Digital Inequality in South Africa

A context in which to consider the Electronic Communications Act and an update on South Africa's cost to communicate

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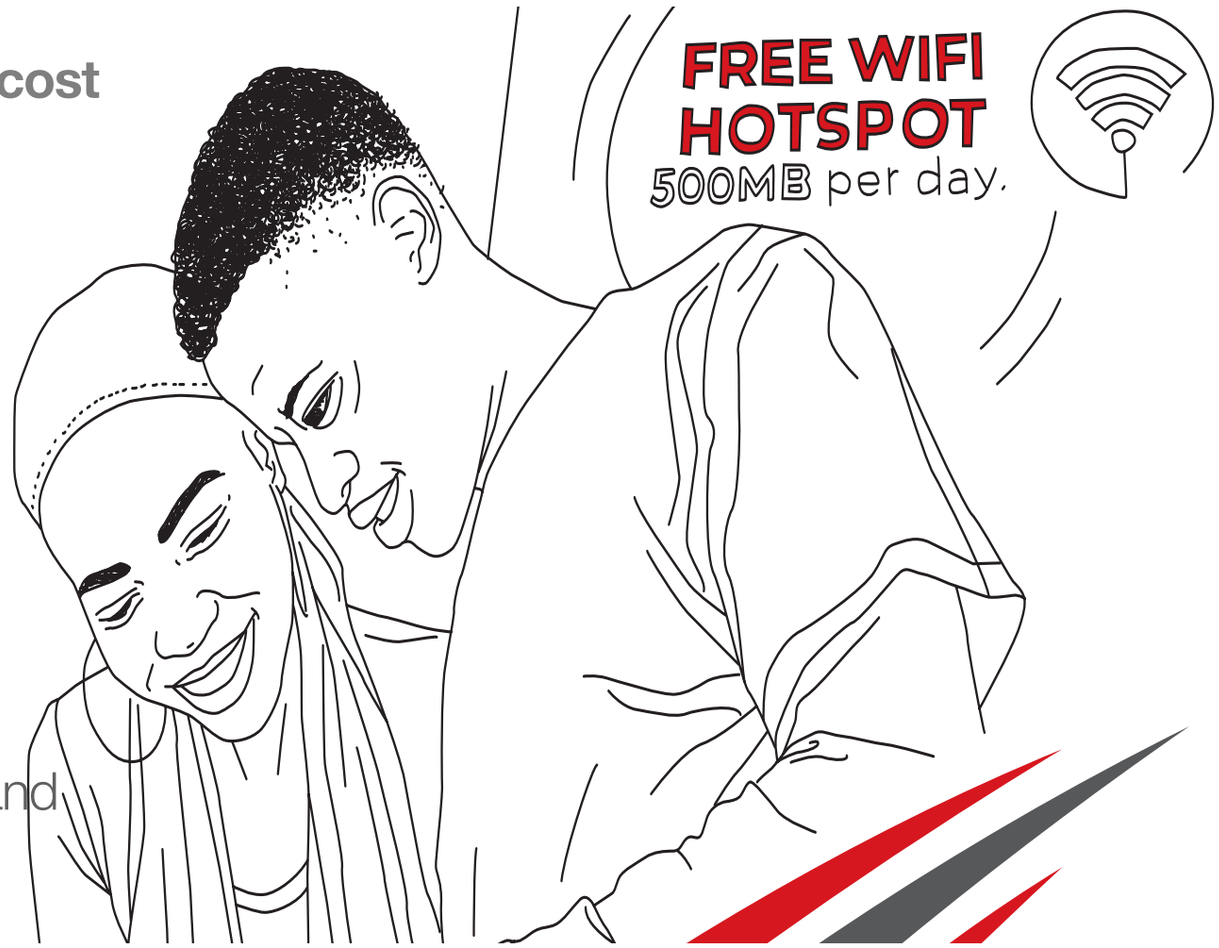
Electronic Communications Bill Amendment public hearing

Parliamentary Portfolio Committee on Telecommunications and Postal Services

26 November 2018



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Context

South Africa's digital economy growing despite policy and regulatory environment not because of it.

- We congratulate President Ramaphosa's recent effort to urgently address obstacles in the sector such as the licensing of high-demand spectrum by ICASA and the reintegration of the two Ministries
- Institutional incapacity, policy uncertainty and regulatory inefficiency have, among others shackled potential of sector to contribute to digital economy.
- Long green and white process holding up rapid deployment, high demand spectrum release and institutional rationalisation only introduce amendments to three Act.
- Still require policy and implementation that cuts across sectors – digital economy vision

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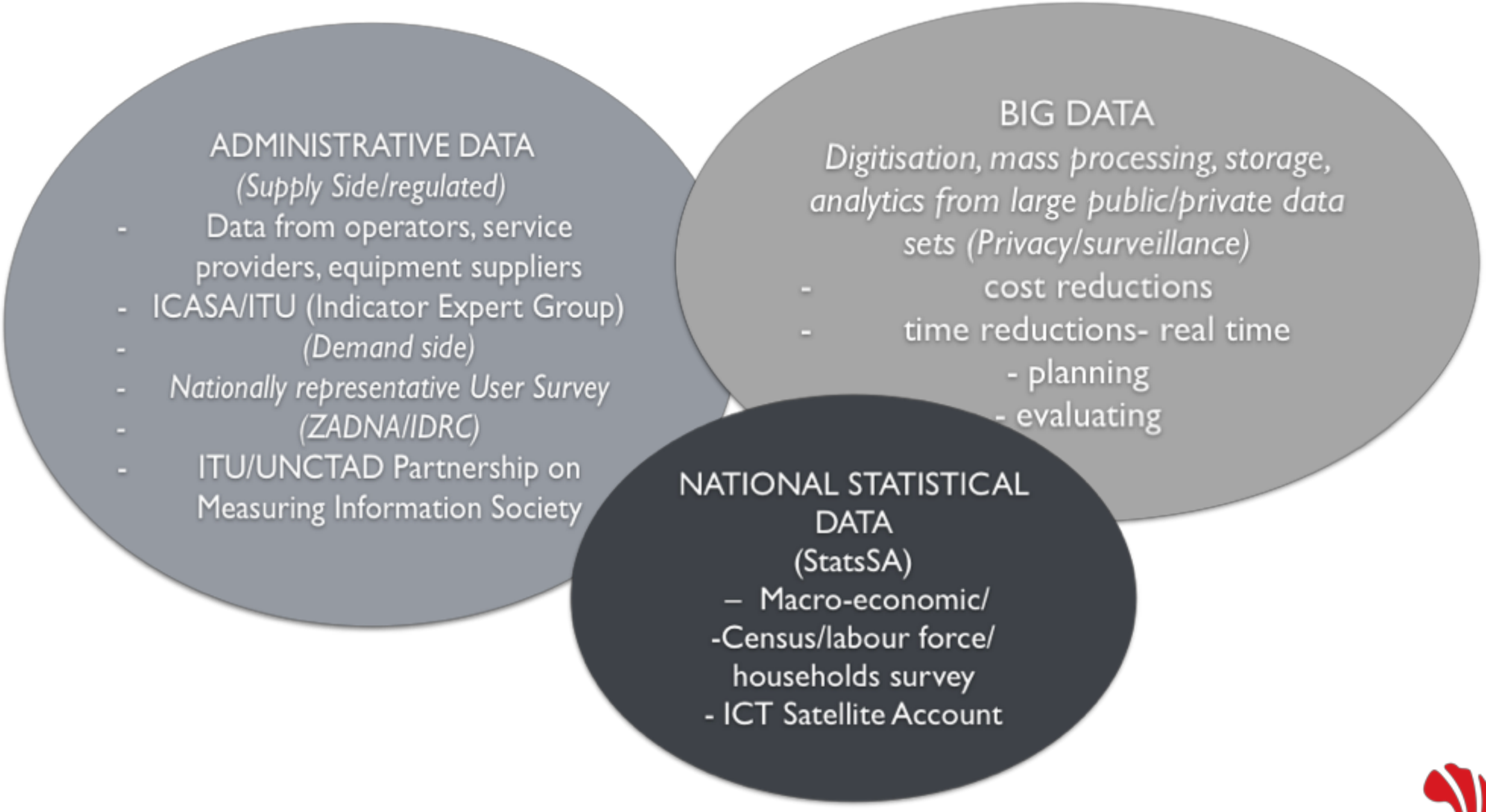
Research ICT Africa- Evidence based policy

Welcome requirements on regulator to collect data but requires integrated national effort to produce quality evidence



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7 ICT indicators, 6 targets under SDG Goals 4, 5, 9,17

Target 4a: Proportion of schools with access to computers for pedagogical purposes

Target 4.4: Proportion of youth/adults with ICT skills, by type of skills

Target 5b: Proportion of individuals who own a mobile telephone, by sex (ITU)

Target 9c: Percentage of the population covered by a mobile network, broken down by technology (ITU)

Target 17.6: Fixed Internet broadband subscriptions, broken down by speed (ITU)

Target 17.8: Proportion of individuals using the Internet (ITU)

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We do not have the official data to know our progress to SDG targets

Table 1: South Africa's performance on ICT indicators in relation to the SDGs

SDG GOALS AND TARGETS	INDICATOR PERFORMANCE	SOURCES
1.4) and 9.1) Households with broadband Internet access	11%	After Access Survey, 2017
4.4) Individuals with ICT skills	Unknown	
5.b) Individual mobile phone ownership	84%	After Access Survey, 2017
9.c) Broadband Internet prices (1GB of prepaid mobile data)	USD 8.28	RAMP Index, Q2 2018
9.c) Mobile network population coverage	3G: 99% 4G: 80%	Annual reports: Vodacom, 2018
	3G: 98% 4G: 80%	Annual reports: MTN, 2018
16.10) and 17.8) Individuals using the Internet	52%	After Access Survey, 2017
17.6) Fixed Internet broadband subscriptions	2%	ITU, 2017
17.8) International Internet bandwidth (bps per inhabitant)	263 029.93 bps	ITU, 2017

