, 2010; Kreutzer, 2009).

Nevertheless it is important to explore the possible paths to widespread adoption of mobile Internet in developing countries, if only because of the demonstrated links between internet connectivity and economic growth (Koutroumpis 2009; Qiang, Rossotto & Kimura 2009). The humble (but expensive) text message already improves coordination, increases productivity and accelerates the flow of information, and has proved its utility across traditional development domains including agriculture, health, education, governance, and civic participation (Donner, Verclas, & Toyama, 2008). The promise of internet-enabled multimedia exchanges at a fraction of the per-bit cost of a text message is not simply tantalizing, it is urgent. A full assessment of the implications of the mobile internet for economic and social development is beyond the scope of this brief note. However, we argue that clear and easy access to prepaid mobile data is one key to widespread mobile data usage.

The prepay or "pay as you go" model already exists for voice and SMS; a consumer purchases 'airtime' of a certain quantity that enables them to make a predetermined amount of phone calls or SMS messages. For the poor, being able to manage expenditures in an inexpensive, discrete manner has been central to the widespread accessibility and adoption of mobile telephony (Dhawan, Dorian, Gupta, & Sunkara, 2001; Hodge, 2005; Prahalad, 2005).

Our research approach was inspired by (Neto, Best, & Gillett, 2005) who in 2004 conducted a survey of African regulators. They found considerable variation in the regulations (and indeed legality) of the 2.4 and 5 GHz radio bands, used to carry WiFi, and postulated that the variance was limiting its diffusion. We thought we could do something similar (in 2009) with another crucial technology at a similar level of nascent and (possibly) disparate development around the continent. Given advances in both the bandwidth of mobile networks and the functionality of many affordable phones, our initial motivation was to assess whether prepay data was similarly available.

Methods

From late October 2009 to January 2010, we utilized a combination of Internet research and direct contact with mobile operators to determine the availability of prepaid mobile data connectivity. A combination of human and automated translation overcame most language barriers.

Using information from the GSM Association and other public information, we compiled a database of mobile network operators in every African country. Beginning with their corporate sites, if available, and progressing as needed to personal contact via email and phone calls to customer service, we sought to determine if a) the operator's network had data capabilities, b) if phone-based data was available to individual customers, and c) if it was offered in a prepay model. Additionally, when possible, we noted the pricing schemes.

Results

For reasons detailed below, determining with certainty (via deskwork) the *presence* of prepay data was more feasible than the *absence*. Of the 53 countries assessed, we could ascertain that prepay mobile data service is available from at least one operator in 38 of them. In 13, it is unclear due to a lack of information from the providers. In only two countries – Comoros, and Sao Tome and Principe – is it likely that there is no prepaid mobile data service. It should be noted that the latter two have monopoly mobile network operators.

The ambiguity in results arose for a number of reasons:

UNCLEAR WEBSITES Our experience suggests that some mobile phone operators (logically, perhaps) do not prioritize their websites as sources of information for customers. Consider the lack of mobile information on the website of Djibouti Telecom (Evatis) or the

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lack of a functioning website for Moov in Burkina Faso. In the Comoros, the provider's webpage for all prepaid mobile has been "Under Construction" for much of 2009-2010. Indeed, Burkina Faso presents a good illustration of the shortcomings: of the four identified providers, Zain did not respond to email inquiries, Onatel and Telecel Faso have no relevant information on their websites, and Moov, as mentioned, does not have a working site.

POOR SUPPORT Numerous customer support telephone numbers and email addresses were erroneous or went unanswered. In Zambia, the local affiliate of the multinational operator MTN lists email addresses that bounce when contacted.

NO COMMON TERMINOLOGY While working through the available resources from operators, and in speaking with various representatives, it became clear that IP-based mobile communications lack a coherent language for the community to use. Perhaps because the practice of accessing the Internet through a mobile phone is still new to many, or perhaps because it is complicated by carrier-specific offerings with novel brand names, speaking about mobile data services requires an overtly technical slew of acronyms. For the customer lacking the sophistication to parse GPRS, IP and 3G, it is often unclear what the operators offer. Moreover, despite their very different interests and needs, operators market the "mobile Internet" to both professionals seeking USB modems (dongles) for their laptops and netbooks, and to more casual users seeking simply to access Facebook or a WAP site on their phone.

Discussion

The first-order finding, that a significant portion of the African population has access to prepaid mobile Internet services, is certainly heartening, especially because fixed line broadband access remains minimal. That such a significant number of mobile data providers are explicitly making available prepaid mobile Internet demonstrates at least a trend towards widespread recognition of this pro-poor business model. Future research and policy efforts around the adoption of the mobile internet should make a clear definitional distinction between those users on "data plans" (a common term from the US and Europe) and those who whose access is prepay/"pay-as-you go". Just as prepay airtime fuelled the boom in worldwide teledensity, prepay data may contribute to a corresponding rise on internet acceess.

