ANALYSIS

Country overview: Nigeria

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Mobile for
Development Impact

OMIDYAR NETWORK™

The MasterCard
Foundation

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Mobile for
Development Impact

GSMA supports the digital empowerment of people in emerging markets through its Mobile for Development Impact programme, used to inform investment and design decisions for mobile services. Our work is freely accessible through support from Omidyar Network and in partnership with The MasterCard Foundation at gsmaintelligence.com/m4d

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Executive summary

Whether comparing Nigeria to its geographic neighbours or to other countries with similar dynamics, mobile penetration is relatively low and subscriber growth – while healthy given the large population base – will continue to slow. However, due to various other positive factors including a high access rate of well over 50% (those who use a mobile despite not owning one), increasing mobile data consumption, a rise in digital entrepreneurship, and a large youthful population Nigeria presents a growing opportunity for investment and innovation. Specific factors related to regulation and the role of large international donors and the impact investment community have the potential to support positive growth and demonstrate long term commercial viability in valuable mobile products and services that improve livelihoods.

1. The biggest country in Africa but underpenetrated in mobile. Young, but still low internet penetration. A fast growing economy but with persistent income inequality, with the majority of the population often lacking basic service access. Nigeria paints a picture of contrasts – mobile, however, is in many ways a common denominator to driving socio-economic improvement.

As the most populous country in Africa, Nigeria is home to around 170 million people. After the recent rebasing of its GDP, it also overtook South Africa to become Africa's largest economy. At first glance, mobile penetration is high, at over 70%. However, penetration on a unique subscriber basis (a better proxy for individual ownership) is much lower at around 30% (see Figure 1 below). There is significant variation within the country, with a strong urban-rural divide (urban ownership is around 1.4 times higher), as well as differences between northern and southern Nigeria (the southern states including Lagos and those clustered around the oil-rich Niger Delta, which generally have much higher access than in the north). Relatively low unique subscriber penetration has not stopped or hindered an emerging shift towards mobile data, and indeed there are several interesting trends underlying this growth. Smartphone penetration is still nascent (around 10-15%), and while we believe the mobile internet is not (yet) that much further along, it is currently occupied mostly by feature phones. Operators are increasingly designing tariffs for prepaid internet use (2G and higher speed mobile broadband) to align with the socio-economic realities of a predominantly low-income customer base. However, with incomes projected to rise and handset and data service prices declining, the barriers to entry for data services will continue to fall and it is expected that a significant section of Nigeria's population will come online in the next three to four years. This will enable much of the Nigerian population and government to enjoy the numerous socio-economic benefits of improved mobile and mobile broadband access – the challenge is in ensuring the story is not a tale of two halves.
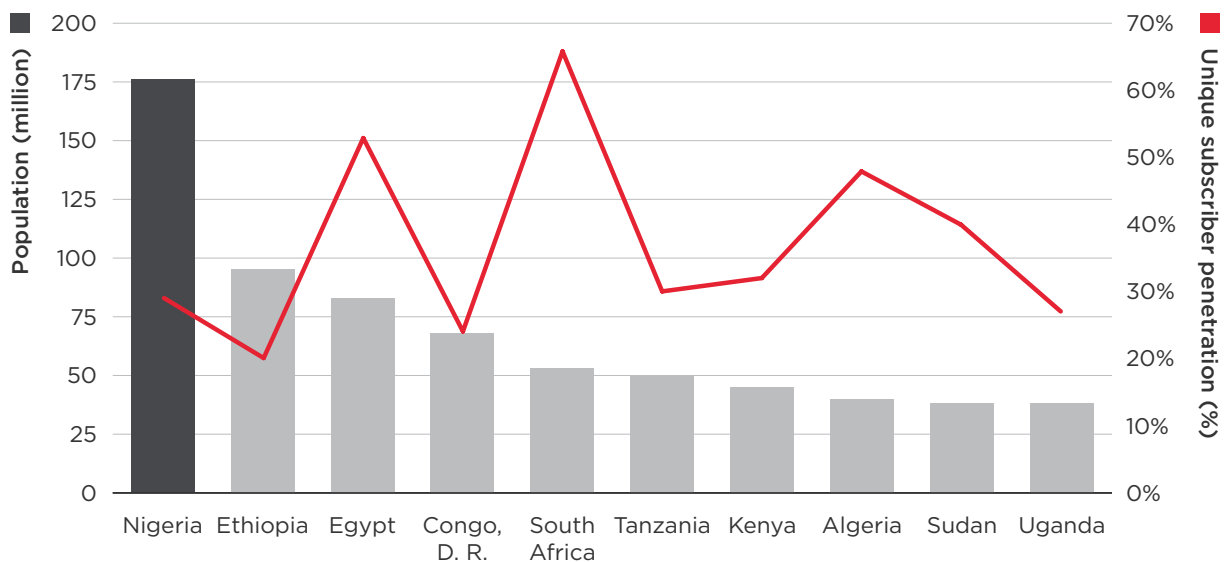
Figure 1: Nigeria, the largest country in Africa, but underpenetrated in mobile
Source: GSMA Intelligence

2. Low life expectancy, poor health and sanitation, lack of access to banking services, and illiteracy are all examples of the many socio-economic issues that Nigeria faces. As a market with rising mobile penetration and a negligible fixed broadband infrastructure, Nigeria has the opportunity to leverage mobile technology to generate improved social and economic outcomes. The participation of mobile operators and the wider mobile ecosystem will be key to realising such successes. Of course, this can take time. There is therefore a crucial role for intervention support from large international donors with scaled presence and the impact investment community in the short to medium term in supporting high potential services that are not yet market-led.

Nigeria is a fast growing market, with economic growth humming along at around 7% (double that of Europe and the US). As the largest market in Africa, Nigeria's population also continues to rise at around 3% per year. Despite this growth, large sections of the population continue to lack access to basic services such as in health and banking and the country scores low on the United Nations Human Development Index. By contrast, while mobile penetration on a unique subscriber basis is low (under a third nationally, with this lower in rural areas), it is actually around 70% when considering those who have access to a mobile without actually owning one. Why does this matter?

There is a clear opportunity for mobile to play a role in enabling access to these basic services and in driving wider socio-economic development through innovative applications and the use of mobile broadband. Those individuals on lower rungs of the income ladder that lack many basic services are also those that make up a significant portion of expected new mobile subscribers over the next 3–5 years. However, while mobile operators are active in offering a range of value added services (VAS) targeting entertainment and social media platforms, they are largely absent from providing commercial VAS that fill gaps in core needs (such as financial services, health, utility access and employment). The need for such services could potentially justify a small expenditure by subscribers and may also serve to drive customer loyalty.

We believe the reasons for this lack of participation are complex, ranging from operators focusing on core competition in the marketplace, a lack of credible business models, a lack of understanding consumer needs, high costs associated with expanded network roll-out, and regulatory challenges. There are also more nuanced factors at play, such as Nigeria's diverse religious landscape, with around 250 tribes and 280 languages existing throughout the country.

The implications of these challenges quickly become evident as operators expand such services at scale to a diverse customer base. It is, however, an opportunity waiting to be harnessed. Beyond operators, participation and involvement of players in the wider ecosystem is needed in forming partnerships to harness comparative advantage. Recent examples have often focused on opportunities the internet presents, with the presence of local entrepreneurial talent in ICT start-ups serving as a key commonality amongst Nigeria's success stories.

Of course, all of this takes time. As such, we believe there is a key role for large international donors in providing funding and operational support for solutions that improve livelihoods and have commercial potential but that are not yet market-led – particularly those in the agriculture and education sectors. This makes sense because these organisations are scaled, can harness economies of scope and are increasingly shifting towards a returns-based investment mindset despite their non-profit status to ensure proper and robust business planning among entrepreneurs. The impact investing community is smaller in size, but can also play a complementary role in this space to provide seed funding, operational and mentoring support to early and mid-stage ventures.

3. Bureaucracy and regulatory complexity throughout Nigeria continue to act as barriers to realising the socio-economic opportunities that mobile services enable, underpinning the need for a transparent, consultative and pro-investment regulatory environment.

Affordability and coverage are key barriers in driving increased mobile penetration and the socio-economic benefits that follow from improved access to mobile services. The cost of running a mobile is around 5% of personal income in Nigeria, well above the threshold of 2-3% below which penetration starts to rise steeply. On coverage, the country is well provisioned in urban areas but there remains a lack of infrastructure in many rural regions. This is understandable given the combination of challenging terrain and vast distances, a lack of electricity and road access, and persistent security threats. It does, however, underline the reality that coverage is largely a product of investment, which can only occur in a clear, constructive and proactive regulatory environment favouring innovative roll-out models (such as network sharing). Affordability requires this environment as well, but also has the strength of market forces to help.

While regulations on coverage expansion (as a condition for spectrum ownership) and expectations for Quality of Service (QoS) are important in ensuring high quality services for consumers, a balance is important to avoid delays in the implementation of an operator's expansion and upgrade plans. This is also important for Mobile for Development (M4D) services, where the regulatory environment can play a role in an operator's decision to roll out such value-added services. Major growth of mobile money services has thus far been largely outside West Africa in general, although there are many positive success stories

to draw on from other countries in this sector (e.g. Kenya, Tanzania, Democratic Republic of Congo) where operators have used extensive distribution networks and brand to grow scale and catalyse development of other M4D sectors through payments, transfers and insurance. From this, we think there is a strong case for permitting operators to operate mobile money services in Nigeria. More widely, a facilitating regulatory environment can help unlock successful services in other M4D sectors closely aligned with economic growth and social improvement (Sri Lanka is a good example), for which Nigeria is a prime candidate.

National context

Located in Western Africa near the Gulf of Guinea, Nigeria is the most populous country in the African continent with a population of over 170 million. It is situated in the tropics with Savannah grasslands occupying majority of the land area. The River Niger enters into the country from the west and forms an oil-rich delta towards the south which makes Nigeria the fifth largest oil exporting country in the world. Despite being infamous for oil theft and extensive pollution due to oil spills, this delta has contributed immensely to the prosperity of the southern parts of the country. Nigeria was formed following the merger of two separate British protectorates (North and South) post independence from British rule in 1960. However, it struggled with political instability and civil wars periodically after this, regaining democracy in 1999. The elections held in 2011 are considered to be the fairest and most credible in the country's history so far.

Nigeria boasts high population growth, which has increased at an average of over 2.6% annually in the last decade. On the economic front, it has emerged as the biggest economy in Africa following a recent rebasing, with an estimated GDP of over $490 billion in 2013. The contribution of the services sector to GDP was found to be higher than originally thought. Telecommunications in particular is now estimated to contribute to about 9% of GDP in 2013, up from the earlier estimates of less than 1%.