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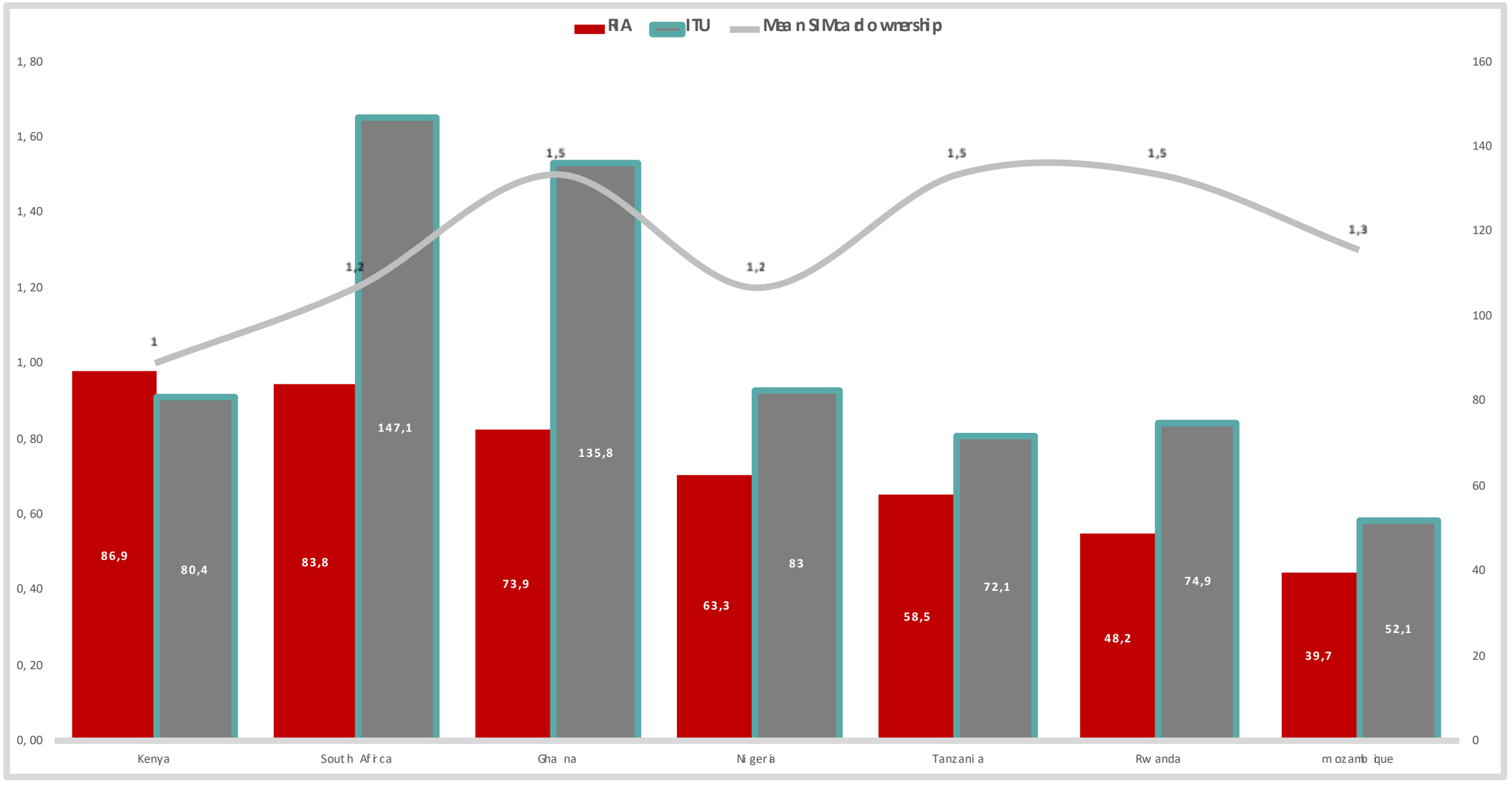
Supply vs demand-side indicators: What's the story?



- Active SIMS vs Unique subscribers.
- Disaggregation by gender, income, education, location.

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DEMAND SIDE ANALYSIS

Issues of digital inequality

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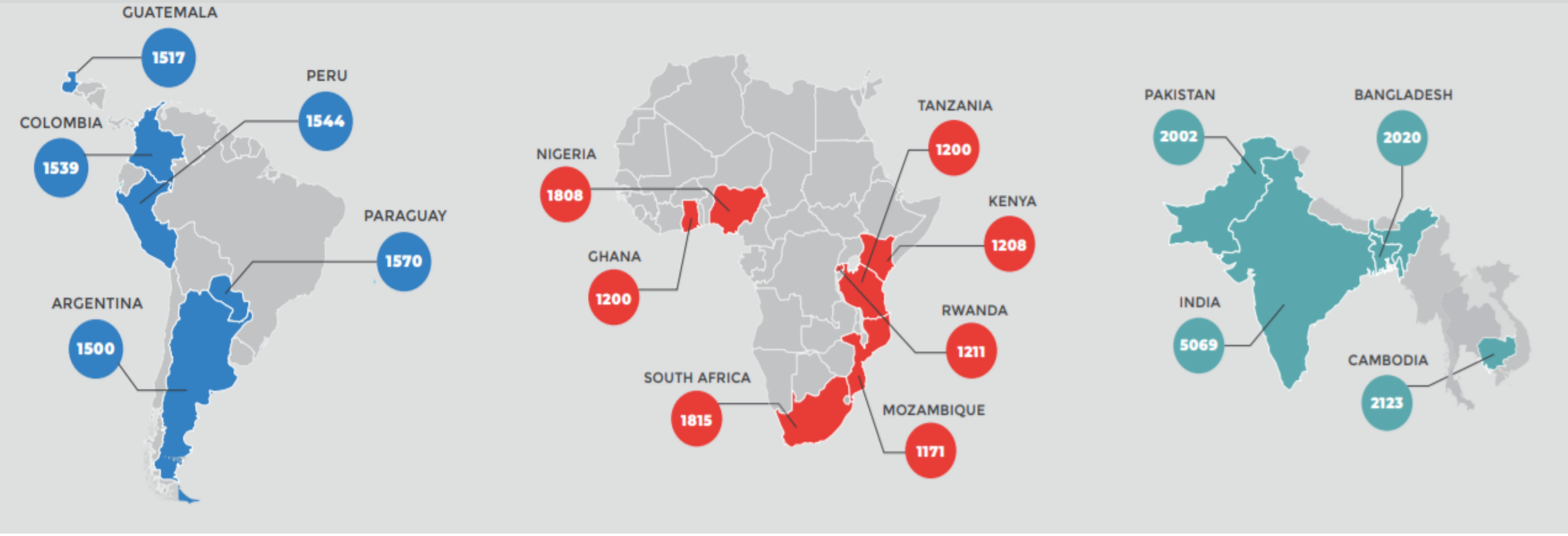
Nationally representative surveys of ICT access and use by households & individuals aged 15-65; In 16 developing countries; Data represents 30% of the global population; 28,900 face-to-face interviews; +/-3 margin of error



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Sample

- **Two sampling frames were available for South Africa based on the 2011 census: Enumerator Areas (EAs) and Small Layers (SAL).**
- **Out of 90, 425 EAs, a total of 75 EAs were sampled using SRS 47 urban areas and 32 rural areas were sampled (60% urban : 40% rural split).**
- **The target sample of 1800 was spilt in to 60% urban and 40% rural, yielding a target of 720 rural and 1080 urban households.**
- **Household and individual weights were then constructed based on the census and world data on urban and rural, male and female proportions.**

Table 1: SA EA sampling	Rural	Urban	Total
Sample of households	720	1080	1800
HHs per EA	24	24	24
Sampled EAs	30	45	75

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Mobile phone ownership, Internet use tracks GNI per capita

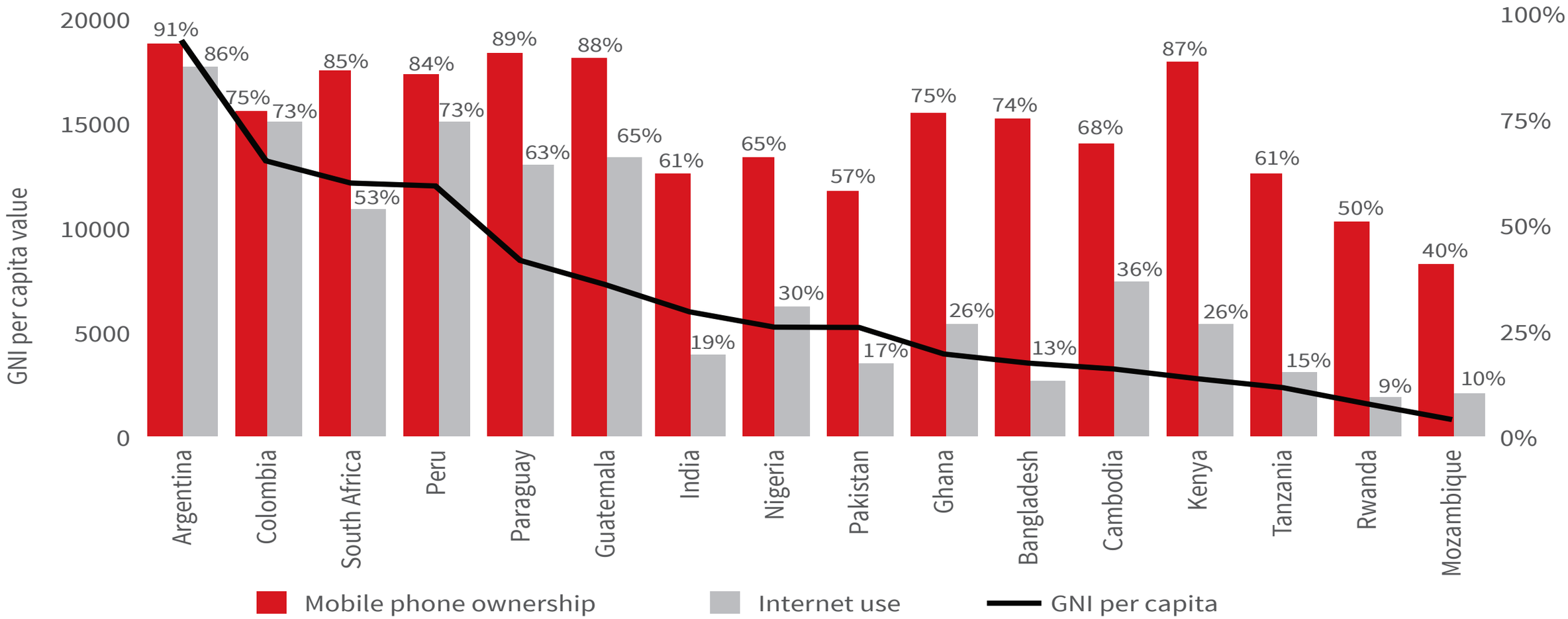

Figure 1: Mobile phone ownership, Internet use and GNI per capita
Sources: RIA After Access Survey, 2017; World Bank, 2018