But amidst this success the results of the desk analysis present reasons for concern. Our research illustrates two gaps between access to prepay data in theory and in practice.

First, a significant portion of the operators' publicly available information is either insufficient or unclear enough to make ascertaining the availability of mobile Internet nearly impossible. Even when our research was able to definitively uncover the presence of prepaid mobile data, it was rarely prominently presented, let alone the focus of the offerings. In this sense, Kenya is perhaps a leading exception. Safaricom is offering 10 MB of data for around USD 0.10, and has at least some advertisements to share this offer (Hersman, 2010). Elsewhere, disarray confounds easy adoption of a technology through a confusing user experience.

Second, our informants[i] described a set of anecdotal intermediate barriers to data activation. These include not only nonstandard settings on the handsets themselves (Gitau, et al., 2010), but also barriers established by the operators, such as high per-MB tariffs (Botswana), higher required minimum balances for data than for voice (Benin), and requirements to specifically request prepay data activation (data is not default-on, but default disabled/opt-in) (South Africa).

Word-of-mouth and peer-to-peer learning are channels for the diffusion of innovations – people regularly turn to friends and colleagues to overcome these intermediate barriers, and to learn how to access data (Gitau, et al., 2010). This viral process is particularly effective when supporting the adoption of platforms that the peers will share, like the South African

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chat program MXit (Chigona, et al., 2009) or Kenya's M-PESA. However the possibility that these intermediate barriers are slowing the diffusion process seems likely and worthy of further investigation.

Like other technologies before it, the mobile Internet is in the midst of a process of adoption, exploration, appropriation, and deployment (Rogers, 2003). The hurdles to its diffusion are multiple, but while diffusion research typically focuses on the demand side, interplay with suppliers of technology plays a role in determining the ultimate level of adoption. Though often *technically feasible*, the *practical obscurity* of the mobile Internet is a supply-side barrier to its diffusion in Africa. Its widespread use—at the levels required to begin to fulfil a promise of broadening access to the internet to those without a PC—will likely occur more rapidly if mobile network operators provide market leadership through clear and consistent promotion of the technology.

Additional analysis is required to assess the actual availability of such services, in terms of up-time, proportion of towers configured for data, and in terms of offered protocols (GPRS, edge, 3G, etc),. Each factor is likely to manifest as new permutations of existing differences in rural vs. urban access to the internet, this time via the handset. In addition, further assessment of the price per MB and the presence of intermediate barriers to access may reveal differences in the overall ease-of-adoption between prepay data and the more widely understood prepay airtime.

Realizing the full potential of the mobile Internet to improve the everyday lives of Africans will take a variety of improvements in the surrounding ecosystem that includes education, policy, technical innovation, and market forces. The industry can further assist by converting its public information and promotion from a focus on overwhelmingly voice and text to a more cohesive and delineated offering that reflects and includes the availability of prepay mobile data. As a piece of the overall adoption puzzle, clear, coherent, and enthusiastic public promotion of prepaid mobile data by the industry itself seems to a factor that is lagging behind.

Results of Desk Assessment as of 9/20/2010

Yes **at least one operator offers mobile prepay data**			**Missing/Unconfirmed**	**No**
Algeria	Lesotho	Rep. of Congo	Burundi	Comoros
Angola	Liberia	Rwanda	Cameroon	Sao Tome and Principe
Benin	Libya	Senegal	Chad	
Botswana	Madagascar	Seychelles	Djibouti	
Burkina Faso	Malawi	Sierra Leone	Equatorial Guinea	
Cape Verde	Mauritania	South Africa	Eritrea	
Central African Republic	Mauritius	Sudan	Gabon	
Cote d'Ivoire	Morocco	Swaziland	Guinea	
DRC	Mozambique	Tanzania	Guinea-Bissau	
Egypt	Namibia	Togo	Mali	
Ethiopia	Nigeria	Tunisia	Niger	
Gambia		Uganda	Somalia	
Ghana		Zambia	Zimbabwe	
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[i] In June 2010 we conducted a second wave of data-gathering to deepen and extend the data gathered via the original design. We attempted a "crowdsourcing" technique, driving visitors via our professional networks, to an online editable map where informants could details on each country. During this stage, the contribution of Michael Minges of TMG was particularly helpful. Although ultimately unsuccessful as a comprehensive source of data, the second wave did uncover these anecdotal reports of "intermediate" barriers. A longer discussion of the (sparse) results of this second wave is available at http://bit.ly/9crDfF.

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