While these revised estimates indicate rise in per capita GDP from $1,550 to $2,689, this is not indicative of an overnight jump in wealth for all. Over 60% of the Nigerian population still continues to live on less than $1.25 a day. The country struggles to provide basic amenities to its population and scores low relative to its African peers on the Human Development Index (HDI). More than half of Nigerians do not have access to electricity and just over a quarter have improved sanitation facilities available to them. Adult literacy hovers around 65%, with a significant gender deficit (female literacy is around 50-55%). In addition to gender-based inequalities, regional and urban-rural divides are evident in many socio-economic outcomes.
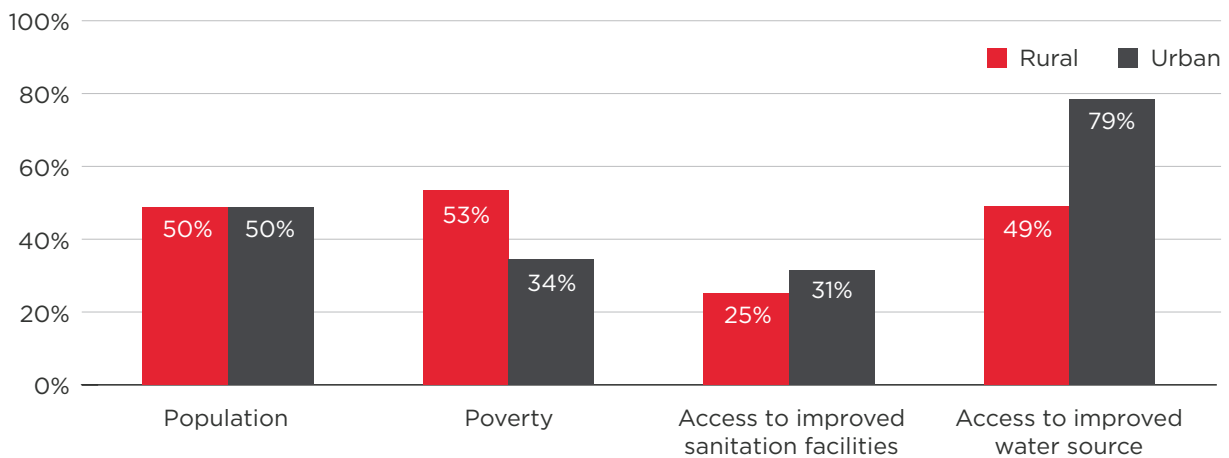

Figure 2: Rural versus urban gap — equal population but socio-demographic inequalities
Source: GSMA Intelligence, World Bank

Note: Poverty data reflects poverty headcount ratio at the urban and rural poverty line, 2010

On a regional basis, Southern Nigeria, which is primarily Christian in ethnicity, is the more prosperous of the two halves owing to the presence of Niger delta and thriving financial centres such as Lagos that contributes to more than half of the business activities in the country. On the other hand, the predominantly agricultural northern half struggles with religious tensions and poor social and health situations. Similarly pronounced differences are seen in the urban-rural outcomes, where the rural populace lags behind on most human development parameters despite constituting half of the country's population. In a nut-shell, while a large proportion of natural and human resources indicates huge growth potential for Nigeria, greater efforts are required both from public and private sector entities to bring about a more egalitarian growth that is shared across the population.

Benchmarking Nigeria: methodology

Figure 3: Benchmarked countries
Source: GSMA Intelligence

For the purpose of this report we have chosen a selection of five other countries from a total 236 countries world-wide, to compare Nigeria with. The idea has been to broaden the scope of benchmark countries from Nigeria's usual regional peers in Sub-Saharan Africa or West Africa to envisage countries across the globe with similar growth/development profiles. The selection of benchmark countries has been made on the following 4 criteria:

1. **Wealth** — GDP per capita (2012)[1]
2. **Economic growth** — GDP growth rate (2009–12)
3. **Mobile market maturity** — subscriber penetration (Q4 2013)
4. **Human development** — Human Development Index (HDI, 2012)

Taking Nigeria as the base we have selected countries which fall under a variance range chosen for each of the four criteria. Following are the range of variances chosen to arrive at a group of countries which represent major regions across the globe:

Criteria	Variance	Lower value	Nigeria	Higher value
GDP per capita (current US$)	± $1,000	$1,689	**$2,689**	$3,689
GDP growth rate (%)	± 3pp	3.7%	**6.7%**	9.7%
Subscriber penetration (%)	~± 25pp	5.0%	**29.1%**	55.0%
HDI (1 is the highest)	± 0.2	0.27	**0.47**	0.67

Table 1: Benchmarking criteria
Source: World Bank, GSMA Intelligence

[1] Nigeria revised its GDP figures in April 2014, rebasing them to 2010. The figure has been extracted from a presentation from National Bureau of Statistics (NBS)

GDP per capita ($1,689–$3,689)
29 countries (including Nigeria: Asia Pacific (13), Latin America (5),
CIS (4), MENA (3), SSA (3), Europe (1)

GDP growth rate (3.7%–9.7%)
17 countries (including Nigeria): Asia Pacific (6),
Latin America (4), CIS (4), MENA (1), SSA (2)

Subscriber penetration (5%–55%)
13 countries (including Nigeria): Asia Pacific (6),
Latin America (3), CIS (1), MENA (1), SSA (2)

HDI (0.27–0.67)
11 countries (including Nigeria): Asia Pacific (5),
Latin America (2), CIS (1), MENA (1), SSA (2)

6 countries*: Indonesia, Morocco, Nigeria,
Philippines, Uzbekistan, Vietnam

* 5 countries (Congo, Guyana, Honduras, Solomon Islands and Papua New Guinea)

Country	Sub region	GDP per capita (US$)	GDP growth rate (%)	Subscriber penetration (%)	HDI	Population (million)
Indonesia	Asia Pacific	$3,557	6.0%	41%	0.63	247
Nigeria	Sub-Saharan Africa	$2,689	6.5%	29%	0.47	169
Philippines	Asia Pacific	$2,587	5.3%	49%	0.65	97
Vietnam	Asia Pacific	$1,755	6.6%	53%	0.62	89
Morocco	MENA	$2,902	5.4%	51%	0.59	33
Uzbekistan	CES	$1,717	8.6%	53%	0.65	30

Table 2: Data used for benchmarking
Source: World Bank, UN, GSMA Intelligence

Whilst the 11 countries shortlisted show similar profiles in fourth step were similar on the four major criteria, we saw that five of these were very low on population (less than 10 million) when compared to Nigeria which has around 170 million inhabitants. We therefore filtered these out leaving us with 6 countries which include Nigeria along with Indonesia, Philippines, Vietnam, Morocco and Uzbekistan.

Note that while we have benchmarked Nigeria against these peers for the purposes of aligning markets at similar stages of development, we also provide regional comparisons at relevant points in the report to group markets influenced by similar regulatory climates and spectrum plans.

Nigerian mobile market

Metric	2010	2011	2012	2013	2014
Connections (million)	87	95	113	127	145
% active	98%	98%	98%	97%	97%
% prepaid	97%	97%	97%	97%	97%
SIMs per subscriber	2.3	2.4	2.4	2.4	2.4
Unique subscribers (million)	36.5	39.2	45.4	51.1	58.0
Penetration, connections	54%	57%	66%	72%	80%
Penetration, unique subscribers	23%	24%	27%	29%	32%
Connections growth (annual)	19%	9%	19%	12%	14%
Unique subscriber growth (annual)	14%	7%	16%	13%	14%
ARPU, by connection (US$)	$7	$7	$6	$6	-
ARPU, by subscriber (US$)	$17	$16	$15	$15	-
Recurring revenue (US$, million)	$7,084	$7,324	$7,627	$8,717	-
Recurring revenue growth (annual)	-6%	3%	4%	14%	-

Table 3: Nigeria, key mobile indicators
Source: GSMA Intelligence
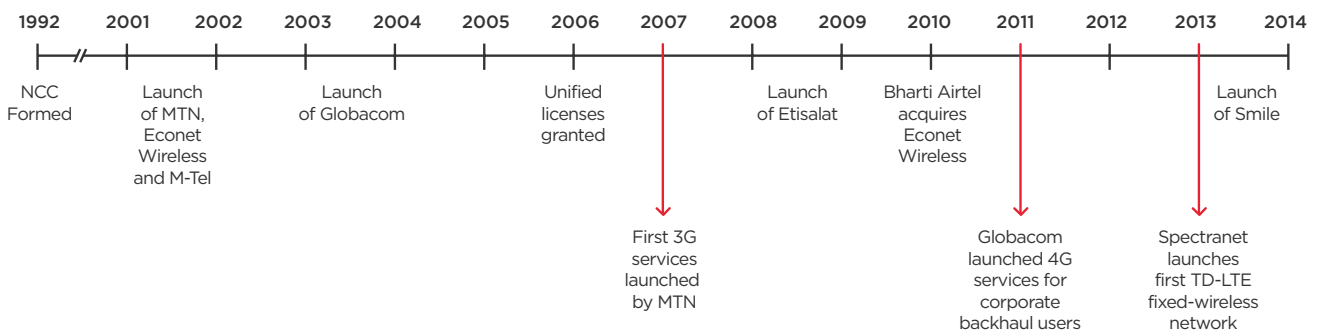
Figure 4: Mobile network operator launch timeline
Source: GSMA Intelligence

Big market, many players

As the largest country and mobile market in Africa, Nigeria has attracted a diverse range of players. The top three operators – MTN, Airtel and Globacom – have been present since the early growth years and now account for around 85% of the market. This hasn't changed very much over the last 10 years, although Etisalat has come on as a competitive force since its launch in 2008/09 — aided by the introduction of mobile number portability in May 2013 (see Figures 6 and 7) — effectively limiting the gains of the small cadre of mostly

CDMA operators (e.g. Visafone) and providing a price check on its larger competitors (e.g. through price plans such as 'home zone' packages where the subscriber is charged at a lower rate when they are in a chosen location and 'reverse charge calling' popular among youth where on running out of prepaid balance their calls to specific numbers (mostly parents or home) can be charged to the call receiving party).
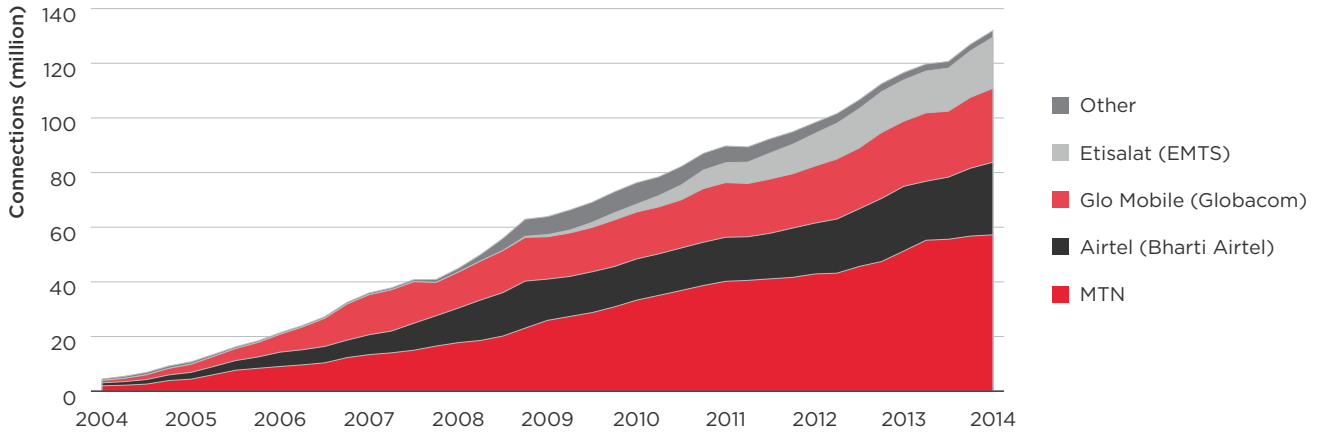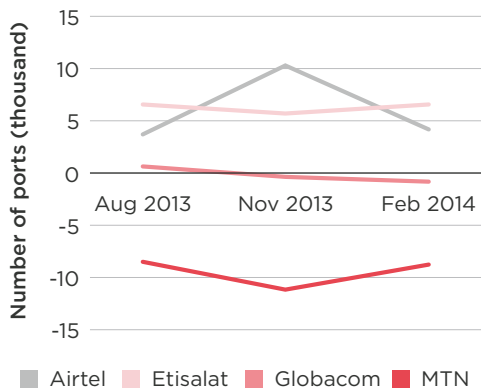

Figure 5: Operator market share evolution

Source: GSMA Intelligence

Figure 6: Net mobile numbers ported (quarterly)

Source: Nigerian Communications Commission
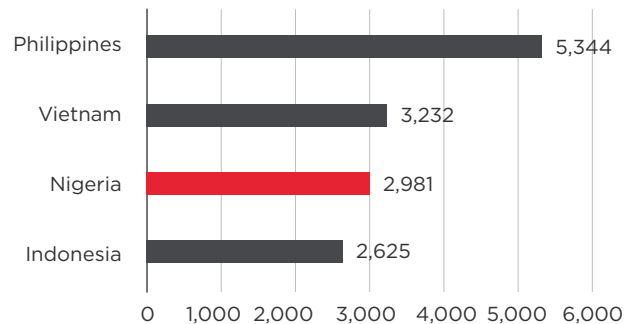
Figure 7: Herfindahl Hirschman Index (HHI), 2013[2]

Source: GSMA Intelligence

As a result, Nigeria is, at least on paper, a fairly competitive market relative to peers (see Figure 7). The Nigerian Communications Commission (NCC) is keen to continue this record, with a watchful eye on market dominance. In an assessment of market competition in 2012 it found a wide differential (of about 300%) between on-net and off-net calls for MTN and consequently ordered it to adhere to a number of obligations, including accounting separation and the introduction of equal rates for on-net and off-net. The NCC also reduced interconnect rates in March 2013 for operators with less than 7.5% market share to boost competition and reduce pricing pressure on smaller players.