Gender gap in mobile phone ownership

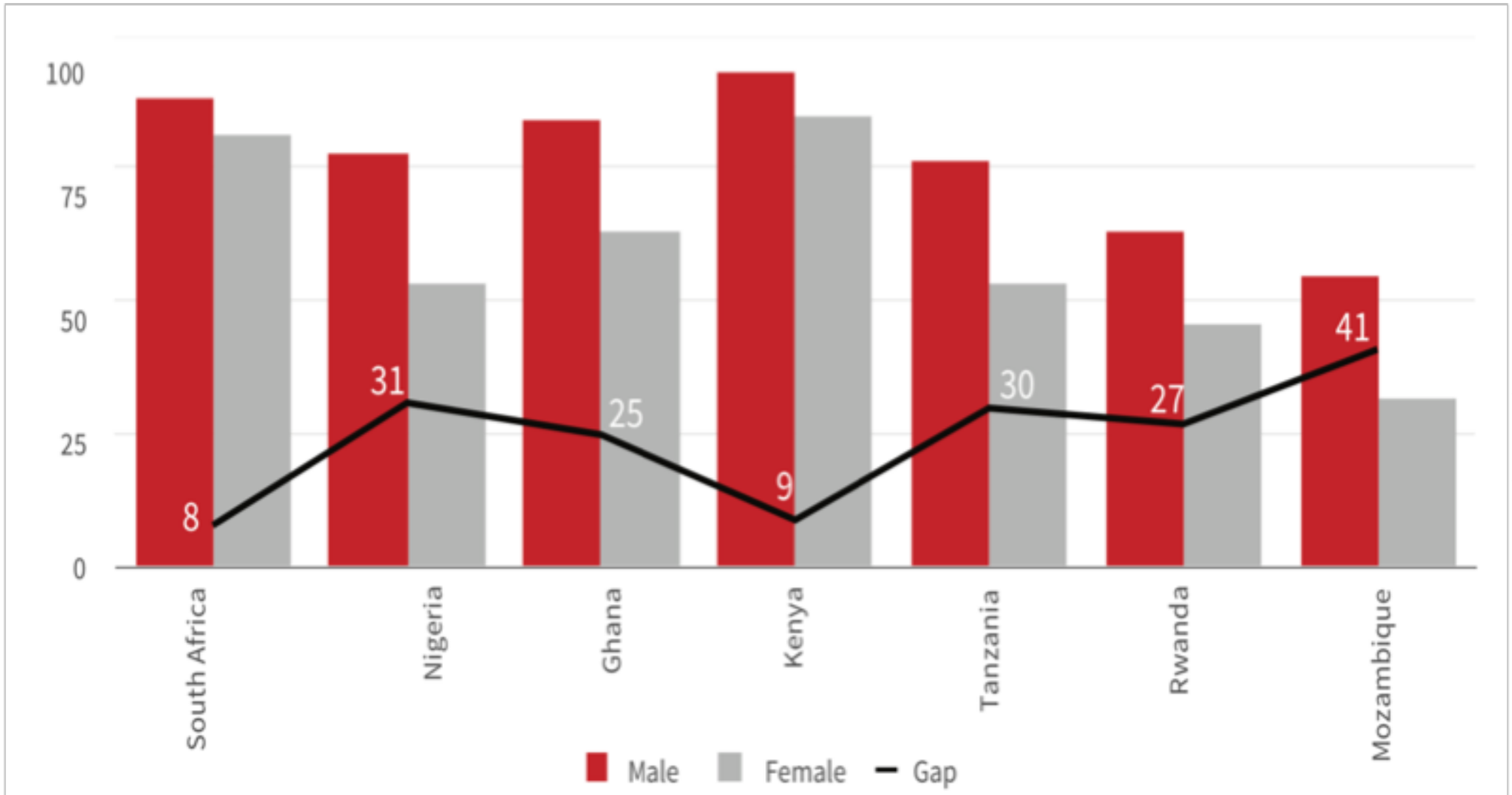

Figure 24: Gender disparity in mobile phone ownership

Source: RIA After Access Survey data, 2017

- As markets become saturate greater parity in ownership
- Smaller gap than Internet
- But other cultural, demographic, urbanisation, factors at play

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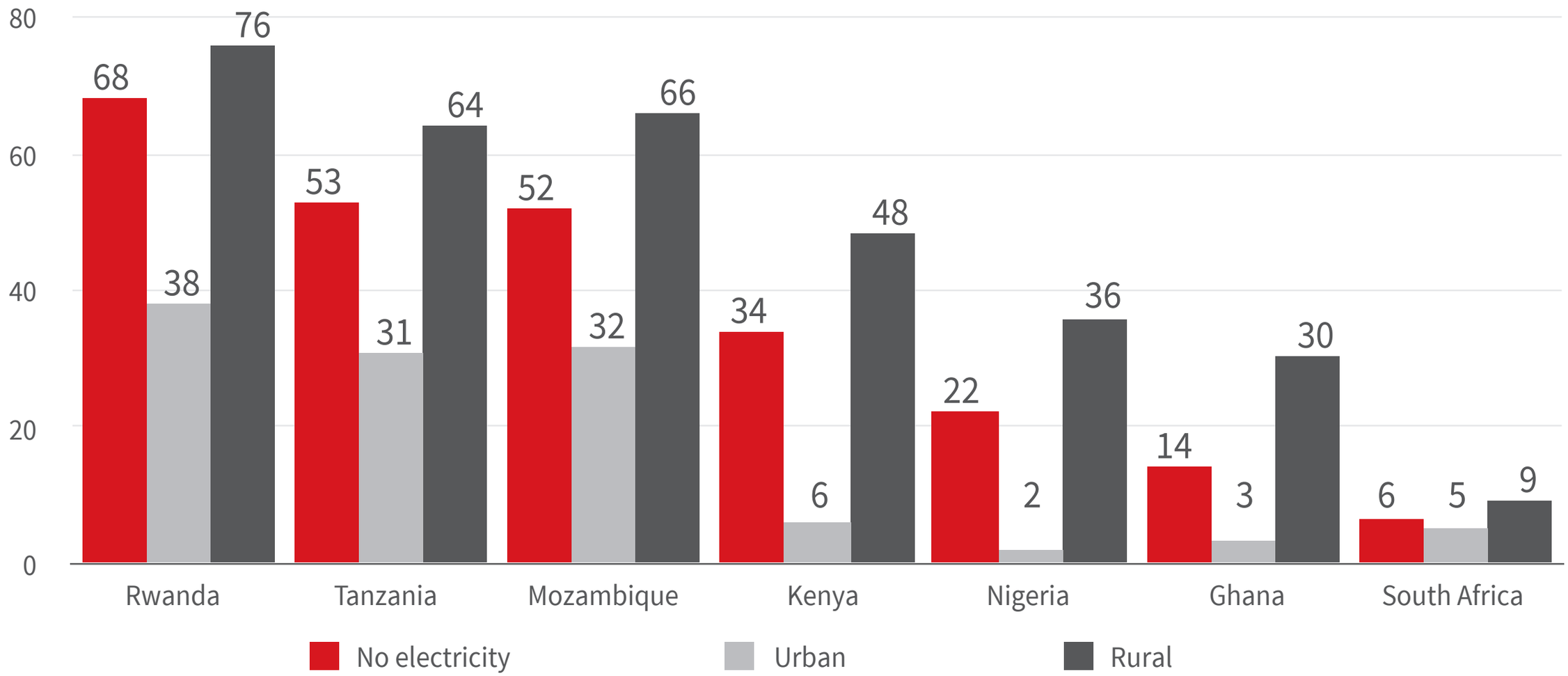
Major barrier to adoption in rest of Africa is lack of power



South Africa performs very well compared to global south

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Gender gap in Internet use also track GNI

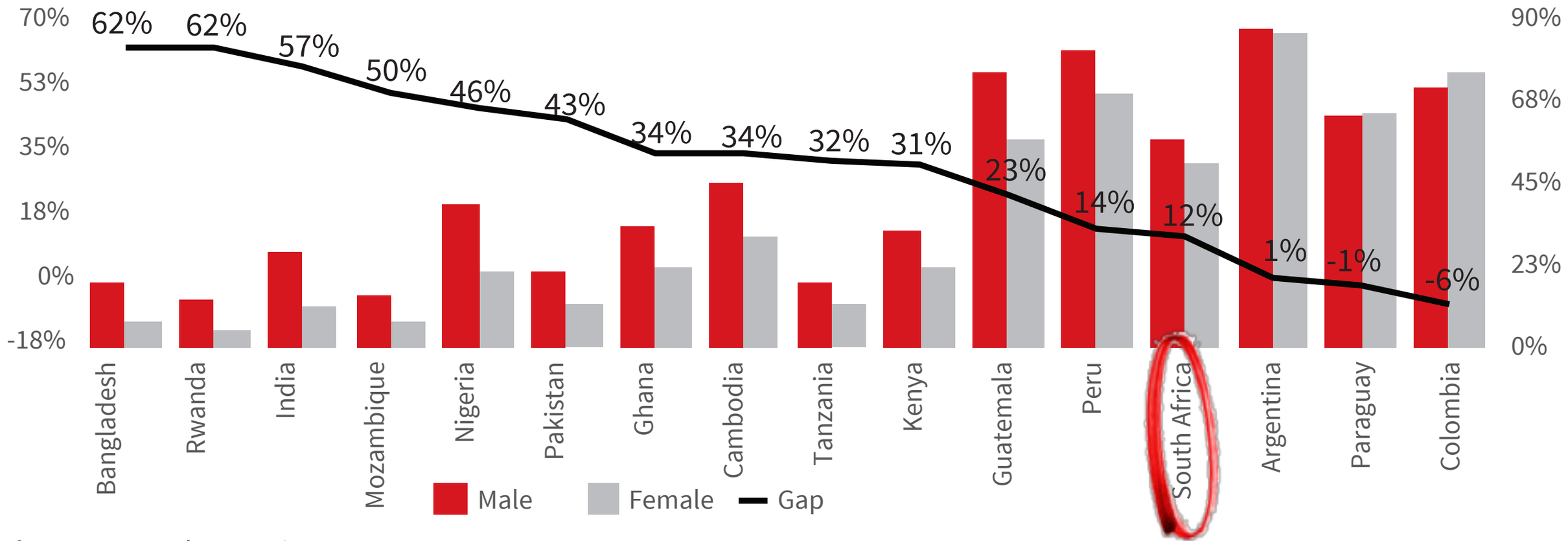

Figure 2: Gender gap in Internet use

Source: RIA After Access Survey, 2017

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Urban–rural Internet divide than gender divide (but overlapping)

