

# Visualisation and mapping does not compensate for poor data

## Introduction

The *Cable* methodology does not compare similar products across countries and does not consider price differentials between small and large data packages.

With Internet-based services taking the centre of an increasingly digital global economy, reliable and up to date data sets are crucial for the formulation of evidence-based policy. Critical attention, however, should be paid to methodologies used to measure and compare indicators for policy formulation and to assess outcomes. One of the critical data points used to assess competitive outcomes and the impact on consumer welfare is price. Mobile data prices are increasingly used to assess Internet service affordability, among other variables that contribute to affordability measures.

Recently *Cable* publicised information covering 1GB data prices for 230 countries for the period 23 October to 28 November 2018. They ranked the countries based on the average between the lowest and highest price for 1GB<sup>1</sup>. At an average price of USD 0.56, USD 0.68 and USD 0.88, *Cable* ranks Rwanda, Sudan and the DRC respectively as among the top 10 cheapest countries in the world. India, with an average price of USD 0.26 for 1GB data, is ranked first among the 230 countries. The most expensive country is Zimbabwe, with an average 1GB data cost of USD 75.20. This price is 289 times higher than the cheapest country, India, according to *Cable*.

Besides the average price not reflecting the actual price paid by consumers, the *Cable* methodology does not compare similar products. Data packages are priced based on the number of MB provided and the validity period. The *Cable* methodology seems to have completely failed to take this into consideration. To compare prices across countries we need to use a methodology that can compare similar packages. Because data products differ between operators and across countries this requires researchers to generate pricing baskets.

### **Cable data is unreliable and inaccurate**

The pricing data that is used by *Cable* to rank countries is problematic. The average monthly cost of each plan is calculated based upon 1GB of data. For example, a 10GB SIM with a cost of USD 30.00 would be calculated at USD 3.00 per gigabyte. An assessment of headline retail prices shows that consumers of small data bundles pay inexplicably more on a per MB/GB basis. For instance, relative to a monthly 10GB, a consumer buying a 1GB data package pays roughly three times the price on a per GB basis for the same validity period.

Researchers and regulators should be cautious when using this data for benchmarking or comparison purposes. Countries are benchmarked on an effective prices, which does not in any way reflect the actual prices paid by mobile

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<sup>1</sup> Cable (2019). Worldwide mobile data pricing: The cost of 1GB of mobile data in 230 countries. Available at: <https://www.Cable.co.uk/mobiles/worldwide-data-pricing/>

consumers. More problematic is that the average price is calculated using different data packages.

For instance, it lists South Africa, ranked 143 in the world, as offering the cheapest 1GB at USD 0.71 (around ZAR 10) but also the most expensive 1GB data at USD 35.06 (ZAR 500). While there is no 1GB package that costs USD 35.06 or has over the last year, the cheapest offer of USD 0.71 appears to reflect the 1GB data “Just 4 You” product offered by Vodacom. A weekly product which provides a user with Internet connectivity between 11:00 and 17:00 only. “Just 4 You” products are priced based on each consumer's unique consumption patterns, therefore using these products to rank countries does not adequately represent the cheapest price accessible to most people in the country.

Some products captured by Cable cannot be validated, while others that have been captured does not give all time access

As argued above, benchmarking studies or country ranking exercises require that comparisons should be rooted on similar products. While disregarding the price differential between small and large data packages is a serious miscalculation by *Cable*, the ranking of countries using different 1GB data products is concerning. For instance, in Botswana, the cheapest monthly product captured by *Cable* is 1GB at USD 9.01 but this has a different validity period to the cheapest 1GB data price captured for South Africa, rendering the dataset unusable for comparative purposes.

## Prepaid mobile pricing methodologies for benchmarking and comparison

Prepaid mobile pricing measurements require careful consideration. As for voice/SMS products, services are priced based on the time the call was initiated (Peak, Off-Peak and Off-off-Peak) and destination (on-net and off-net). Mobile data products, are priced based on how many MBs provided and the validity period. The most commonly used method of measuring mobile data pricing, which can be used for benchmarking purposes is the International Telecommunication Union (ITU) Information and Communication Technology (ICT) Price Basket methodology for mobile broadband prices. The methodology requires that data prices are collected for the cheapest plan, with a data volume allowance of a minimum of 1GB for USB/dongle (computer-based) subscriptions, or 500MB for handset-based subscriptions.