[2] HHI is a measure of competition; it takes the sum of the squared market shares of each operator (with a maximum value of 10,000). Higher values indicate a larger concentration of share held by one or two operators, which generally indicates a lower level of competition

[3] Source: *Determination of dominance in selected communication markets in Nigeria*, NCC, April 2013

The key market dynamic is an emerging shift towards mobile data. Smartphone penetration is still nascent in Nigeria at around 10-15% of mobile subscribers (not far off 3G penetration of around 15%). However, this masks a more interesting use of data at the lower end of the market, where the mobile internet is currently occupied mostly by feature phones (see Figure 8) – where Nokia is a key player, but there are also others (such as Samsung and LG).
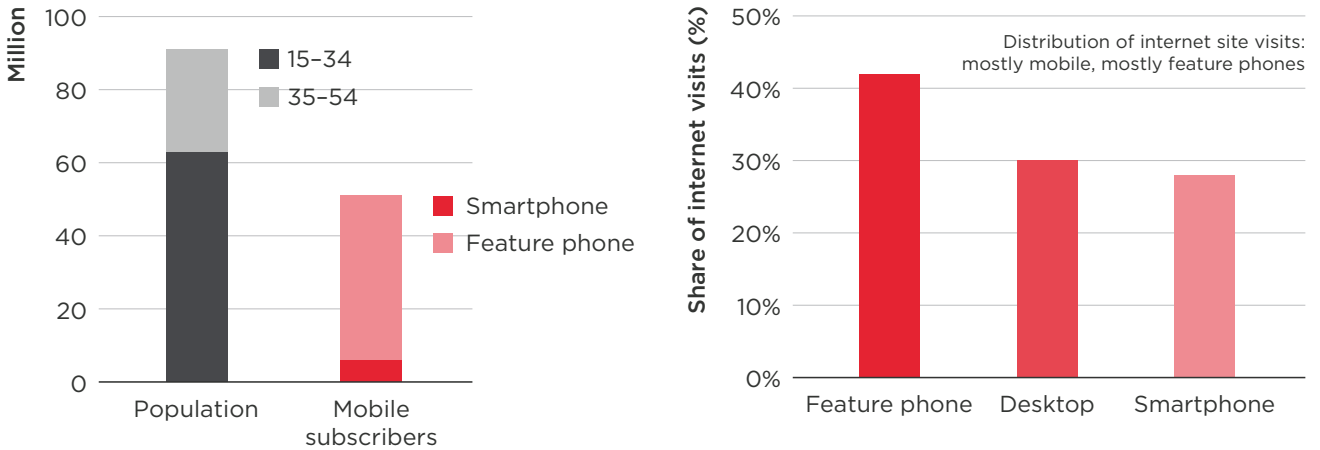

Figure 8: A young population poised for the internet
Source: GSMA Intelligence, Terragon[4]

The opportunity becomes evident given the combination of Nigeria's relatively young population (around a third are between 15-34), discovery of the internet using feature phones, introduction of flexi data tariffs designed for the mobile internet on prepay, lack of fixed broadband access, and the expectation for continued strong economic growth. Coverage and affordability remain key barriers, but our expectation is that as market forces drive these down over the next 2-3 years, a gradual transition towards higher speed access will then become a steeper one as predominantly young urbanites come online (see Figure 9).
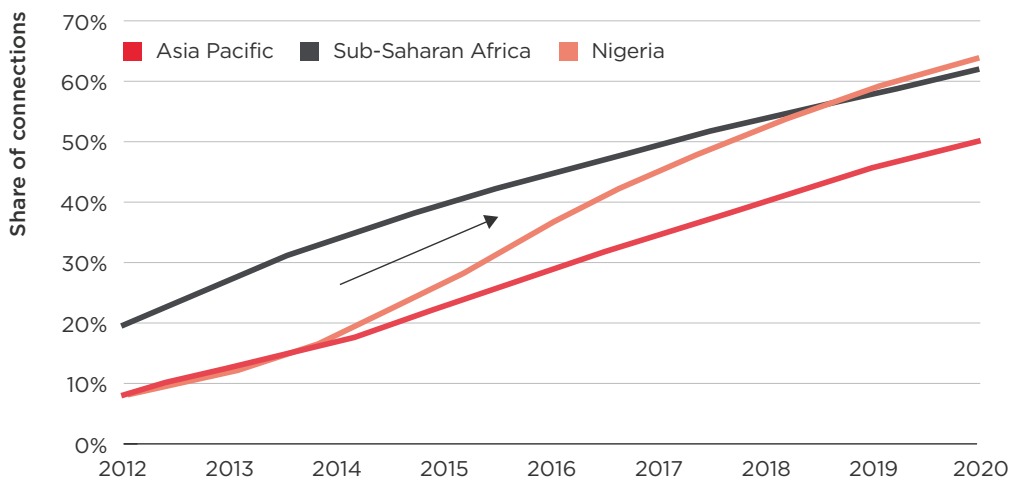

Figure 9: Mobile broadband — impending rise
Source: GSMA Intelligence

[4] Source: *State of Digital Media*, Terragon, 2013

Large room for growth, but affordability and coverage are barriers

While a 70% mobile connections penetration would paint a picture of a well-connected market, the actual penetration on a unique subscriber (e.g. human user) basis is more sobering. Here, Nigeria is around 30%, low even among developing world countries. The technical reason for the disparity is clear enough – an average Nigerian uses around 2 SIMs with a view to cut costs and benefit from the many low-cost deals available in the market (according to a survey done by MTN early last year , the rate of multi-SIMming in Nigerian market is around 40%). Of course, this practice is not unique to Nigeria and so would not account for the disparity. It is the underlying drivers for individual ownership which merit attention – here, we focus on affordability and coverage. There is a tightly defined relationship between the take-up of mobile and its affordability relative to income, with a tipping point around 2-3% (see Figure 10). Nigeria is among the outliers to this plot. While we expect this to improve over the next 3-5 years as incomes rise and the cost of devices and airtime falls (e.g. market forces), the pace at which this occurs can be positively influenced by increasingly aligning tariffs to the purchasing power of mid and low income customers.
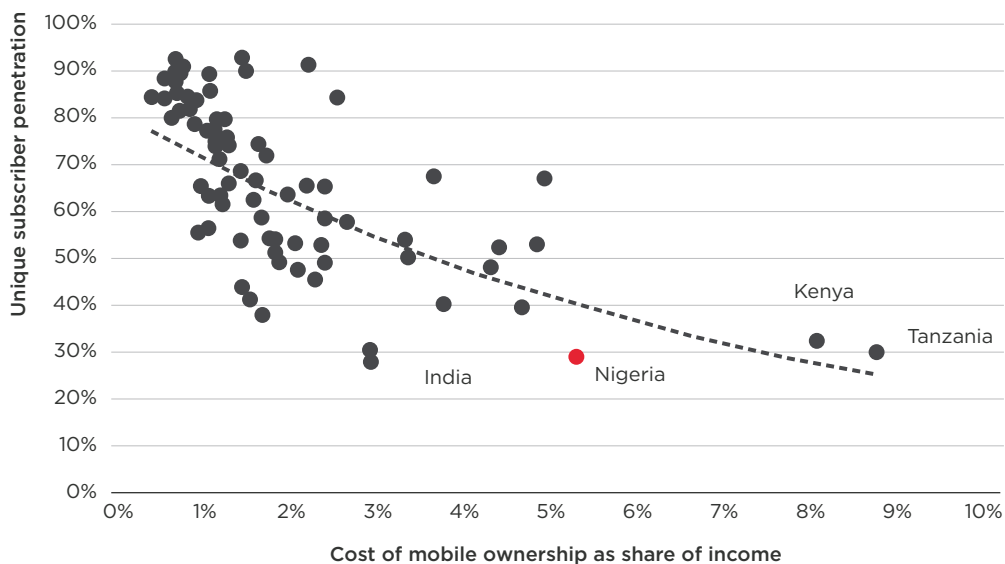

Figure 10: How much does it cost to run a mobile phone relative to income?
Source: GSMA Intelligence

The problem of coverage comes into sharper view when mobile access is viewed through the urban vs. rural lens. Nigeria's population is split roughly 50:50 between urban and rural areas, but mobile penetration is much lower outside of cities (see Figure 11). More striking still is a north-south divide within the country, with southern regions (including major metropolises such as Lagos) well ahead of northern counterparts in access within a household to mobile phones.
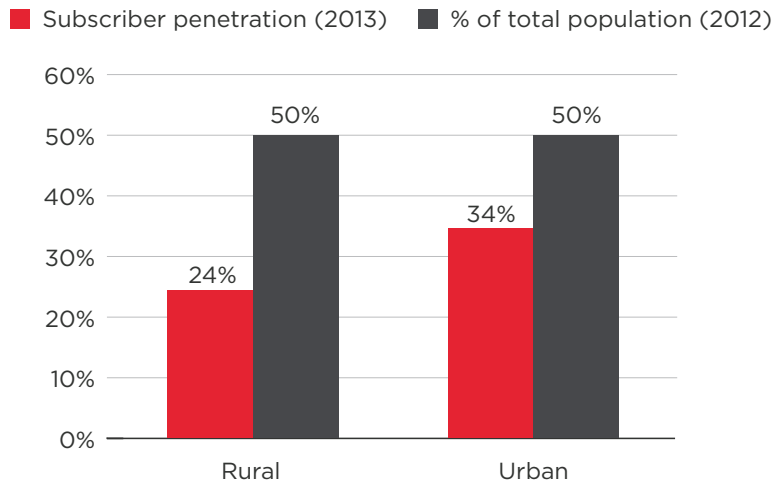
⁵ Source: MTN Q1 2013 earnings call transcript