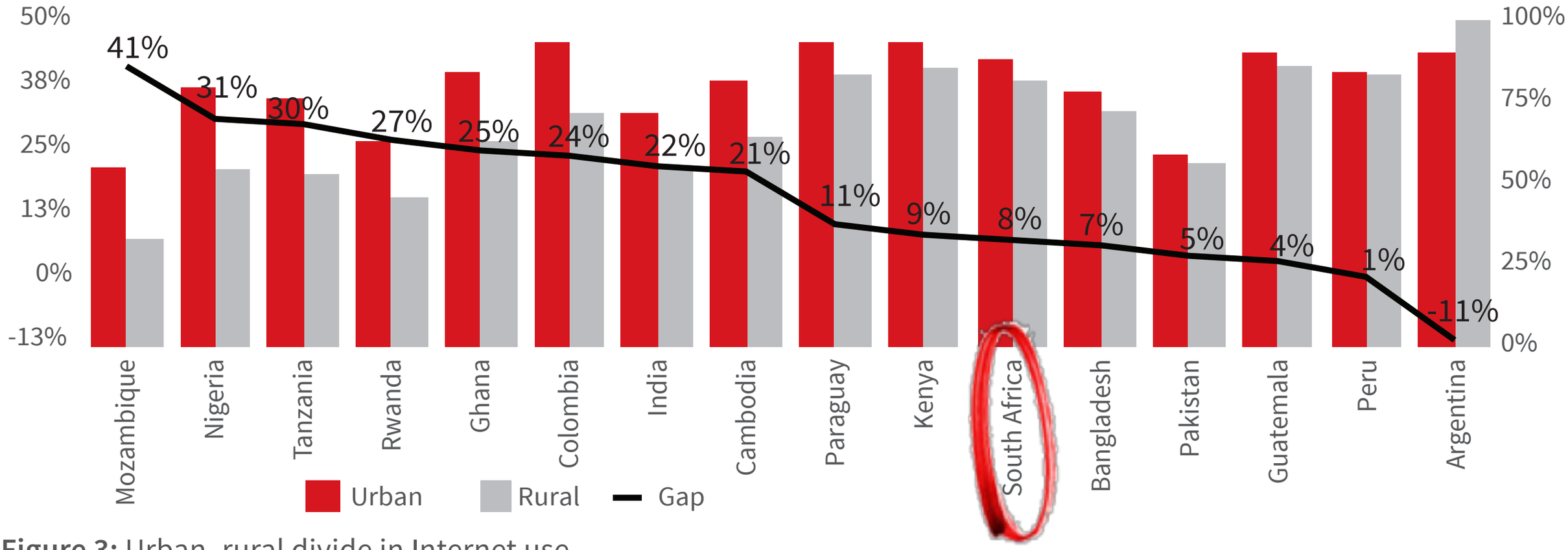

Figure 3: Urban–rural divide in Internet use

Source: After Access Survey, 2017

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ICT ownership

Despite lack of policy implementation and effective regulation ICT take-up strong, but those offline face same affordability and skills challenges as those off line anywhere else on the continent.

Table 12: Summary of ICT access

	2008	2012	2017
Household with fixed line	18%	18%	8%
Household with a television	71%	78%	80%
Household with radio	78%	62%	68%
Household with desktop	14%	24%	9%
Household with laptop	14%	24%	17%
Household with tablet	5%	20%	15%
Household with Internet	5%	20%	11%

Source: RIA ICT Access and Use Surveys, 2008, 2012, 2017

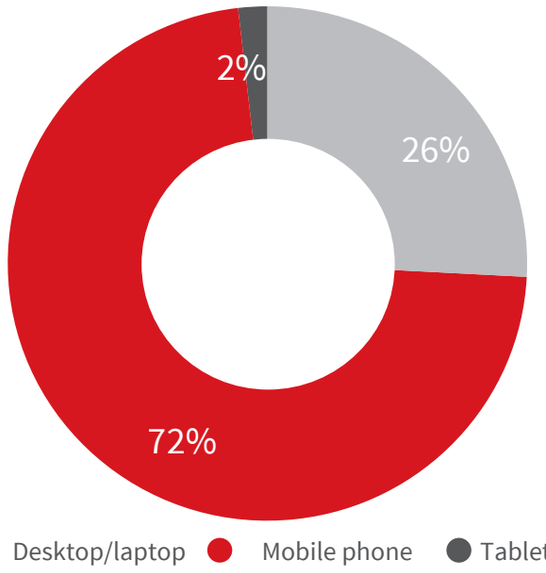

Figure 23: Population grouped by 'device used' to access the Internet

Source: RIA After Access Survey data, 2017

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Ownership and use of ICTs by income

Affordability is the main obstacle to South Africans trying to get online

INCOME (ZAR)	MOBILE PHONE	SMARTPHONE	INTERNET
0 – 1 583	82%	45%	51%
1 584 – 7 167	81%	38%	37%
7 168 – 7 167	95%	74%	74%
7 168 – 1 6418	100%	93%	98%
16 419 – 33 333	100%	100%	100%
33 334 – 57 333	100%	100%	100%
57 334 – 123 417	100%	100%	100%
>123417	100%	100%	100%

Source: RIA After Access Survey data, 2017

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Financial inclusion

Transition from voice to data supported by other revenue streams such as mobile money

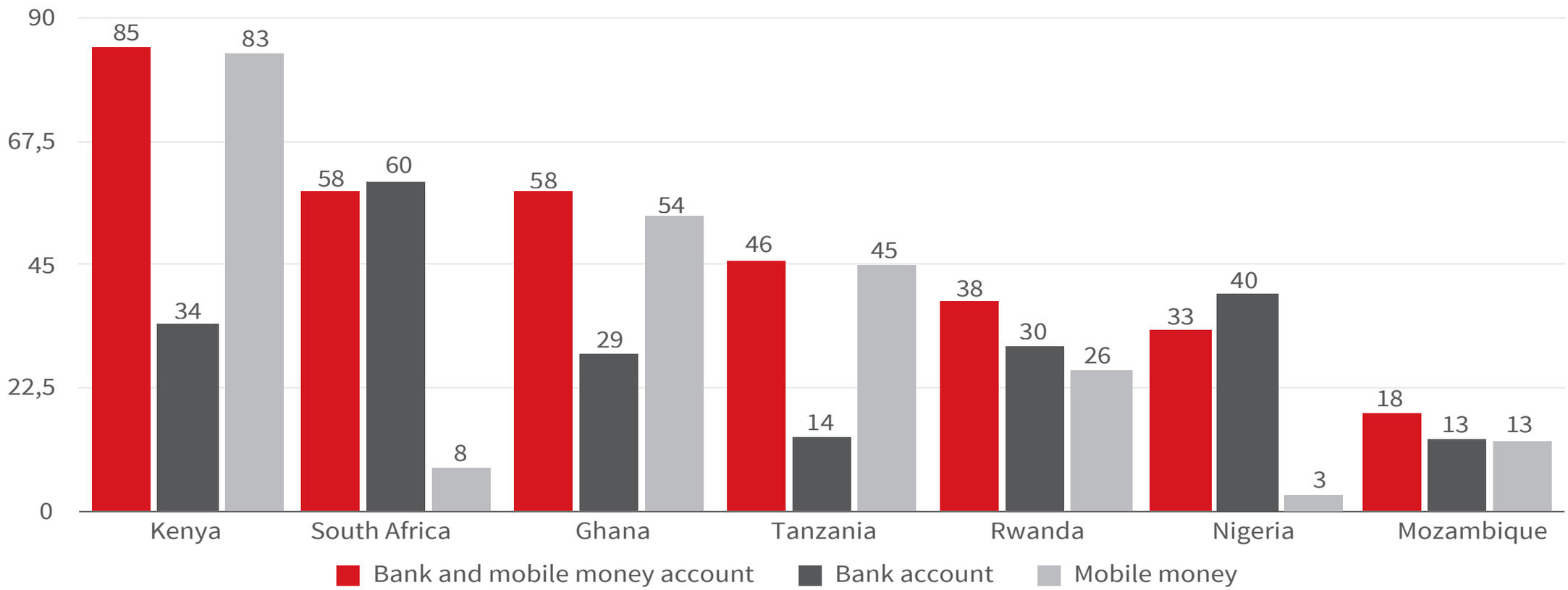

Figure 26: Account ownership in seven African countries
Source: RIA After Access Survey data, 2017

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Internet access and social media penetration

	15+ that use the Internet				Where did you first access the Internet			
	2008	2012	2017	Diff (2017-2012)	Computer or Laptop	Mobile phone	Tablet	Social Media penetration
Ghana	6%	13%	28%	15%	29%	70%	1%	27%
Kenya	15%	26%	27%	1%	25%	75%		25%
Mozambique			10%	10%	20%	77%	3%	9%
Nigeria		18%	29%	11%	29%	71%		27%
Rwanda	2%	6%	9%	3%	49%	51%		6%
South Africa	15%	34%	53%	19%	25%	73%	2%	42%
Tanzania	2%	4%	14%	10%	28%	71%	1%	12%