As per the ITU ICT Price Basket guidelines, the selected plan should not necessarily be the one with the cap closest to 500MB or 1GB, as the case may be, but should include a minimum of 500MB/1GB. For instance, if an operator offers a 300MB and an 800MB plan, the 800MB plan or two 300MB plans (if the package can be purchased twice for a monthly capacity of 600MB) should be selected for the 500MB basket. The cheapest option between the 800MB plan and two 300MB plans will yield the cheapest 500MB basket. This methodology identifies the lowest cost to purchase at least 500MB in a particular market. To ensure comparison across countries the ITU methodology considers a validity period of 30 days or four weeks. Using this method, a plan with a validity period of 15 days can be selected, but in order to meet the basket criterion it should be selected twice, making the cost of that basket double that of the plan. Likewise, if a plan with a

validity of a day or a week is selected, it will be taken as many times as necessary to cover a period of four weeks. The cheapest plan on the basis of a validity period of 30 days or four weeks is selected.

## RIA African Mobile Pricing Index

Following the ITU ICT Price Basket methodology, Research ICT Africa (RIA) developed an African Mobile Pricing Index for daily, weekly and monthly plans for 100MB, 500MB and 1GB. The RIA African Mobile Pricing (RAMP) Index is underpinned by a comprehensive database collecting all prepaid mobile prices advertised by all operators in 50 countries, on a quarterly basis. To fully capture the dynamism of product and service offerings in Africa's prepaid mobile markets RIA introduced new bundles in the first quarter of 2018. The latest data basket measures the cost of 100MB, 500MB and 1GB data bundles available on daily, weekly and monthly validity periods. The RAMP Index allows researchers to conduct analyses of market trends; to assess the impact of competition on pricing, and to enable for practical benchmarking exercises. It is a useful tool to determine the affordability of prepaid mobile retail services and drive policy formulation towards inclusive access and use of telecommunication services for economic growth.

*RIA found significant differences between the prices captured by Cable and the cheapest prices collected by RAMP from mobile operator website*

The RAMP Index collects the cheapest data products based on international standards. By following the ITU methodology for the purposes of this exercise, RIA maps the RAMP Index against the 36 African countries, included by Cable, to analyse the cost of mobile data focusing on the cheapest prices. RIA found significant differences between the prices quoted by Cable and the cheapest prices collected by RIA from mobile operator websites in Q4 2018 (see Table 1). According to Cable, the countries with the cheapest data prices in Africa were Rwanda, Sudan and the Democratic Republic of Congo. However, according to the RAMP Index, North African countries, also covered by Cable, were found to offer the cheapest 1GB of data, with the cheapest valued at USD 1.12 in Egypt, followed by Tunisia at USD 1.73 and then Mozambique at the third place at for USD 1.94. These results are different from the Cable's rankings of Rwanda (1st), Egypt (3rd), Tunisia (12th) and Mozambique (29th).

	RIA Mobile Pricing Index		Cable 1GB mobile data pricing					Price variation (%)
	RAMP cheapest 1 GB, Q4 2018	RAMP Rank	Cheapest 1GB	Most expensive	Rank	Cheapest Price difference	Africa countries ranking	
<b>Egypt</b>	1.12	1	0.48	4.55	24	0.64	3	57
<b>Tunisia</b>	1.73	2	0.31	13.42	59	1.42	12	82
<b>Mozambique</b>	1.94	3	0.80	55.84	203	1.14	28	59