Figure 11: Gap in rural vs urban penetration
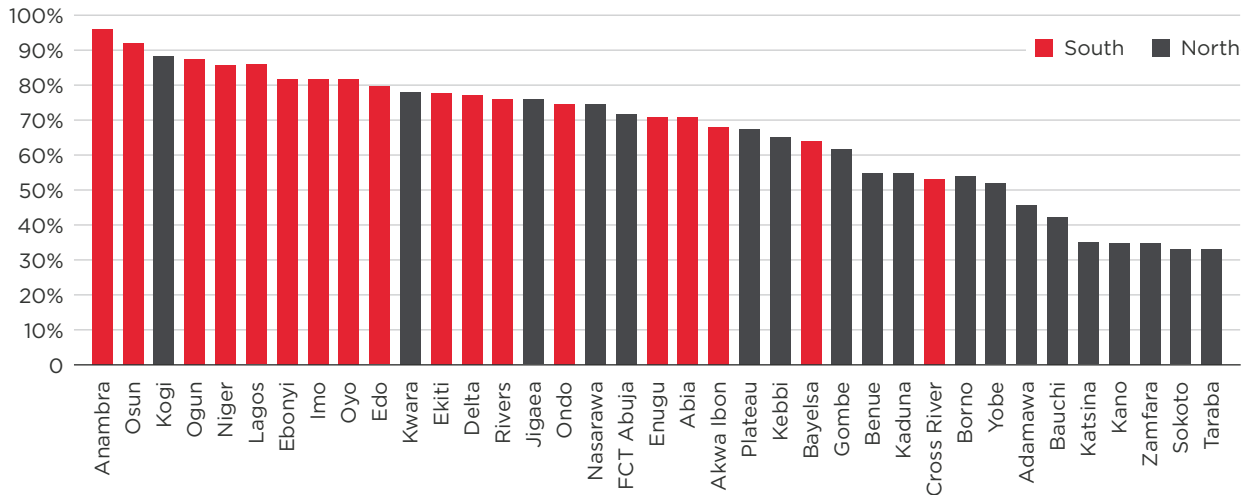*Source: Nigeria Bureau of Statistics, GSMA Intelligence*

Figure 12: Access[6] to mobile phones — north-south divide
Source: Nigeria Bureau of Statistics

Expanding coverage to rural areas is a complex issue. Geographic terrain and vast distances, lack of electricity and road access, and continued security threats are all challenges to investment in rural coverage (including new sites and backhaul) despite Nigeria's position as a fast growing economy. The regulator has set a goal of 60% rural penetration by 2015, with an increase to universal levels by 2017. While this is ambitious, the seeds on the demand side have largely been laid – household access to mobile phones is already high, with sharing amongst multiple individuals common practice, particularly in rural areas among lower income populations. Indeed, the mobile phone as a category is near ubiquitous on this basis (only radio is more widespread), with broadcast TV still behind, and PCs and the internet lower still as a result of a paucity of fixed broadband infrastructure (see Figure 13). We believe the most important actions lie on the supply side in setting clear and realistic goals by government, fostering a regulatory climate conducive to investment and that adequately reflects the socio-economic benefits gained through rising mobile penetration.

[6] Access is defined as ownership or access to a mobile without ownership
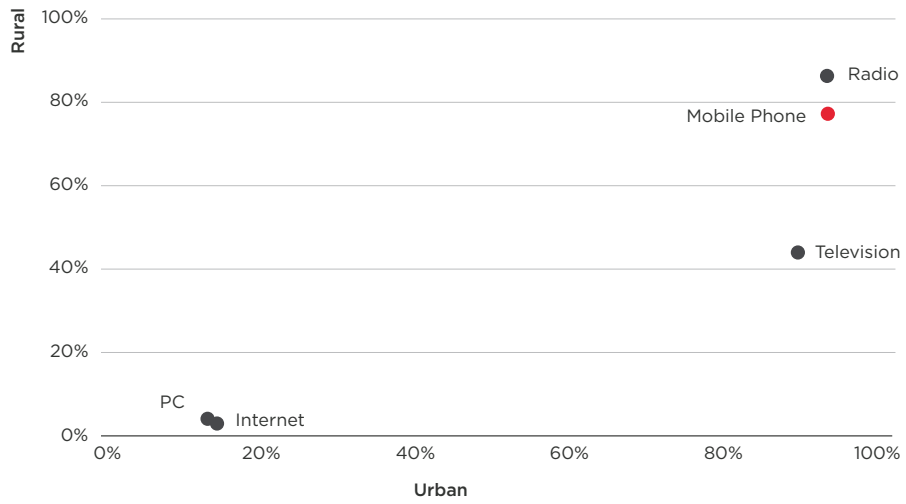
Figure 13: Household access to communication technology in Nigeria, 2012
Source: Nigeria Bureau of Statistics[7], GSMA Intelligence

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[7] Based on Living Standard Measurement Study (LSMS) conducted by National Bureau of Statistics through bi-annual surveys administered on a sample of households selected from 22,000 households surveyed in General household survey

Challenges in the regulatory space

While affordability and coverage are common barriers to accessing mobile and data services (therefore constricting supply and demand) in many countries across Sub-Saharan Africa, the extent of these challenges are often larger in rural areas. This means that improvements driven by market forces alone will take longer. Coupled with the role of mobile in driving access to basic communications and wider socio-economic services for mid and low income populations, the opportunity cost underlines the need for a pro-investment climate. This includes encouraging innovative network roll-out models (such as the optional practice of network infrastructure sharing) and wider collaborative approach between industry and government.

One of the major challenges faced by mobile operators in Nigeria is the pervasiveness of multiple regulation and taxation structures. In addition to the national regulator (NCC) operators must obtain approvals from several other regulatory bodies, each of which have their own remit in regards to infrastructure and other network development. Such bodies include government officials at federal, state and local levels, environmental agencies, town planning agencies and other traditional bodies of governance. This inefficient duplication of regulatory hurdles ultimately means that operational costs are higher (all else equal), which can lead to delays in network roll-out and higher costs for delivering mobile services.

Operators must also consider high and duplicate taxes being levied on them by multiple agencies and bodies. The government of Nigeria has highlighted this issue in its recent National Broadband Plan (NBP, covering 2013-2018), stating that the taxes imposed on operators in the telecoms and ICT sectors are disproportionately higher than those in other sectors in the economy, even after accounting for the relatively large contribution to GDP of around 8%. The government is now piloting a 'Smart State Project' in four states of the country to focus on reducing multiple layers of taxation and ensuring a smooth mobile infrastructure roll-out in the country[8].

Another important issue has been the quality of service (QoS) provided by Nigerian operators, which has been under strict scrutiny of the NCC. In March this year, the regulator banned the three largest operators (MTN, Airtel and Globacom) from selling new SIM cards for a month. This came in the aftermath of operators allegedly missing target key performance indicators (KPIs) for quality of service in the month of January. It is worth noting, however, that the KPIs have changed considerably in the 11 months from February 2013 to January 2014, with significant changes in target levels for stand-alone dedicated control channel congestion and call drop rates. It is important to understand that while quality of service is essential to provide value for money and un-interrupted connectivity to customers, targets should be set by the regulator in consultation with operators, so that expectations are aligned and delivered on a mutually acceptable timeframe.

[8] Source: _70% of investment in Nigeria's telecoms sector goes to taxes - Johnson_, HumanIPO, May 2014

Indicator	Target (Feb 2013)	Target (Jan 2014)
Call Set Up Success Rate	95.5%	98.0%
Call Drop Rate	1.9%	1.0%
Stand Alone Dedicated Control Channel Congestion	1.0%	0.2%
Traffic Channel Congestion	1.8%	2.0%

Table 4: Quality of service indicators
Source: Nigerian Communications Commission

In addition to the cost and time resources associated with expanded network infrastructure and service roll-out, Nigerian operators must also resolve issues of petty theft and vandalism to their networks. The Nigerian Ministry of Communications has highlighted this in its National Broadband Plan and has revealed that mobile operators reported over 70 physical cuts a month to their nationwide fibre networks, a large portion of which were caused by road construction and wilful damage. Such issues not only impact operator revenues but also significantly hamper their ability to provide connectivity to Nigerians. The government will enact a Critical Infrastructure Protection Act that lists ICT infrastructure amongst assets to be protected, along with the provision of direct appropriate security agencies to elevate infrastructure surveillance and protective oversight for such infrastructure.

Lastly, in order to meet growing demand for mobile broadband, the release of sufficient spectrum, at reasonable price, is essential. The regulator recently auctioned a 30 MHz block in the 2300 MHz band and plans to auction higher frequency bands in the future. The top four operators in Nigeria operate in the 800/1900/2100 MHz spectrum bands. When planning future releases, the harmonised channelization of spectrum becomes increasingly important as this could significantly contribute towards gaining economies of scale, which will enable a virtuous cycle of more affordable smartphones and higher end feature phones accelerating mobile broadband take-up in the country. Additionally, the auction of the Digital Dividend (700 and 800 MHz), which has the advantageous characteristics of sub-1GHz spectrum, would offer strong geographic coverage and access for mobile broadband in both urban and rural areas. The importance of clearing this spectrum for mobile services is heightened by the impending global ITU deadline for the analogue to digital switchover in June 2015.

Operator	800 MHz	900 MHz	1800 MHz	1900 MHz	2100 MHz	2300 MHz
Airtel (Bharti Airtel)		x	x		x	
Etisalat (EMTS)		x	x		x	
Glo Mobile (Globacom)		x	x		x	
MTN		x	x		x	
Multi-Links (Capcom)	x			x		x
Starcomms				x		
ZOOMmobile (RelTel Wireless)				x		
Visafone	x					

Table 5: Mobile spectrum holdings in Nigeria
Source: Nigerian Communications Commission, GSMA Intelligence

What are the opportunities and challenges for operators in the Nigerian market?

"Limited broadband penetration in Nigeria presents a big opportunity for the mobile industry, especially since landline services are virtually absent in the market. Multiple SIMming is estimated at close to 2 SIMs per subscriber which means that despite 92% teledensity, there still is enough gap in basic telephony, which is waiting to be filled by mobile services. For niche operators, the paucity of metro fibre infrastructure presents a significant opportunity to expand data and broadband services.

However we face a number of challenges ranging from unreliable public electricity supply to arbitrary and incessant disruption of telecoms facilities and operations by individuals and groups and also Ministries, Departments and Agencies (MDAs) that impose unreasonable demands on operators. We have to deal with a bureaucratic and rather 'rent-seeking' administration of planning and other approval processes. Theft, vandalism and outright sabotage of fibre cables and frequent fibre cut incidents strangle network capacity and hamper quality of service in the country even further."

How do you think regulation is affecting the development of ICT in Nigeria?

"There is an overlapping regulatory oversight between sector-specific and subject matter-specific regulators, eg NCC (telecom sector regulator) and Consumer Protection Council (CPC), broad consumer affairs regulator; or NESREA (environmental regulator) at the Federal level, and also between Federal and State Ministries, Departments and Agencies (MDAs). This precipitates multiple-regulation and associated multiplicity taxes on telecoms operations.

Under impetus granted by their enabling legislation, these MDAs typically seek to drive "internally generated revenues" as opposed to providing regulatory service which they only marginally address, or indeed relegate. And sometimes important requirements for environmental protection such as those that relate to effluent discharge or aerial emissions from generating sets at cell sites, are subordinated, in fact relegated, to payments received from telecom operators in lieu. Ironically this is stimulated by perceptions of the profitability of telecoms. The continuing legacy of "silo regulation" of the ICT Sector as distinct Broadcast, Telecom and IT entities as opposed to a converged ICT industry also detracts from coordinated development of ICTs in Nigeria, unlike other countries where these regulators have converged or unified."

What do you think could be the potential ways to overcome these issues?

"Government buy-in at all levels would be very helpful to curtail the menace of multiple taxation, regulation and undue disruption of telecom operations. The enactment providing legal protection for telecoms facilities as Critical National Infrastructure presents a ray of hope to deal with vandalism issues, as well. The epileptic public electricity supply situation is also a serious problem and it is certain that a reasoned and committed privatisation of electricity sector would bring much needed solutions to some of the problems."

We noted that telecommunications has been a major contributor to the recent rebasing of Nigerian GDP, what do you think is the role of the government in promoting ICT/ mobile as driver for economic development?