Reasons for not using the Internet

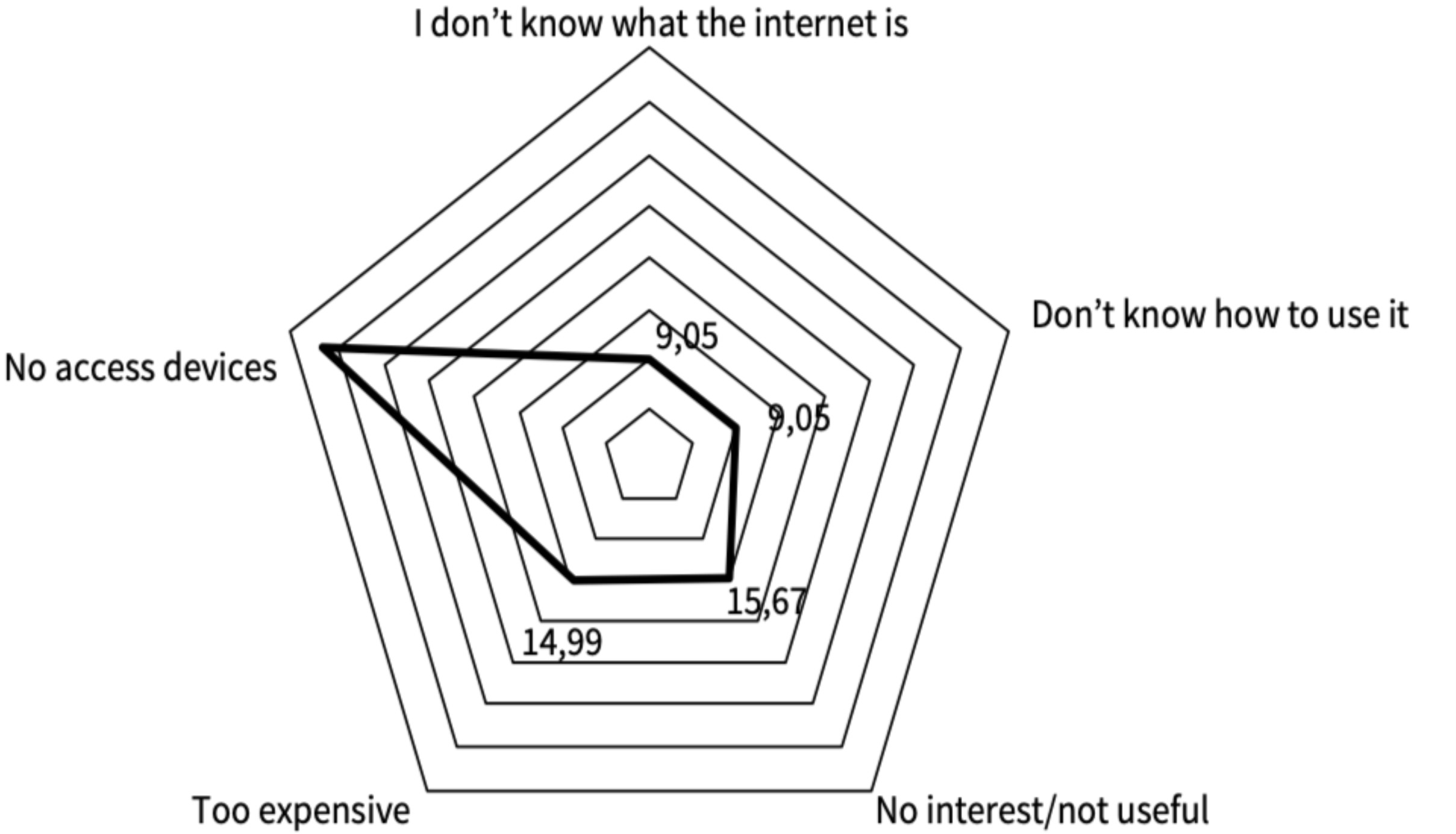

Figure 25: Reasons for not using the Internet

Source: RIA After Access Survey data, 2017

SUPPLY-SIDE ANALYSIS

Pricing, quality and coverage as outcome of regulated competition

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Cost drivers

- **High rand-dollar exchange rate-** Which affects equipment import required for the constant upgrading of mobile network.

- **Increasing costs of key inputs -** power in particular has inflationary effects on data prices

- **In the absence of high-demand spectrum being released to operators for 4G:** high bandwidth services are also not being deployed in the cost-effective manner which further exacerbate the high cost of data.

- **Regulatory issues:** failure of ICASA to complete market review to determine dominance in wholesale markets, which is highly imperfect by nature, does not produce the intended competitive results – wholesale facilities and IP transit costs result in high telecom input costs for service providers and corporates

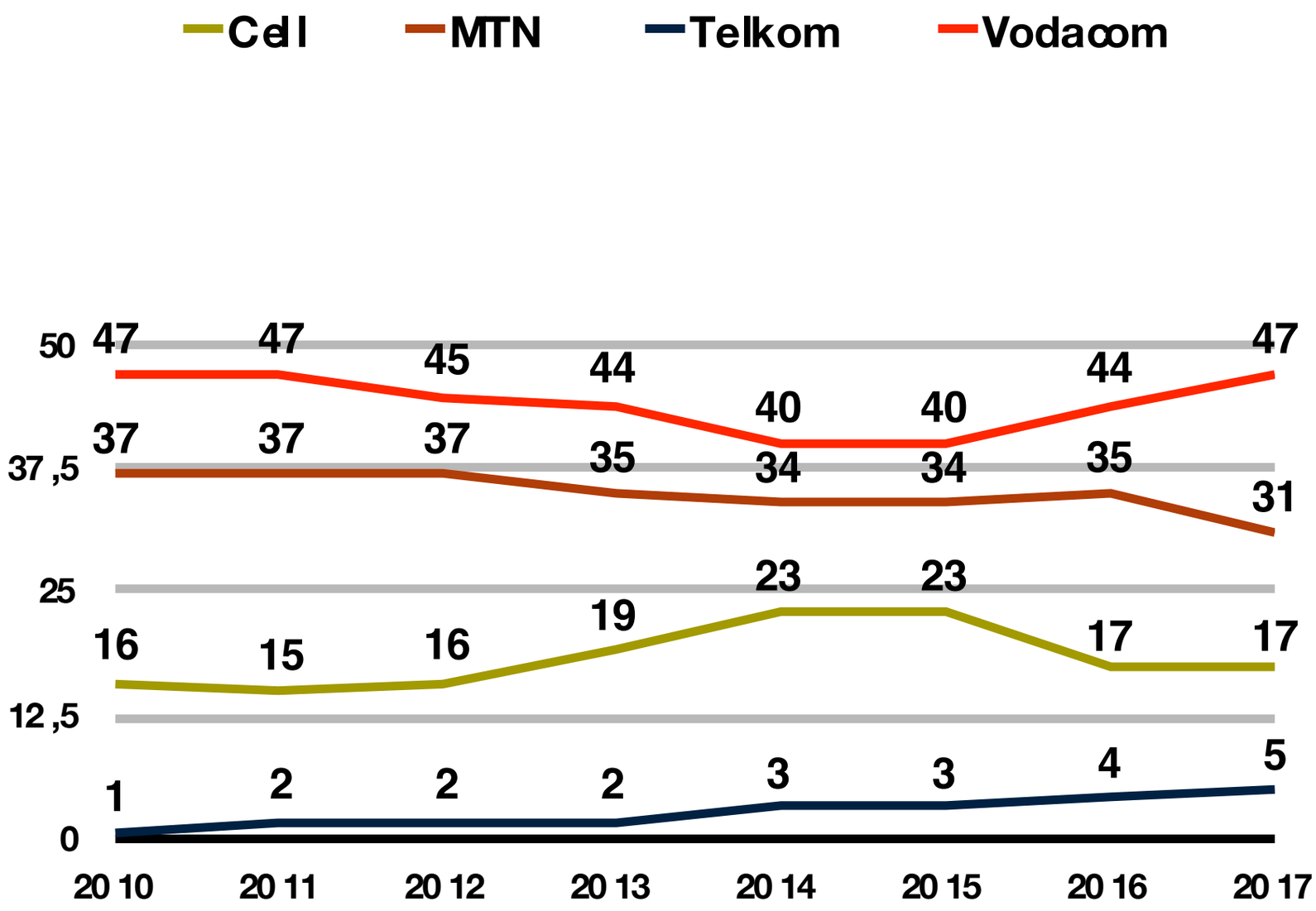
International bandwidth and national transmission

- South Africa is connected to six submarine cables.

- Telkom, Liquid Telecom South Africa (previously Neotel) and Broadband Infraco have made considerable backbone and backhaul investment over the past decade, giving South Africa the most extensive coverage in the continent

- Supplemented by recent expansion of fibre networks in larger metropolitan areas and complementary investments in secondary intercity routes (high levels of redundancy)

Mobile Market Share

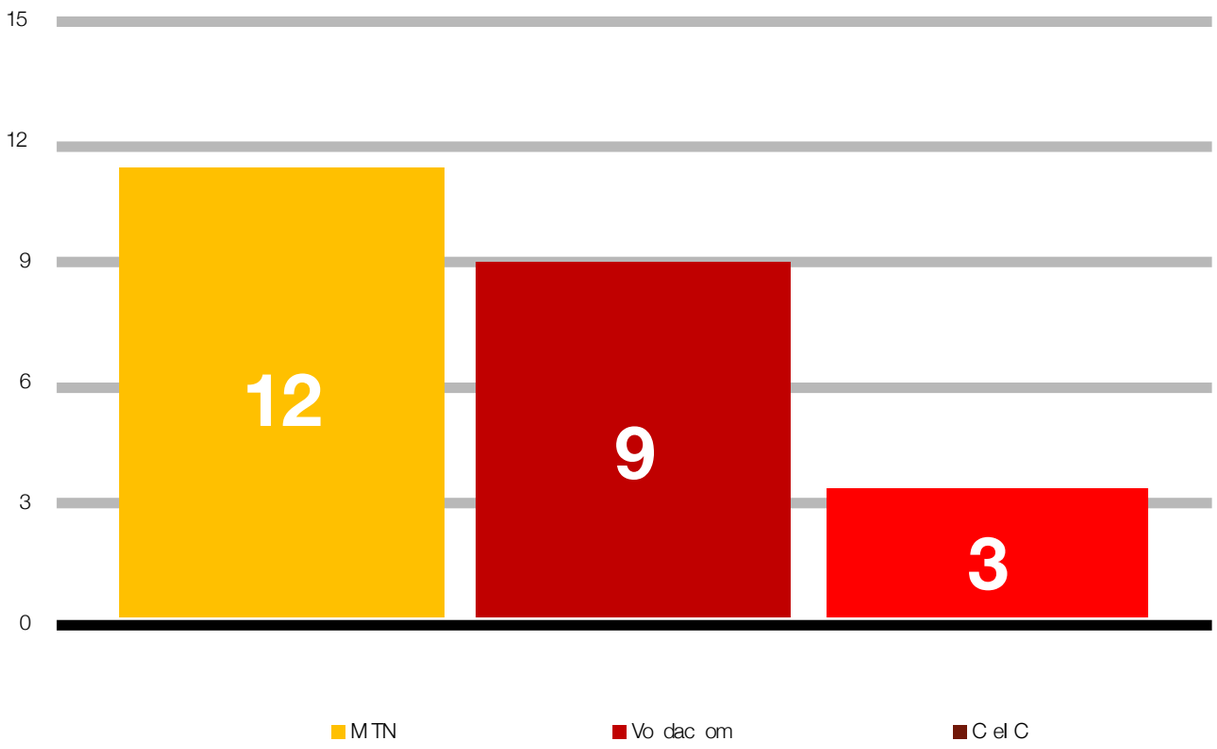


The south African mobile market is dominated by two players: Vodacom and MTN.

Using the HHI the market is found to be highly concentrated which n index higher than 2500.

Despite smaller players (Cell C and Telkom) adopting a number of competitive strategies they have failed to gain substantial market share.

Mobile operator investments



Mobile operators have made significant network infrastructure investment to be able to carry vast volumes of data.

Vodacom coverage- 3G - 99.97%, 4G (80%)

MTN coverage- 3G - 98%, 4G (80%)

Competition in the mobile market is no longer about pricing only, quality is more critical especially in the data market.