"The primary role of government is to create conducive regulatory environment for businesses to thrive. The Federal Government should fast track the on-going engagement for timely release of the 700 MHz spectrum to support Mobile Broadband growth, especially considering the shortage of wire-line infrastructure in the country and the long lead time to deliver this even with the planned licensing of 7 regional fibre infrastructure companies by the NCC. Government patronage and incentives are required to develop the ecosystem to support effective social services delivery over ICTs, viz e-Education, e-Government and e-Health. Forward-looking and incentive regulation will provide the enabling environment for entrepreneurial development for commercial delivery of Broadband initiatives in e-commerce, e-agriculture, etc. Federal Government in collaboration with committed State Governments would need to partner with telecom operators, ICT players and development partners to support the creation of incubation centers in parts of the country that will foster the growth of an ecosystem in-country that will position ICT/mobile as driver for economic development."

Could you throw some light on the mobile broadband roll-out by Airtel in Nigeria in the past? What are the company's plans to bring greater mobile broadband coverage in the country in future?

"Airtel presently has an extensive mobile broadband coverage on 3G plus (W-CDMA and HSPA) across the 36 States of the Federation, including the Federal Capital Territory, Abuja, while 4G-LTE is planned for in-band rollout on 1800 or 2100 MHz spectrum or 700/800 MHz spectrum grant from NCC.

Given the coverage targets of 35% (2013), 60% (2015), and 80% (2018) Broadband penetration specified in the National Broadband Plan, 2013 – 2018, Airtel will align its broadband roll out plan to achieve or exceed these targets."

Mobile for development (M4D) landscape

An evident opportunity

So, what does this all mean in a high growth economy with rising mobile penetration and utility, but one where deep divides persist in access to basic services and information? Nigeria, like many other countries in sub Saharan Africa, suffers gaps in access to banking, education and literacy, and utilities, with often under half the population provisioned. Inequality is evident, with over 60% of the population still earning under $1.25 per day. Given that a large portion of Nigeria's population has access to a mobile through sharing, if not direct ownership (see Figure 14), mobile therefore has a role to play in closing the gap in access to basic services and information.
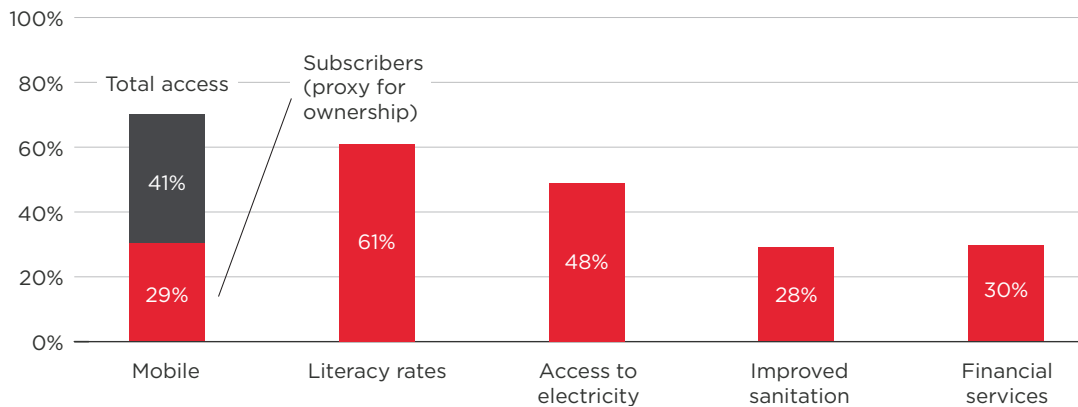

Figure 14: Opportunity for M4D, Nigeria
Source: GSMA Intelligence, World Bank

Note: Access to improved sanitation facilities refers to the percentage of the population using improved sanitation facilities include flush/pour flush (to piped sewer system, septic tank, pit latrine), ventilated improved pit (VIP) latrine, pit latrine with slab, and composting toilet

The transition from a voice to data-centric world is not unique to one country (its stage of development influences only the pace, not the direction), with Nigeria no different. Indeed, mobile and the internet can and should be seen as enablers to socio-economic development, helping the government break a vicious circle which has dragged Nigeria into a loop of income inequality, poor health and education, and pocketed high unemployment.

To realise this opportunity at scale, participation of the mobile operators is a pre-requisite. Indeed, there are sound commercial incentives for operators, both in terms of revenue and loyalty through positive associations with provision of connectivity and life-enhancing services. However, the majority of commercial products currently offered by operators in Nigeria are focused on entertainment and social media (see Figure 15), highlighting the significant gap and opportunity that exists for the delivery of M4D services that deliver both business benefit and socio-economic impact.
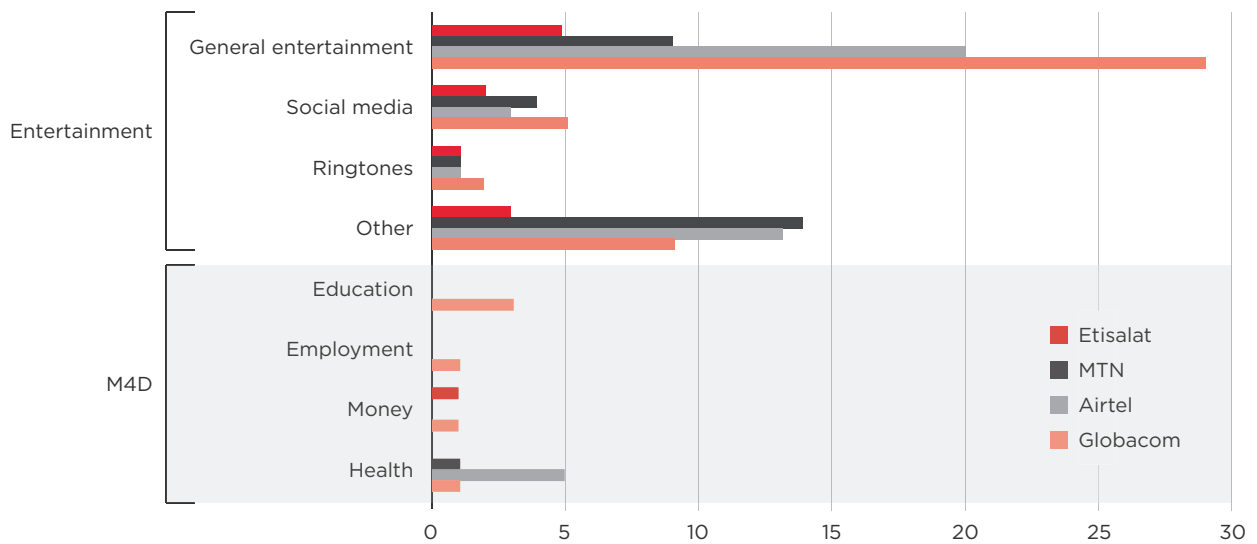
Figure 15: Commercial VAS offered by operators in Nigeria
Source: Operator websites

Note: general entertainment includes news, religion, games, music, etc. Other includes services to recharge prepaid, receiver pays for calls/ SMS, missed called alerts, etc.

The higher number of entertainment and social media services is, in some senses, not surprising. Nigeria has a small but inexorably rising internet penetration, and large youth population that is more likely to drive network effects of lifestyle content and social media. There is, however, a potential missed opportunity given the demand for basic service access from a significant section of the population for whom entertainment is arguably a lower priority.

We explore the M4D opportunity in a number of sectors – health, financial services, utility access, and education – before discussing wider ecosystem engagement to deliver at scale. There is scope for more operator leadership in M4D, but there are also clear opportunities for impact investors in this space. The commercial opportunity for mobile services in Nigeria are there but might take longer to realise than the typical investment would prefer to see. In this case large foreign aid players and social investors could play a crucial role in financing the creation of services and demonstrating the demand and adoption to stimulate the creation of similar services by the market.

Sector view for M4D products and services

With only about 30% of the adult population with a bank account, financial services access remain the preserve of a minority in Nigeria. Access to improved sanitation and electricity is available to less than half of the total population. The average power availability across the electrified areas is less than 5 hours per day. As the country seeks to address these and other socio-economic challenges, we have seen M4D services picking up in the country. These have increased from less than 10 in 2008 to over 50 by the end of 2013, with health and mobile money (particularly after licences were issued by the Central Bank of Nigeria in 2011) the main drivers.
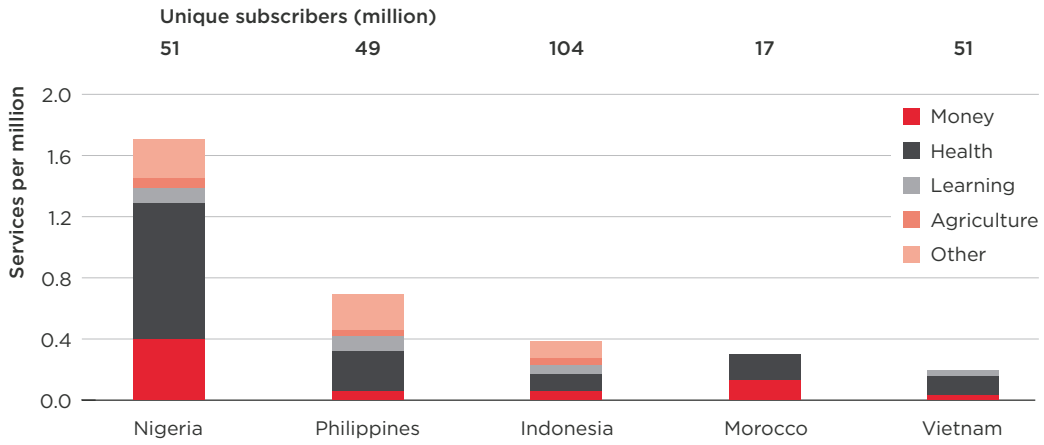
Unique subscribers (million)

| 51 | 49 | 104 | 17 | 51 |

Figure 16: M4D services per million mobile subscribers

Source: GSMA Mobile for Development

mHealth

It is reported that one in every eight children born in Nigeria dies before reaching the age of five and that such instances are even more prominent in rural areas. The country has one of the highest maternal mortality rates in the world with about four maternal deaths per hour. There is an opportunity for mobile to support improved nutrition and reduced maternal and child mortality. Traditionally, the primary decision makers in the household for matters related to health, childcare and food are women. In Nigeria, women have low literacy rates, especially in the north, 30% compared to 78% in the south. This is less the case for males, for which literacy rates are 63% and 88% in the north and south respectively. Therefore, taking into account phone sharing, we believe the use of both text (SMS, USSD, and increasingly applications) and voice-based solutions (such as IVR) will help increase the addressable market for mHealth services (see Figure 17)[9].
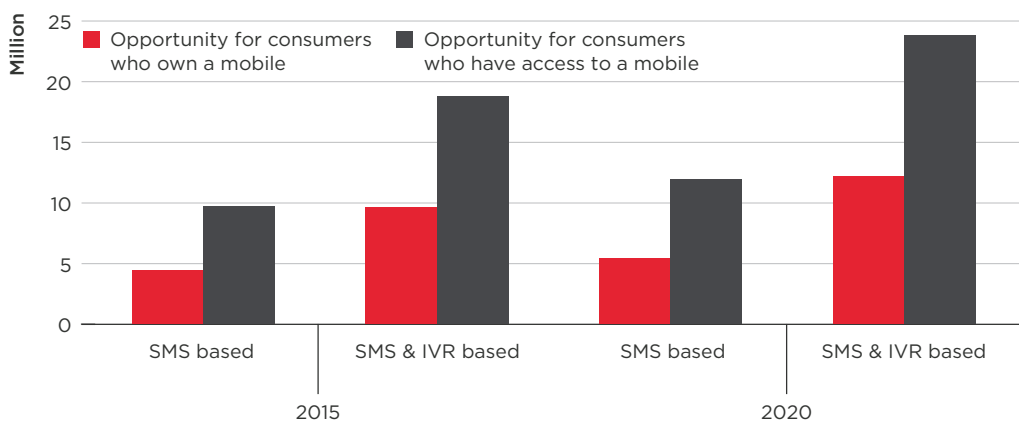
Figure 17: mHealth opportunity

Source: GSMA mHealth[9]

[9] Source: *mHealth Feasibility Report: Nigeria*, GSMA, May 2014

Improvement of health services has been a priority of Nigerian government, which is struggling to achieve the Millennium Development Goals set by the United Nations. The inclination of government to track the progress on health indices can be inferred from the fact that a number of mHealth deployments focus on demand generation, registration and data surveillance components and are supported by the government. The poorest segment of the population has the least access to public healthcare (see Figure 18). On the other hand, an average of around 50-60% of these households in Sub-Saharan Africa (for which Nigeria is by far the largest country) have access to mobile phones, underlining an opportunity for mobile to fill the gap in the delivery of health services, provided awareness and the use cases are effectively managed.
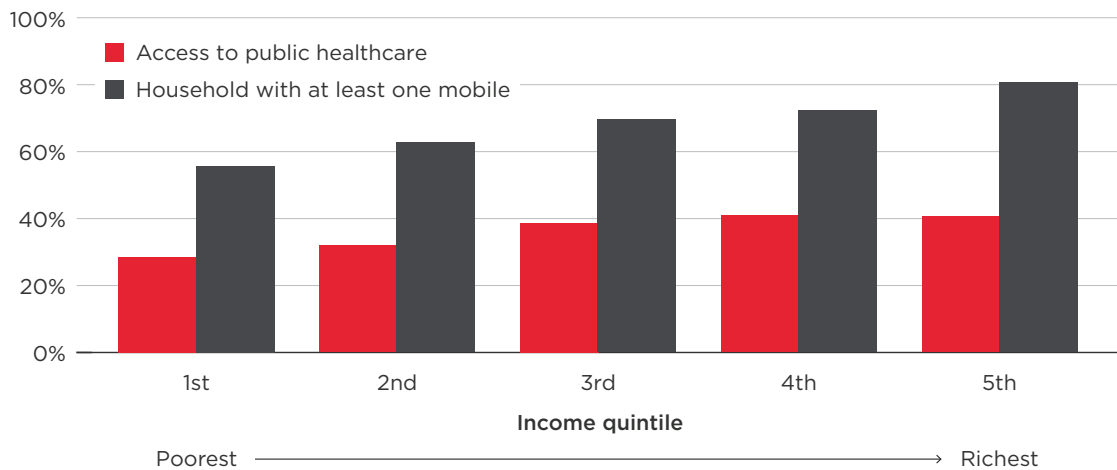

Figure 18: Access to public healthcare by income level quintile, Sub-Saharan Africa
Source: NDHS, Gallup

Special feature: In conversation with Emeka Chukwu
mHealth/IT Officer, Pathfinder International Abuja

What was the mHealth opportunity in Nigeria and how was it filled by Pathfinder International?

"Nigeria contributes to about 2% of world's population but is home to around 10% of the maternal and child health problems in the world. Services at the lowest level of care are often provided by unskilled and sometimes overworked health workers due to the dearth of human resource for health in the country. The data used to measure health indicators in Nigeria is largely collected by these health workers and is often found to be unreliable for data driven decision making. We at Pathfinder International decided to step in and leverage the rising proliferation of mobile phones in rural areas and started a project called m4Change in 2012. This project was aimed at equipping community health extension workers with a mobile phone decision support and data collection mobile application known as CommCare. This point of care application is used during ante-natal care and has a case management feature coupled with automatic messages which are sent to pregnant women who miss regular appointments and to health workers to check for those patients who did not deliver at the facility two weeks post due dates."

How have things gone so far since the launch of the m4change project?

"It has been great. We did not expect such a success during pilot project. It was initially funded from June to December 2013 by Pathfinder International funds, but we received an additional funding last October from the UN to extend our project and take it to the second phase until 2015. To date more than 15,000 women have registered with CommCare at project health facilities. Moreover interviews with the clients indicate that not only have these mobile interventions improved service to the patients but also have contributed to a significant increase in their knowledge about healthy practices during pregnancy and breastfeeding." M4change Project evaluation showed an improvement in the antenatal quality score from baseline to end-line, and client overall perception of quality of care."

How are you working to scale this service to reach a larger audience? What is your business model around it?

"We work on a freemium business model and are funded by our donors. In the second phase we are expanding the reach of our project from 20 primary health centres (PHC) to a total of 50 PHCs. Not only are we looking at expanding the reach of the project but are also widening the scope to cover deliveries and post-natal care in addition to ante-natal at present. The key feature of the new project is to equip health workers with this mobile application to track mothers through baby's year one of life and initiate payments for services (co-responsibilities met) to support the government's conditional cash transfer scheme in collaboration with the subsidy reinvestment and empowerment program (SURE-P) for maternal and child health (MCH)."

What kind of challenges have you faced in the past and how did you deal with them? Do you see any new challenges in the future?

"One of the many challenges that we faced in the first phase was limited network coverage which prevented our health workers from uploading patient data in absence of network availability. To overcome this we introduced a mobile health application solution that enables the user to enter data offline and then be synced whenever the device enters the coverage area.

Working with mobile money service providers have been challenging. Mobile money services in Nigeria are nascent and bank led. This has changed the way mobile money is seen in this country. A wallet in one bank can only receive money through its agent mobile operator. At this scale, the project has elicited to work with a mobile money operator pending when advocacy for inter-agent withdrawal will yield results. Additionally there is fierce competition among operators – while one operator may give us free services another may charge an exorbitant amount for the same service. We are positive however that we will be able to overcome these challenges just as we have in the past and will work together with various parties to provide value to poor patients in remote areas. GSMA, through its mHealth Community of Practice in Nigeria has been very helpful in brokering value adding partnership between us, VAS aggregators (Vas2Nets & Starfish mobile) and mobile operators."

What is the value of partnerships in your business, particularly with operators?

"Partnerships are critical to our business model. As I said we will now be working to provide cash transfers from government to the mobile wallets of pregnant women in need, and also support provision of continuum of maternal, neonatal, and child health (MNCH) services. This involves partnering with government, banks, mobile operators as well as VAS aggregators. We partnered with Etisalat in the first phase of our project but now we are looking to partner with more operators particularly to provide free SIM cards to eligible women who currently don't have a mobile connection. We are targeting partnerships with all operators also because of differences in the network coverage areas by operator. VAS2Net and StarFish-mobile, our partner VAS aggregators, are serving as an excellent link between us and the mobile operators and will also play a critical role in forming partnerships between MNOs and the banks for mobile money."

Mobile Money

There are 18 licensed Mobile Payment Services providers in Nigeria[10], comprising of banks and companies established for this purpose under the 2009 Regulatory Framework for Mobile Payment Services[11] ("the Regulatory Framework"). No other country in the world has such a high number of mobile financial services providers. However, according to GSMA estimates, in June 2013 there were still less than 1 million customers using mobile payments services in Nigeria, less than 1% of the population[12]. Nigeria is lagging behind in the development of these services, when compared to what has already been achieved in other markets such as Ivory Coast, Kenya, Madagascar, Tanzania and Uganda. For example, Tanzania has an adult population of 25.8m (one third of Nigeria's adult population) and already has 11m Mobile Payment Services accounts that are active on a 90-day basis[13]. In September 2013, the four mobile money services provided by operators facilitated transactions for TZS 2.8 trillion ($ 1.6 billion). The value transacted through those schemes in Tanzania is 26 times greater than Nigeria (NGN 10.14 billion/month, equal to $61.4m, in the same month).

The Regulatory Framework allows three models, which the Central Bank of Nigeria (CBN) describes as i) bank-led, ii) non-bank-led, and iii) bank focused. It specifically excludes operators from providing mobile payments services, limiting their role to merely the provision of the channel through which other providers' services can be offered[14]. The regulation takes an approach that focuses on the type of provider rather than the service, which goes against guidance provided by the Bank of International Settlements, Committee on Payment and Settlement Systems. While the CBN has acknowledged that regulations should enable the diversification of payment methods as well as different options for funds transfer and storage and should ensure new mobile-based payment instruments can be introduced safely, it is hard to understand why the regulator has opened the market to non-bank providers but has discriminated against operators, specifically prohibiting them from offering these services even though they are well suited to doing so.

GSMA's annual global survey of mobile money services has consistently shown that among the group of the fastest growing services, the vast majority are driven by mobile operators (see Figure 19).

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[10] Source: Musa Itopa Jimoh (Head, Payments System Policy and Oversight), Central Bank of Nigeria, presentation at the International Conference on Payments System, September 2013

[11] Source: *Regulatory Framework for Mobile Payment Services in Nigeria*, Central Bank of Nigeria, 2009

[12] This measure is for customers that have conducted a transaction in the past 90 days. Estimates based on the data gathered through the annual GSMA Mobile Financial Services Adoption Survey (Source: *Mobile Financial Services for the Unbanked: State of the Industry 2013*, GSMA, February 2014)

[13] Source: Bank of Tanzania, *Payment System Statistics* (See also *Enabling mobile money policies in Tanzania*, GSMA, March 2014)

[14] The regulation takes a discriminatory approach excluding the participation of operators in the provision of mobile payment services rather than a functional approach that focuses on applying the same rules for the same kind of service or an institutional specific approach which would allow operators incorporate subsidiaries specific for mobile payment services that can be regulated by the CBN (Further detail and source: *Mobile Money: Enabling Regulatory Solutions*, GSMA, February 2013)
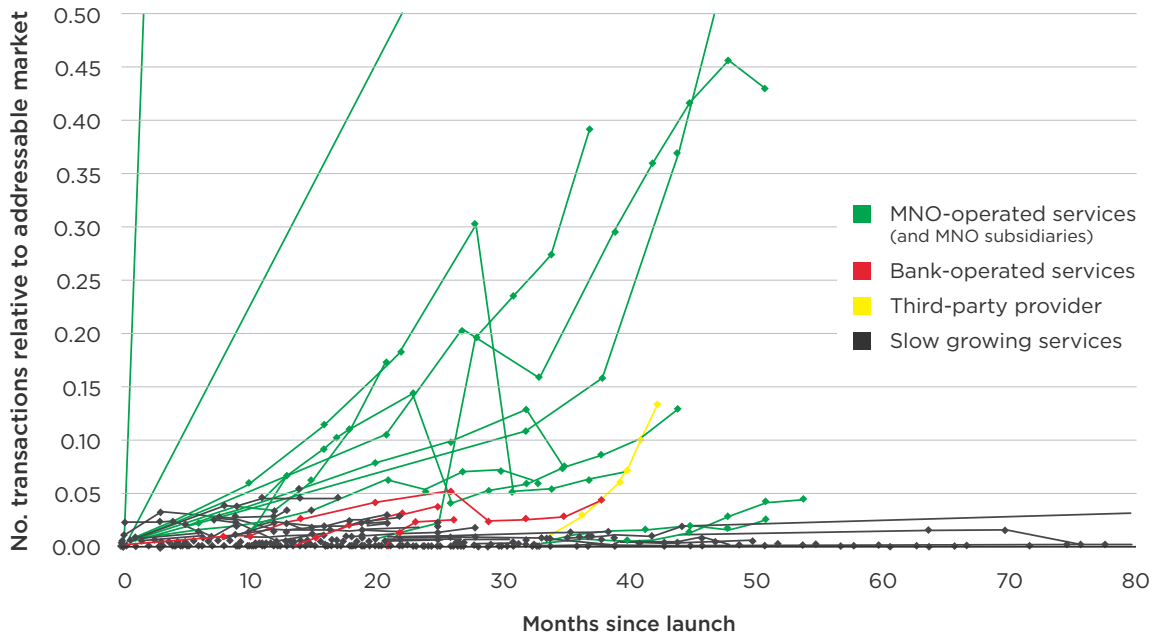
Figure 19: Growth of individual mobile money services since launch, June 2013
Source: GSMA Mobile Money

Operators are interested in the provision of these services and keen to invest in this sector to help the markets scaling because they have a number of assets they can leverage to offer mobile money services, they have expertise in areas central to their core business and necessary for mobile money, and they are able to generate some unique forms of direct and indirect revenue from mobile money[14].