Big operators are likely to win this battle as they are able to re-invest revenues gained from their large market shares

FIGURE 6: OPERATORS' CAPITAL EXPENDITURES (ZAR BILLIONS) IN 2017/18

Source: Operators' annual reports, 2017

Are data prices in South Africa high?

- The cost of cheapest of 1 GB of data (international standard indicator) is used to compare prices in South Africa with other African countries
- South Africa performs poorly in the RAMP index, coming 35th of out of 49 African countries
- The cost of cheapest 1 GB of data in South Africa is USD 8.28 (ZAR 99) seven times higher the cost of 1 GB in Egypt (USD 1.13) and nearly three times the cost of same data in Ghana, Kenya and Nigeria
- Though this is not how data is used in pre-paid markets – very high value low cost products that make 'effective' price much lower
- But best value in >10GB products and post paid products that are the best value but not affordable to majority of citizens – 'poverty premium'

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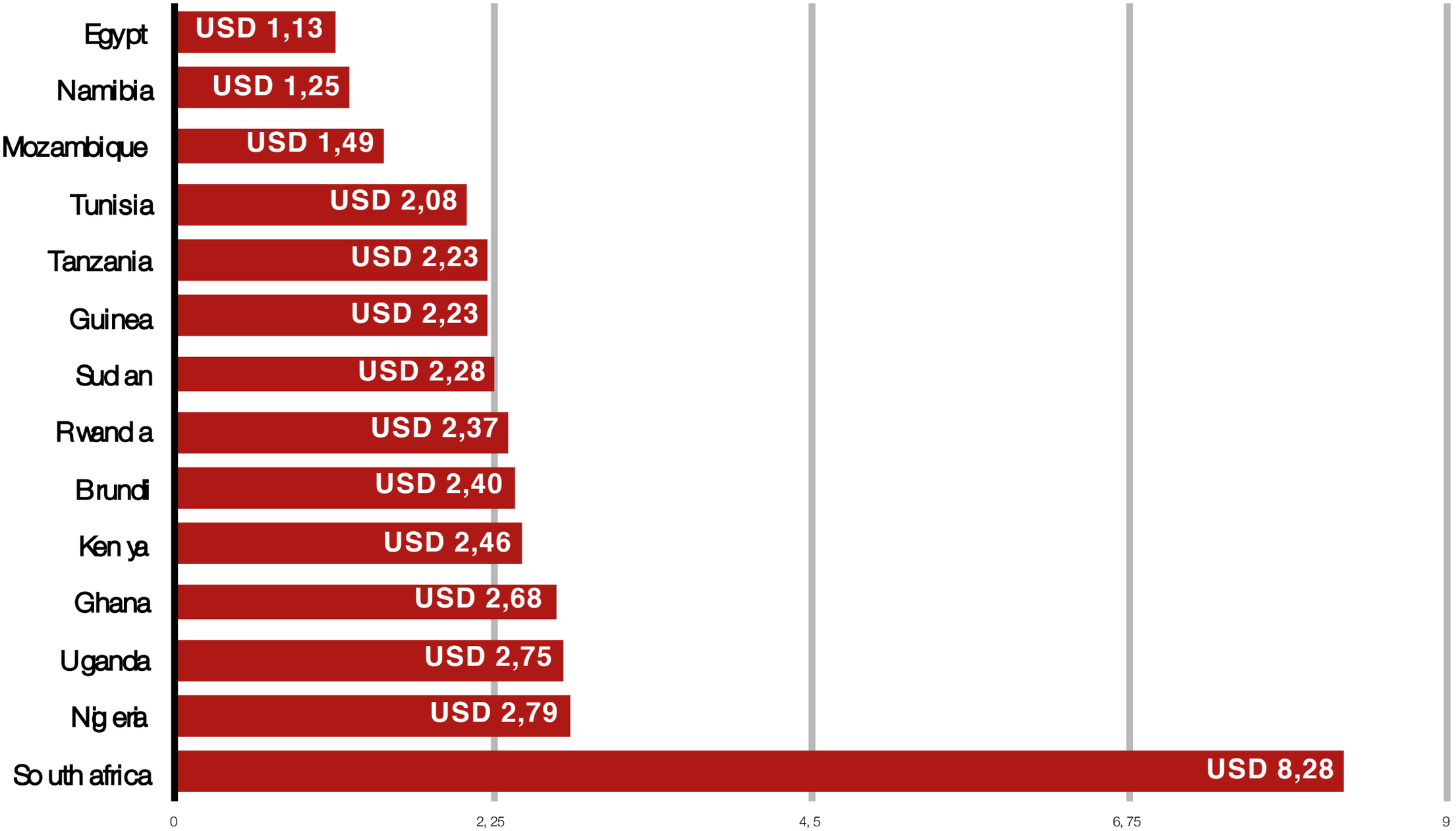
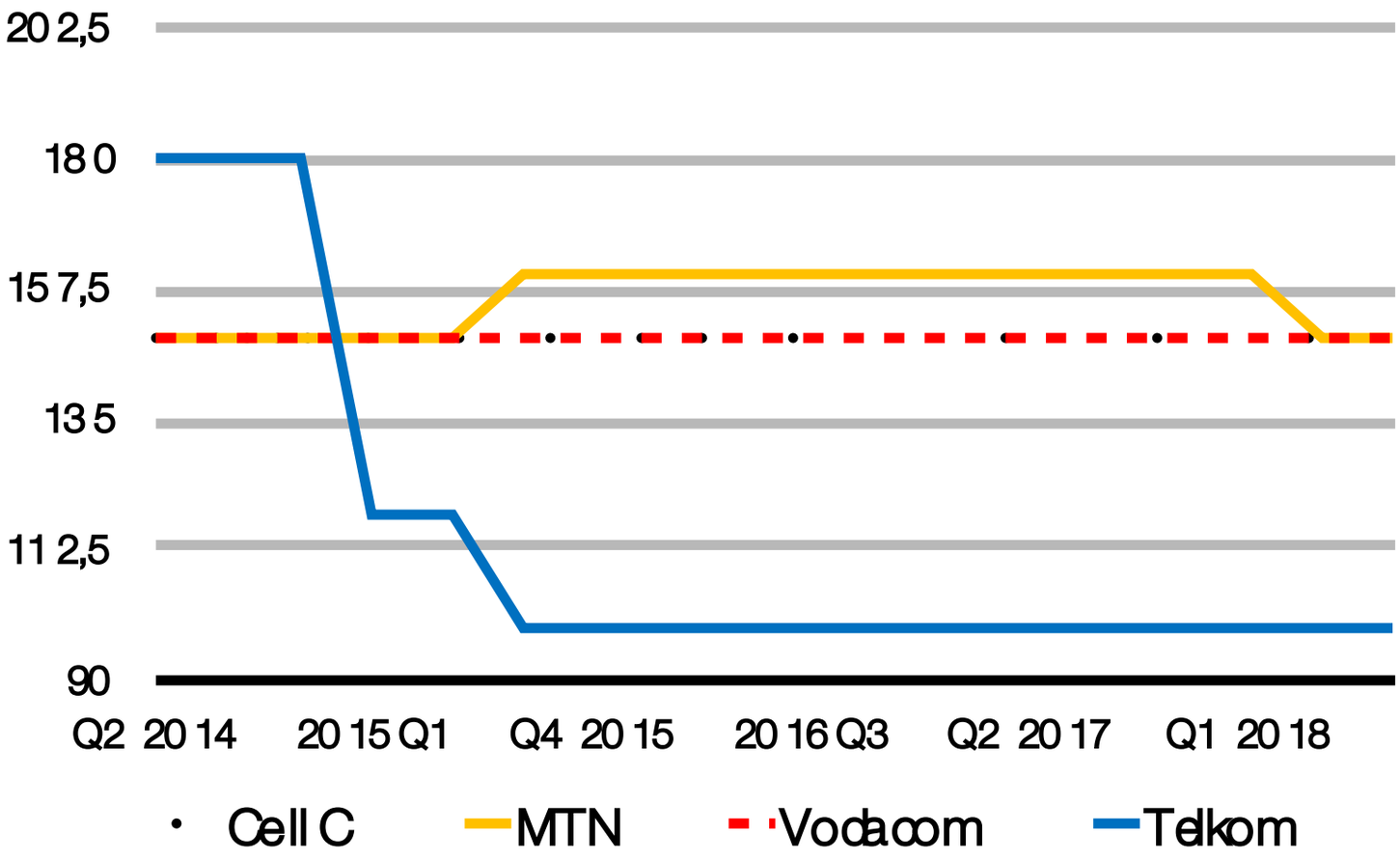
SA's Cheapest 1GB data Compared to Africa's cheapest countries



Source: RAMP Index, 2018

Pricing strategy and competition



MTN offers the cheapest 500 MB data bundles for daily (ZAR 50) and weekly (ZAR 55) periods, but Telkom again offers the cheapest 500 MB monthly bundle at ZAR 69. Similarly, MTN offers the cheapest 1 GB weekly bundle (ZAR 70) but does not compare well in the 1 GB monthly comparison. Vodacom's ZAR 149 promotional package (2 GB) offers the most value with an effective rate of ZAR 74.50 per GB, but Telkom's 1 GB is still the cheapest at a nominal price of ZAR 99.

- Rain now offers the cheapest tariffs across the board: a 100 MB bundle will cost a customer ZAR 5, significantly less expensive than the previously lowest ZAR 29 100 MB offering of Cell C, MTN and Telkom. Rain's 500 MB costs less than half that of Telkom's 500 MB bundle and also out-competes its 1 GB bundle price by being just about half the cost (ZAR 50).

Prices vs quality of service

In a regulated data environment a number of other important factors that have to be considered when comparing price

- Licensee obligations – coverage, quality of service
- And progress towards policy objectives - policy outcomes
- QoS – increasingly important in broadband environment - QOS flip side of price.
- Penetration (access)
- Usage (intensity of use)
- Quality of service
- Even price sensitive users choosing to pay premium for quality services (or just to get signal in their area).