Moreover, the CBN is not unique in its concern around the potential risks presented to the stability and integrity of the financial sector if operators were to offer digital payments. However, other central banks have already assessed and addressed these concerns, finding solutions to mitigate the specific risks and providing an enabling regulatory framework that has proved conducive to increased access to financial services safely and conveniently for millions of people. Countries that allow operators to offer mobile money services and have implemented a proportional oversight framework covering both prudential and market conduct requirements include: Bolivia, Brazil, Burundi, Democratic Republic of Congo, Fiji, Kenya, Liberia, Madagascar, Malawi, Malaysia, Morocco, Namibia, Paraguay, Peru, the Philippines, Rwanda, Somaliland, Sri Lanka, Tanzania, Tonga, Uganda, Zambia, Zimbabwe, and the eight members of the West African Economic and Monetary Union (WAEMU), amongst others.

For a market as large as Nigeria, the opportunity for financial inclusion is huge, however the full potential of mobile is not being utilised. By adopting a non-discriminatory approach to the regulation of mobile payment services under which banks and non-banks, particularly operators' subsidiaries are permitted to issue e-money, the CBN could boost access to financial services in Nigeria and achieve the following benefits:

- Improve efficiencies and scale to the national payments system;

- Unlock capital held back by operators, bringing investment and innovation;

- Enhance efficiency in distribution of Mobile Payment Services through existing wide-scale distribution networks; and

- Inspire public confidence in Mobile Payment Services providers as operators will utilise their resources to educate the public and drive mass recruitment campaigns, reversing the current lack of customer awareness on the product and general customer apathy

Education

Nigeria is a young country (70-80% of its population is under 35), with education a key priority to skill its ever growing working age population. While there has been improvement in some areas, educational outcomes remain poor. Enrolment rates at the primary level are less than 70% (see Figure 20), which has contributed into a vicious circle of illiteracy (nationally this is under 65%, with female lower at around 50%) and unemployment. Compounding this is a structural inefficiency driven by overstretched teachers, with teacher to pupil ratios over 30 at both the primary and secondary level. Even at the university level, while demand for places has risen, the acceptance rate has remained low, with qualified teaching availability a factor within this (see Figure 21).
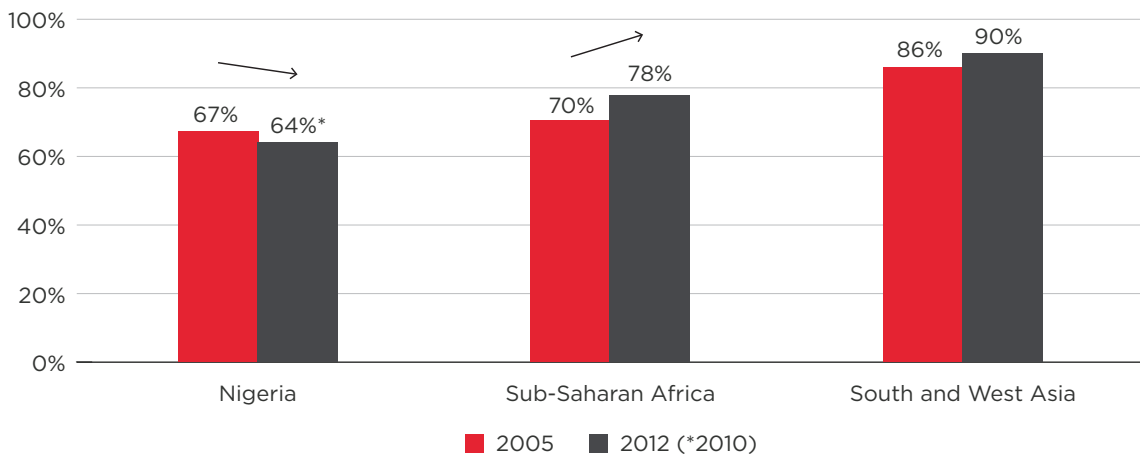

Figure 20: Net enrolment rate in primary education, 2005/12
Source: GSMA Intelligence, UNESCO

Note: net enrolment rate refers to the proportion of children in the age range for a given level of schooling that are actually enrolled at that level
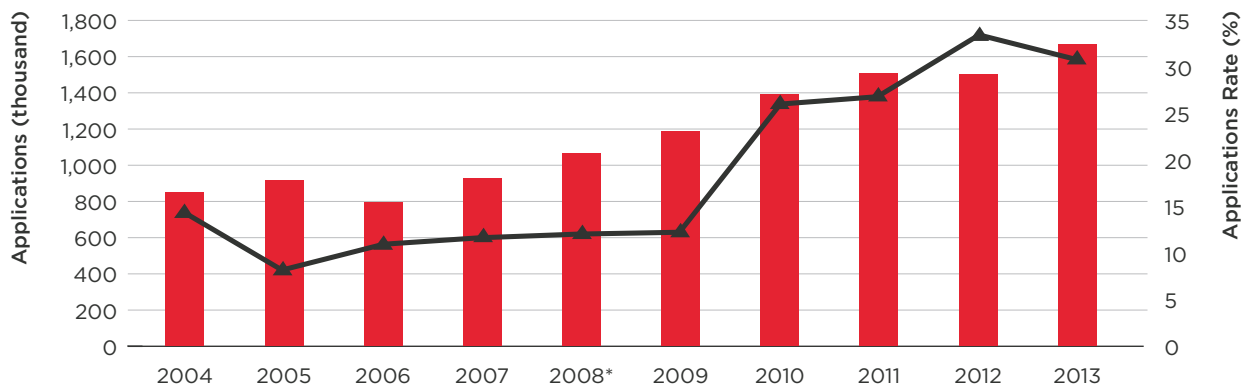
Figure 21: University admissions and acceptance rate, 2004–13
Source: GSMA Intelligence, Nigeria Joint Admissions and Matriculation Board

* Note: 2008 acceptance rate estimated

For its part, the use of mobile in education is relatively nascent, with most of the focus on pilots as opposed to commercial services (the UNESCO-led 'English Teacher' one of the largest). The opportunities are clear enough (see Table 6). The largest addressable market comes through direct knowledge transfer and skills training as it can be applied across all levels of the education system given the relatively high access to mobile phones (even if students don't own one). However, this also carries the most challenges given it is targeting a disparate end user audience, with the need for local language content and services delivered through both text and voice of key importance. Targeting teachers may be a more effective approach given that they can translate the content to students and reach a larger audience through fewer devices.

Opportunity	How mobile can help	Best levels to target	Challenges (beyond core access[15])
Direct skills training and literacy	Deliver educational content via text, voice or application	Students. Primary, secondary, tertiary	Awareness, technological literacy, local language content, text and voice-based services (for illiteracy), user experience on small screen
Improve efficiency in classroom	Distribute teaching tips on curriculum	Teachers. Secondary, tertiary	Buy in to benefits of mobile as educational tool instead of distraction, local language content
Private tutoring out of classroom	Distribute courses and lesson plans	Students (self-taught) and teachers. Mostly tertiary, some secondary	Cost of service, local language content, user experience on small screen

Table 6: A future for mobile-enabled education services?
Source: GSMA Intelligence

[15] Refers to basic barriers to mobile access, including coverage, availability and cost of device and airtime

The potential for monetisation depends on the type of business model being used. In the near term, we see the clearest opportunity in B2B models targeting schools and teachers – at secondary and university levels in particular. Stereo.me is a good example of entrepreneurship in this space, which functions as a sort of extension service where educators pre-record content that is delivered through a voice call to students outside the classroom. Teachers are notified on completion (including the grade), reducing time spent on this in class.

Over the medium term (e.g. 3-5 years), the B2C model has potential. Market forces will help mitigate some of the challenges in delivering educational content to students directly (e.g. handset prices will decline as a share of income), and we expect the local content issue to be addressed gradually as part of the wider growth of the mobile internet. Globacom is the only mobile operator with a significant commercial presence in mobile education services, but the services it offers are perhaps indicative of the future. Its two main services are segmented along audience and technology lines: Glo Mobile School targets the primary/secondary audience through feature phones that do not require internet access, while Glo Mobile Academy targets the secondary/tertiary market through smartphones (and some feature phones) with a data connection. While private mobile-enabled tutor services tend to be expensive ($15-20 per month) and therefore open only to mid and upper income groups, Globacom's are more economical. The costs range between $0.15 and $0.85 per week, equating to between 2-10% of monthly income for a household earning $1.25 per day or 0.3-1.6% for one on the average income. For an operator, education VAS may continue as a charge service (as in the case of Globacom), but its value in driving customer loyalty may justify it as a free add on.

Other M4D sectors: utility access, agriculture and employment

Mobile money, health and education represent some of the key opportunities in Nigeria, but there are also others. For some mobile use cases, it is particularly useful to look at the difference between urban and rural areas. Here, we see gaps in access to services such as water and electricity – for example, while around 75% of the urban population has clean water access, the penetration decreases to only 40% in rural areas. However, given that 70% of the population has access to a mobile phone, it is possible to leverage this to improve access to electricity and water and close the urban rural gap. A GSMA analysis estimates an addressable market for mobile-enabled energy and water access in Nigeria of 60 million people and 40 million people respectively (see Figure 22).
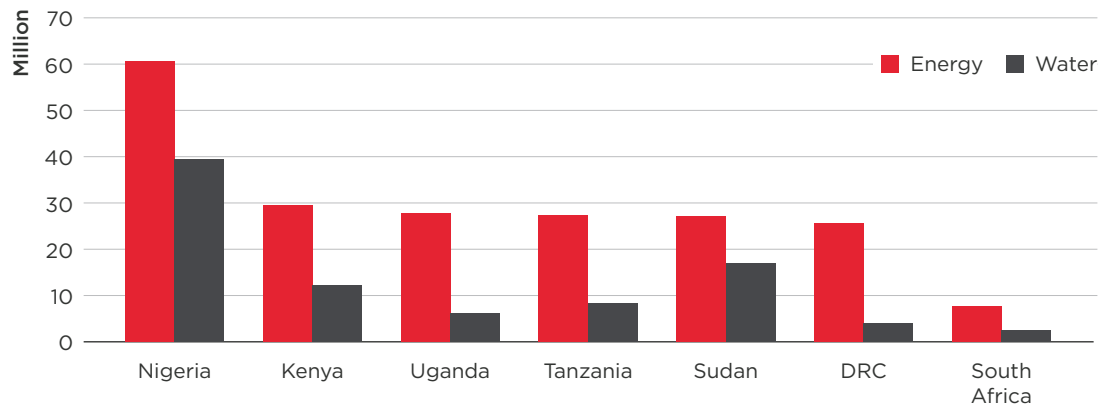
Figure 22: Mobile-enabled utilities: addressable market
Source: GSMA Mobile for Development

Agriculture is another area of opportunity. During the 1960s and 1970s Nigeria was a self-sufficient nation in terms of its food supply, but the agriculture sector has been in decline since the country's economic focus has shifted to oil. By the current government's own admission, corruption has been rife in the distribution of seed and fertiliser to farmers, and the sector has remained inefficient – only around 40% of Nigeria's 84 million hectares of arable land are cultivated. Regardless of the political consequences there are very real implications if population growth outpaces that of the food supply. As a result, the government introduced a turnaround plan in 2011 – termed the 'Agricultural Transformation Agenda' – with the goal to increase the domestic food supply by 20 million tonnes by 2015 with an additional 3.5 million jobs.