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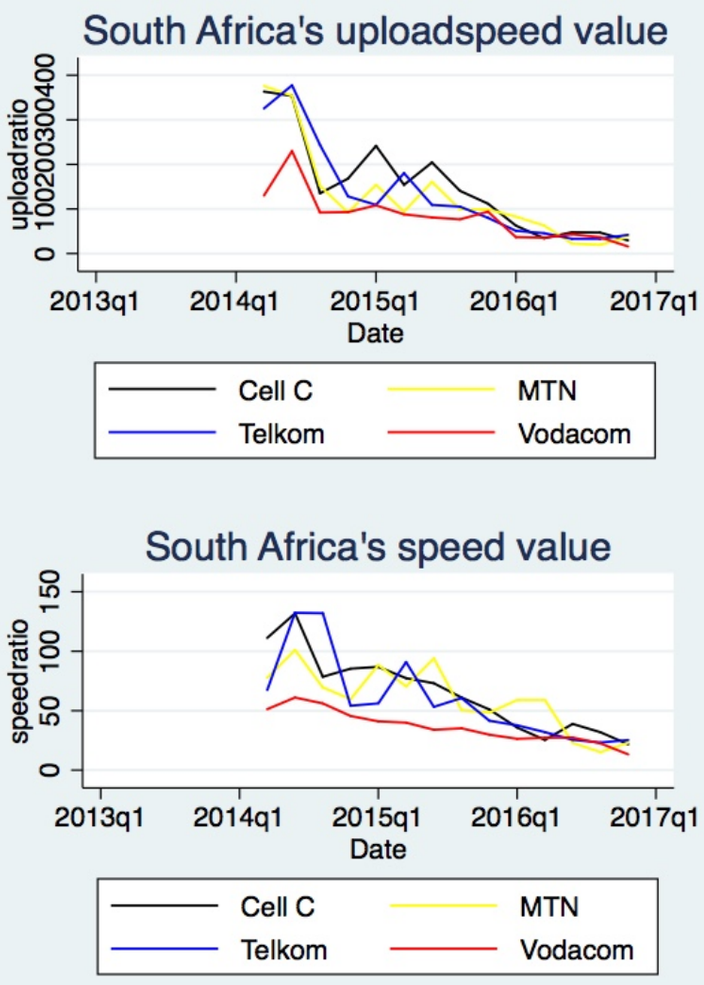
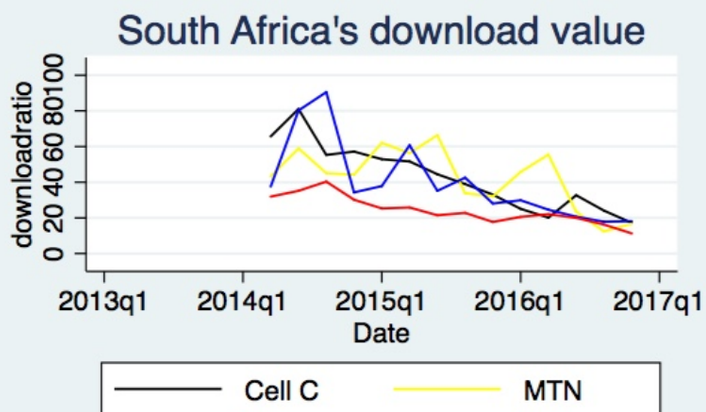
Quality adjusted prices

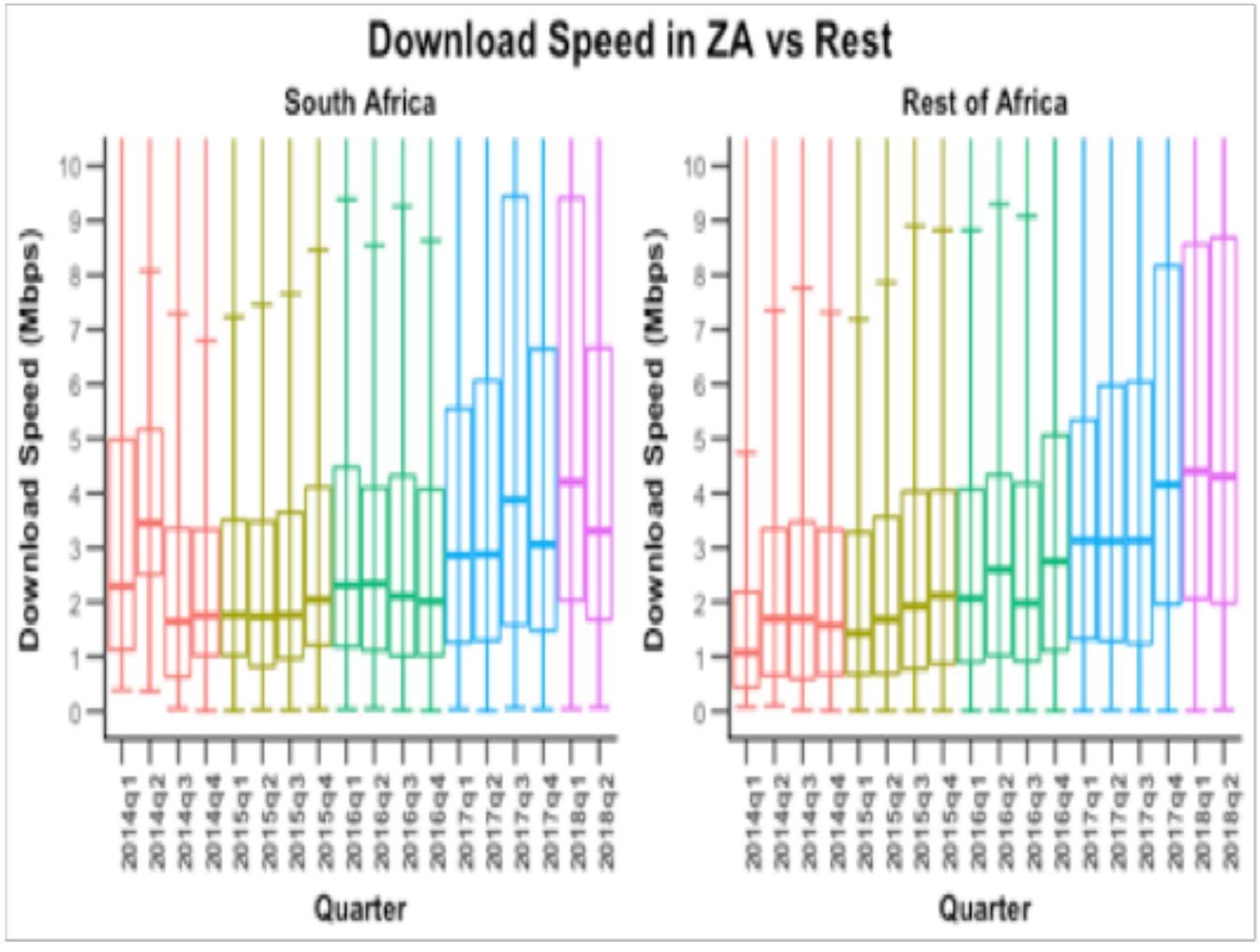




Represents the ratio between the 1GB data basket and the average download and upload speeds, shows that the two dominant operators Vodacom and MTN offer higher quality, respectively.

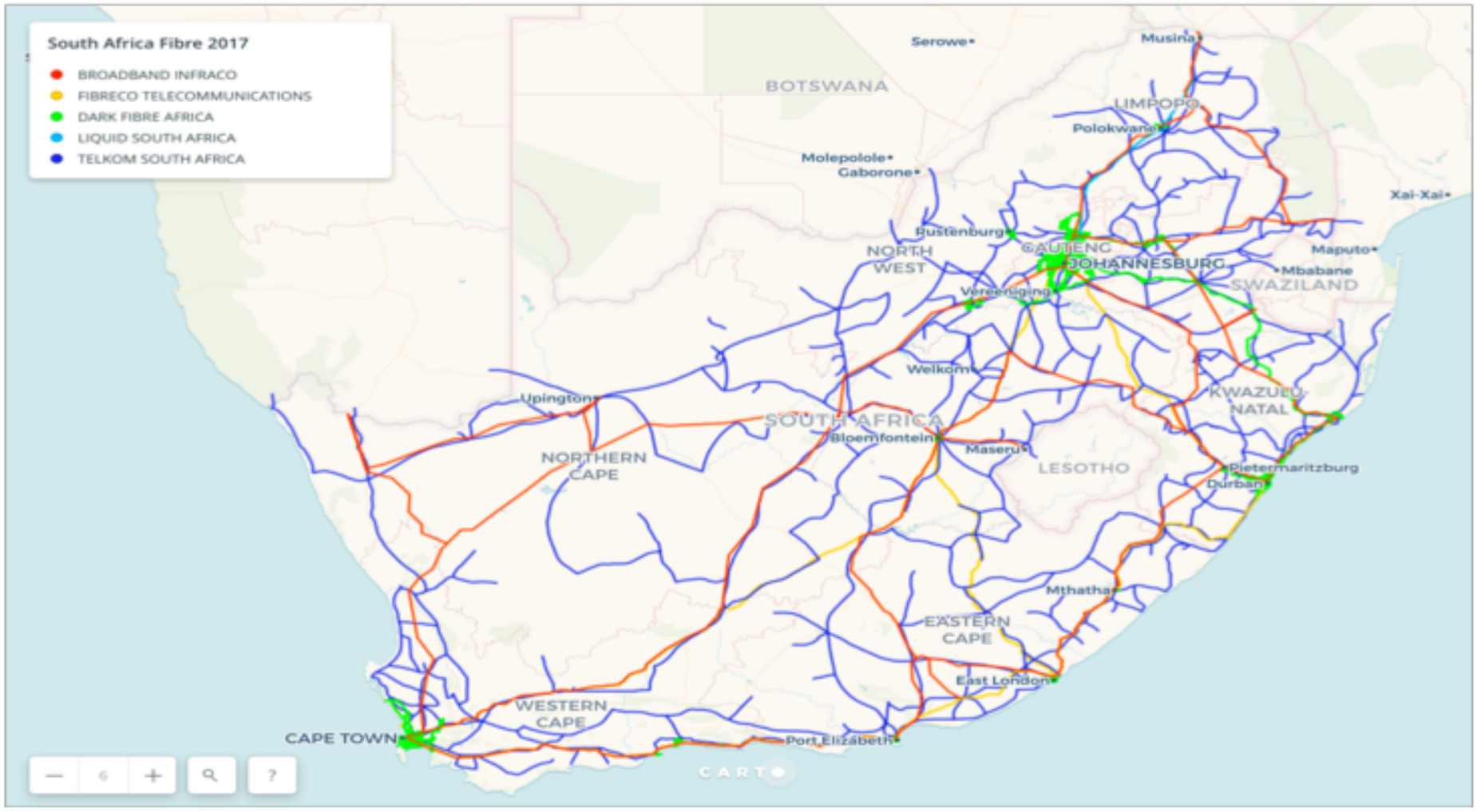
In the same period Telkom's quality was the lowest. However, since Q1 2016, it seems that smaller operators improved their quality, catching up with dominant operators in Q2 2016 (in line with increased network investments). Vodacom SA's high prices are accompanied by higher Internet speeds, compared to MTN SA and Cell C, which are performing less well on the measure based on average download/upload speed (in Mbps) divided by 1GB basket costs.