The role of mobile in this plan is notable. Seed and fertiliser distribution is now delivered through an electronic wallet system, with farmers receiving vouchers via mobile phone. The numbers started small but are growing – 1.7 million in 2012 up to an estimated 5 million in 2013 – with the government keen on the use of mobile moving forwards. Other priority areas identified for agricultural turnaround focus on market access infrastructure and crop insurance. It is here where we believe there is a gap in the market for private sector players. There is no shortage of companies and organisations that have or currently play in this space. IKSL in India operates as a joint venture between the country's largest farming cooperative and Airtel, while Esoko is active in several markets in Africa and recently received further investment for expansion into East Africa (it is also active through a partner in Nigeria). Indeed, Nokia's Life+ service had been available in Nigeria until 2013, but its pull back has created a hole for others to fill. In many ways, the operating environment is conducive to investment in this space – the route to market through feature phones has been shown before, and the transition to a value-added agricultural sector will require price discovery to compete on the international markets – with rising mobile penetration making this a when, not if scenario.

Mobile for employment services remain nascent in Nigeria, but we believe they have an emerging important function as a horizontal enabler. While notable mobile-enabled job search services across a range of countries (such as Rozgar Sewa and Babajob in India and Njorku in Ghana, Egypt and Kenya) have focused to a large extent on traditional employment matching, services are increasingly being complemented by up-skilling within a given line of work (such equipping rural health workers with diagnostic skill sets).

We believe both direct job matching (particularly in some of the south where pockets of high unemployment – 20-30% – exist alongside high mobile penetration) and enablement have potential in Nigeria, providing both a B2C and B2B dimension to the sector. However, both options would benefit from government support and partnership to drive visibility and awareness.

Stakeholder engagement in M4D – a play for the wider ecosystem

Returning to a central issue, most of the current M4D services in Nigeria are not led by operators (see Figure 23). This is especially the case for mobile money: the CBN, the financial sector regulator, has been reluctant to open these services to be led by operators despite encouraging precedents set by other African nations, where mobile money services have acted as an enabler to the unbanked population and a range of other verticals through payments, remittances and insurance. For other sectors where operators are allowed to participate, there is an evident lack of involvement, with health the notable exception.
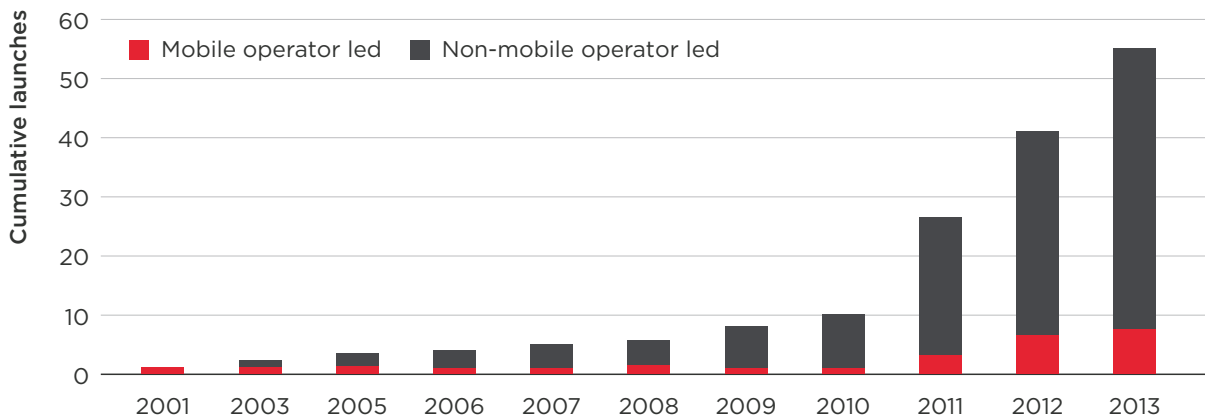

Figure 23: M4D services: an opportunity for operator leadership
Source: GSMA Mobile for Development

We believe the reasons for this are varied, ranging from a focus on day-to-day competition dynamics to focusing capital for investment in network expansion. These are understandable priorities. However, the longer term risk is that mobile is not used effectively and systematically as a catalyst to socio-economic improvement. As we have outlined throughout this report, there are both core access – coverage and affordability of mobile – and business model challenges to achieving this. The commonality between these is that solutions are likely to come through collaboration and comparative advantage. Coverage is a product of investment and innovation, with network sharing able to help this but only if its benefits are mutually understood and acknowledged by operators and regulators.

Operator-led commercial VAS targeting core access needs can fill a gap, but to take leadership operators need clear business models put forth by entrepreneurs seeking partnerships, and a pro-investment regulatory environment. Of course, this can take time. As such, we believe the international donor community has an important role to play

in the short to medium term in supporting the development and commercial viability of socially beneficial value added services before market-led investment takes hold, particularly those in the agriculture and education space. This can be complemented by the seed funding and mentoring support of the impact investing community, which tends to have an operational presence on the ground and can tap into local expertise to ensure services are serving real consumer needs and are dynamic enough to respond to changes nimbly and effectively.

The growing presence of internet entrepreneurship in Nigeria is a useful parallel in this regard. The growth of online retail start-ups like Jumia and Konga are representative of a budding shift towards internet-based products and services. Aside from e-commerce ventures, many online employment services such as Jobberman and Ng careers, and even more nuanced ideas such as incentivising trash collection by crediting people's phones (the offering of Wecyclers[16]), are also gaining popularity. Interestingly, most of these start-ups are owned or headed by Nigerians[17]. The value of this is not only in understanding the local demographic a product is being designed for, but also in understanding and grappling with a business environment that, while increasingly attractive to investors due to its sheer size, continues to experience challenges in navigating processes and regulations part and parcel of doing business. Linking this back to the M4D opportunity, while many internet start-ups in Nigeria target more established use cases – such as e-commerce and social media – the learnings from designing, running and, in many cases, partnering on a business model to meet a demand use case is portable to other sectors. M4D is one with large potential, for which partnership opportunities between operators, entrepreneurs and investors would surely help the drive for scale.

[16] Source: Meet The Entrepreneurs Behind Nigeria's Startup Revolution, Fast Company, April 2014
[17] Source: "Doing E-Commerce In Nigeria Is A No-Brainer", Says Konga's Sim Shagaya, Bits, January 2013

Appendix

Relevant groups and organisations

Government bodies and trade associations	• Nigerian Communications Commission (NCC) • Federal Ministry of Communication Technology • Central Bank of Nigeria • National Bureau of Statistics (NBS)

Data: regulation, business environment, demographics and economics

2013	Nigeria	Morocco	Indonesia	Philippines	Vietnam
ICT regulation (1 = nonexistent, 7 = well developed)	3.7	3.7	4.2	4.1	3.7
Government emphasis on ICT (1 = weak priority, 7 = high priority)[18]	4.0	4.6	4.5	4.2	5.3

Table 7: Government and regulation
Source: Global IT Report 2013, World Economic Forum

2013	Nigeria	Morocco	Indonesia	Philippines	Vietnam
Venture capital availability (1 = very difficult; 7 = very easy)	2.5	3.0	3.6	2.7	2.3
Impact of ICT on new products, services & business models (1=not at all; 7 = significantly)	4.7	4.2	4.5	4.8	5.0
Impact of ICT on access to basic services (1 = do not enable access at all, 7 = enable access)	4.1	3.9	4.1	4.1	4.6
Ease of doing business rank[19]	147	87	120	108	99
Business entry density rate[18]	0.9	1.3	0.3	0.3	-
Number of days to start a business[19]	28	11	48	35	34
Corruption Perception Index 2012 (0 = Highly Corrupt, 100 = Highly Clean)	25	37	32	36	31

Table 8: Business environment and entrepreneurship
Source: Global IT Report 2013, World Economic Forum, Transparency International, World Bank

[18] Data for 2012
[19] Data for 2014

Topic	2014 rank	2013 rank	Change	
Overall ranking	**147**	**138**	**-9**	⬇
Starting a business	122	114	-8	⬇
Dealing with construction permits	151	146	-5	⬇
Getting electricity	185	184	-1	⬇
Registering property	185	185	-	
Getting credit	13	11	-2	⬇
Protecting investors	68	67	-1	⬇
Paying taxes	170	167	-3	⬇
Trading across borders	158	159	1	⬆
Enforcing contracts	136	138	2	⬆
Resolving insolvency	107	107	-	

Table 9: Ease of doing business, by topic
Source: World Bank Ease of Doing Business Rankings

2013	Nigeria	Morocco	Indonesia	Philippines	Vietnam	Western Africa
Population (million)	176	33	251	99	92	336
Urban population[18]	50%	57%	51%	49%	32%	45%
Literacy rate	61%[20]	57%[20]	93%[20]	95%[20]	93%[20]	55%
Median age (years)[19]	18.2	28.1	29.2	23.5	29.2	18.9
Mobile penetration, connections	72%	128%	125%	110%	134%	77%
Mobile penetration, subscribers	29%	51%	41%	49%	56%	35%

Table 10: Demographic data
Source: GSMA Intelligence, World Bank

[20] Data for 2011

2012	Nigeria	Morocco	Indonesia	Philippines	Vietnam	Western Africa
GDP growth	6.7%	4.2%	6.2%	6.8%	5.2%	6.8%
FDI (% of GDP)	1.5%	3.0%	2.2%	1.1%	5.4%	2.8%
Unemployment	7.5%	9.0%	6.6%	7.0%	2.0%	6.4%
Inflation[21]	8.5%	1.9%	6.4%	3.0%	6.6%	3.3%

Table 11: Economic data

Source: World Bank, IMF, GSMA Intelligence

[21] Data for 2013

Glossary

ICT regulation
How would you assess your country's laws relating to the use of information and communication technologies (e.g., electronic commerce, digital signatures, consumer protection)? Key: 1 = nonexistent; 7 = well developed, 2010–2011 weighted average.

Government emphasis on ICT
How much priority does the government in your country place on information and communication technologies? Key: 1 = weak priority; 7 = high priority, 2010–2011 weighted average.

Venture capital availability
In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? Key: 1 = very difficult; 7 = very easy, 2010-2011 weighted average.

Impact of ICT on new products, services and business models
To what extent are information and communication technologies creating new business models, services, and products in your country? Key: 1=not at all; 7 = significantly, 2010–2011 weighted average.

Impact of ICT on access to basic services
To what extent are information and communication technologies enabling access for all citizens to basic services (health, education, financial services, etc.) in your country? Key: 1 = do not enable access at all, 7 = enable access significantly, 2010–2011 weighted average.

Business entry density rate
Recurring (service) revenue generated in the period, including revenue generated from the use of the network (voice, messaging, data, VAS), but excluding non-recurring revenue such as handset or equipment revenue.

Unique subscribers
Total unique users who have subscribed to mobile services at the end of the period, *excluding* M2M. Subscribers differ from connections such that a unique user can have multiple connections.

Mobile penetration, subscribers
Total subscribers at the end of the period, expressed as a percentage share of the total market population.

ARPU, by subscriber
Average revenue per user (ARPU). Total recurring (service) revenue generated per unique subscriber per month in the period. Different from ARPU by connection, ARPU by subscriber is a measure of each unique user's spend.

Mobile termination rate (MTR)
Charges which one mobile operator charges to another for terminating calls on its network

About GSMA Intelligence

GSMA Intelligence is the definitive source of mobile operator data, analysis and forecasts, delivering the most accurate and complete set of industry metrics available.

Relied on by a customer base of over 800 of the world's leading mobile operators, device vendors, equipment manufacturers and financial and consultancy firms, the data set is the most scrutinised in the industry.

With over 20 million individual data points (updated daily), the service provides coverage of the performance of all 1,140 operators and 1,153 MVNOs across 3,505 networks, 65 groups and 236 countries worldwide.

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