Download speed in ZA vs Rest of the World (Speedchecker)



- South Africa performs well in comparison to other African countries.
- download speeds in South Africa have been improving due to innovations and technological developments.
- A development which can be associated with investments by telecommunication

…coverage too



Map shows five major operators: Broadband Infraco SOC Limited, FibreCO Telecommunications, Dark Fibre Africa, Liquid South Africa and Telkom South Africa. From the map, Telkom South Africa has the most comprehensive fibre coverage, reaching most parts of the country, while other operators like Dark Fibre Africa only provide services in major towns/cities.

Source: Steve Song

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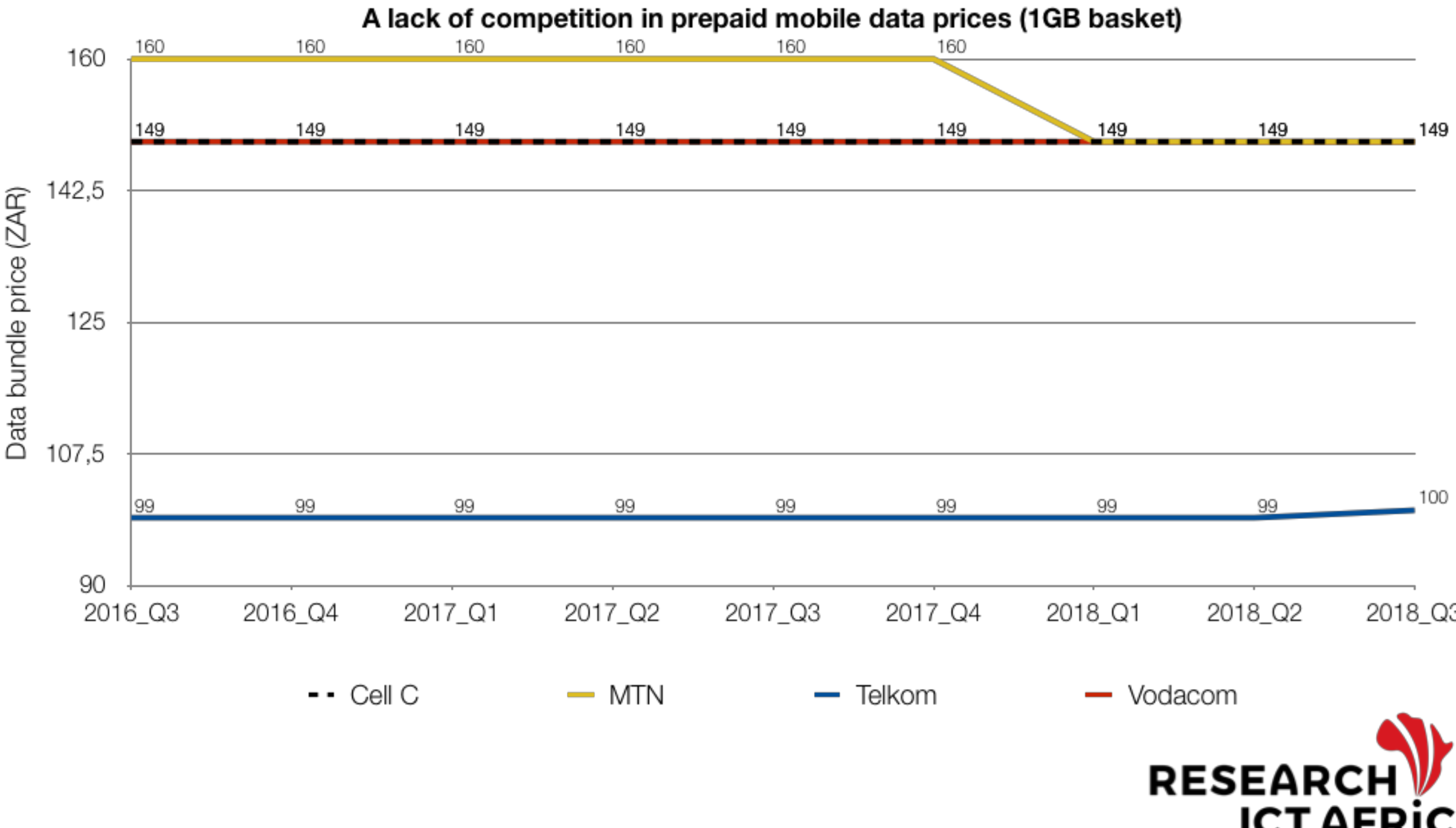
RIA'S Africa Mobile Pricing Index

The RAMP Index ranks the cheapest prepaid mobile voice, data and bundled products in 49 African countries



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Some implications for ECA Amendment and beyond

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Digital paradox

Digital paradox that more people come online greater inequality there is

- Even though we do see significant investments in South African networks that have resulted in the extension of mobile and fibre networks across the country the After Access survey data illustrates how the socially and economically marginalised – particularly those at the intersections of class, gender, race, or ethnicity – are unable to harness the Internet to enhance their social and economic wellbeing.
- Although lack of affordability of devices is the primary barrier to South Africans coming online and lack of affordability of data the major factors limiting intensity of use modelling of the data shows that the main factors determining determine the degree of digital inclusion are education and income.
- Development of relevant local content and applications in local languages, along with the enhancement of citizens' digital literacy skills, are all important demand stimulants.
- Additional supply-side focused policy interventions which fail to address demand-side challenges will simply perpetuate the existing structural inequalities.
- Until fundamental inequalities offline are addressed they will be replicated and even amplified online.

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Efficiency, innovations vs consumer welfare

- What is clear is that we need even greater regulatory agility and insight to manage tensions between the certain policy objectives of competitive efficiency, innovation and consumer welfare.
- With prices of various services high by various benchmarks and more effective regulation of wholesale access in market in which operators are dominant could also reduce the cost of broadband not only for individual users but as a critical input into other sectors of the economy.
- It is clear that even cost-based prices based on existing business models, licensing frameworks and spectrum valuing and use are not going to be affordable for half the population in South African that is currently offline.
- Interventions that would reduce prices, enhance quality, improved e-literacy and develop local content would all bring online those who are currently marginalised from services, women being in the majority.

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Agile policy & regulation for digital economy & society

Greater state coordination, harnessing of private sector and civil society resources

- Adopt wider, integrated digital economy approach;
- remove all excise duties on feature and entry level smart phones;
- avoid instrumental competition regulation (static efficiency) in platform markets (dynamic inefficiency) which may inhibit innovation;
- create open data, access to big data – transparency, accountability, entrepreneurial opportunity;
- localisation – content/apps development;
- create safe and secure Internet (cyberpolicy – data protection, to stimulate productive use, e-commerce, e-government, e-trade, while constraining global monopoly ensuing protection of citizens, and ensuring fair tax regimes; and
- adopt short and longer term strategies to overcome human development constraints on digital inclusion - not only to enable consumption but also production.

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Implement, adapt, implement…

NDP, SA Connect, adaptive regulation…

- Implement SA Connect to drive investment into underserviced areas through public demand aggregation and creation of incentives through anchor tenancies (focusing on schools).
- Connect public Wi-Fi to all public buildings.
- implement critical competition elements of ECA, particularly Chapter 10 market review to enable more price sensitive users to use the Internet.
- ICASA must regulate wholesale prices in markets where there is dominance as this is critical to creating the fair and competitive environment required to produce lower prices, better quality and range of services.
- Review wholesale regulation in data market of facilities and bandwidth will reduce input costs for service providers and private networks.

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WOAN

Cost of not releasing 4G spectrum for more than six years has been high requirement to refarm spectrum and use suboptimal spectrum for 4G has contributed to operator costs.

- Had policy been effectively implemented the requirements and intended outcomes of the WOAN could have been far more effectively achieved through assessment of market dominance and asymmetrical regulation of it.
- WOAN (of digital dividend spectrum only) only considered in markets with far more extreme dominance than South Africa (Kenya over 80% at the time and Mexico 75% - where the introduction of asymmetrical regulation permitted by the same constitutional changes has reduced América Móvil/Telcel to 60%.)
- Tension between objectives universal access, SMME/BBEE, and competition pressures, investment.
- While this will enable market entry and expansion of some existing smaller service providers a disparate competitive pressure will not discipline market behaviour of the incumbents and may weaken position of late, smaller network operators ,through market fragmentation 9in face of global trend towards greater concentration.
- Ensuring underserved areas are beneficiaries of high demand assignments can be addressed through requirements on the winning bidders to provide mobile broadband coverage in those areas before the operator is permitted to deploy the new spectrum in areas already serviced.
- High demand spectrum should be competitive assigned without creating artificial scarcity to drive up prices, with rules to avoid speculation, spectrum trading to correct valuation errors should bee permitted.

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Alternative access strategies

Even if there was effective regulation and prices were cost based largely numbers of people

- Review all national licensing, spectrum and USF models and strategies – develop alternatives based on realities of extreme inequality;
- create incentives for infrastructure-sharing and support complementary investments in broadband networks;
- enable public and private extension of free public Wi-Fi to towns and rural with the connection of all public buildings;
- more optimal co-existence of licensed and unlicensed spectrum that will optimise spectrum for diverse needs in the country;
- secondary use of spectrum should be made available which can be delivered at a fraction of the price of GSM technologies;
- ICASA must assign licensed spectrum required for the evolution of existing services at a competitively determined (efficient use) price to ensure the build-out of capital-intensive networks (with spectrum trading to correct value/use errors);
- nationally allocated spectrum not in use in should be made available through low cost or licence-exempt spectrum for communities, non-profit providers or micro-networks; and
- create incentives for infrastructure-sharing and support complementary investments in broadband networks.

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Institutional failure

- Many of the failures attributable to institutional arrangements and incapacitated institutions.
- It is in the national public policy that the transformative potential lies.
- The institutions and the individuals in them require the technocratic capability to implement the policy effectively.
- Shifting competitive assessment functions to the competition commission (which are intrinsic to ex ante regulation to enhance consumer welfare.
- Claw back implementation powers into equally (arguably more incapacitated) Ministry/Department or additional implementation agencies (with skills challenges and duplication of administrative costs) as proposed does not enable the implementation of the public interest (independent of undue state or industry influence and with Parliamentary oversight) necessary for effective regulation.
- Also need more stringent appointment processes for Chapter 9 institutions that have higher technical expertise thresholds.

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See Gillwald, Mothobi & Rademan. 2018. *State of ICT in South Africa*, available at www.researchictafrica.net, or electronically here