<b>Ghana</b>	2.06	4	0.34	4.75	25	1.72	4	83
<b>Guinea</b>	2.22	5	1.20	2.64	36	1.02	7	46
<b>Guinea-Bissau</b>	2.22	6	2.10	11.49	110	0.12	21	5
<b>Rwanda</b>	2.31	7	0.04	2.78	5	2.27	1	98
<b>Kenya</b>	2.46	8	0.28	9.97	54	2.18	11	89
<b>Tanzania</b>	2.62	9	0.43	53.76	126	2.19	23	84
<b>Uganda</b>	2.68	10	0.88	13.6	101	1.80	20	67
<b>Nigeria</b>	2.75	11	0.26	13.79	44	2.49	9	91
<b>Zambia</b>	2.95	12	0.42	8.44	46	2.53	8	86
<b>Cameroon</b>	3.47	13	0.34	6.89	30	3.13	6	90
<b>Niger</b>	3.47	14	1.38	14.36	61	2.09	14	60
<b>Senegal</b>	3.48	15	0.29	13.79	70	3.19	15	92
<b>Lesotho</b>	4.21	16	0.68	7.56	49	3.53	10	84
<b>Cote d'Ivoire</b>	4.34	17				4.34		100
<b>Liberia</b>	5.00	18	0.60	12.50	83	4.40	18	88
<b>Benin</b>	5.22	19	17.24	24.62	212	-12.02	29	-230
<b>Morocco</b>	5.25	20	0.58	5.25	28	4.67	5	89
<b>Gambia</b>	5.50	21	2.45	9.08	118	3.05	22	55
<b>Ethiopia</b>	5.99	22	2.11	3.86	60	3.88	13	65
<b>Malawi</b>	6.68	23	1.37	7.51	77	5.31	16	79
<b>Gabon</b>	6.95	24	1.72	13.26	125	5.23	23	75
<b>South Africa</b>	6.99	25	0.71	35.06	143	6.28	25	90
<b>Burkina Faso</b>	7.14	26	1.72	11.49	100	5.42	19	76
<b>Mauritius</b>	8.90	27	1.75	6.98	82	7.15	17	80
<b>Botswana</b>	9.06	28	9.01	21.34	194	0.05	27	1
<b>Central African Republic</b>	10.44	29	2.87	8.62	128	7.57	24	73
<b>Democratic Republic of Congo</b>	12.00	30	0.05	5.05	10	11.95	2	100
<b>Mali</b>	13.04	31	3.10	22.75	160	9.94	26	76
<b>Zimbabwe</b>	20.00	32	12.50	138.46	230	7.50	30	38

*Source: Research ICT Africa Mobile Pricing Index, Q4 2018, Cable Worldwide mobile data pricing, 2019*

*Note: The Cable Worldwide mobile data pricing: The Cost of 1GB of mobile data in 230 countries was collected in 2018 but made public in 2019. For consistency with compare the Cable cheapest 1GB data price with the RIA African Mobile Pricing Index for Q4 2018. We do not consider average prices as they do not reflect or represent what mobile data consumers pay.*

Cable failed to capture the correct prices for South Africa despite South African prices being widely available and regularly updated following the on-going data market enquiry conducted by the South African Competition Commission. According to Cable the cheapest 1GB of data in South Africa is USD 0.71 compared to USD 6.99 captured by RIA. The RAMP Index ranks South Africa 25th among 32 African countries above DRC which is ranked 30th. The cheapest 1GB of data in South Africa is offered by Telkom at a price of USD 6.99, followed by Cell C, MTN and Vodacom, at USD 10.42 each, way below the USD 35.06 estimated by Cable.

The RAMP Index ranks Zimbabwe last among the 32 African countries with the cheapest 1GB of data priced at USD 20, significantly different to Cable's estimate of USD 138.46.

Botswana was the only country where Cable's 1G data price coincides with the cheapest monthly price for 1GB captured by RIA. The RAMP Index ranked Botswana 28th, among the 32 countries in the fourth quarter of 2018 with the cheapest data cost of USD 9.06 offered by Mascom. This was also captured correctly by Cable as USD 9.01.

## Collecting accurate and up-to-date data prices

Collection and building a reliable price database that reflects the real costs of data products is a significant component of policy formulation, especially when the data is used to assess affordability of data products. Universal access to the Internet is considered to be pivotal to human development. The United Nations' 2030 Agenda recognises the spread of information and communication technology (ICTs) including global interconnectedness having great potential to accelerate human progress, reduce inequalities and develop knowledge-based societies. In recognising ICT access and use as critical components to achieving the Sustainable Development Goals (SDGs), the Agenda calls upon the international community to increase connectivity and access to ICT and to strive to provide universal and affordable access to the Internet in low income countries by 2020.

While the analysis of Internet affordability is critical to ensure that no one is left out of the digital space, existing affordability measures are highly problematic. Generally, they tend to use more aggregated supply-side and socio economic variables, such as GNI/GDP per capita - data that mask national inequalities. These measurements do not reflect the reality of Internet affordability for different segments of society, and in the case of most African countries the majority of people earn and live below averaged per capita values.

Coverage is not the only factor determining access and use of the Internet. Even though Lesotho, Rwanda and South Africa have more than 95% 4G/LTE coverage majority do not use the Internet.

Likewise national coverage data does not tell us about who is able to use the data services every if they a technically can receive a signal. Even though the extension of broadband networks remains an issue in most African countries, coverage is not the only factor determining the access and use of the Internet. The nationally representative 2017-2018 After Access Survey of 22 countries in the Global South indicates that although Lesotho, Rwanda and South Africa, have a broadband coverage of over 95%, yet a significant portion of the population do not use the Internet.

The surveys show that 70 percent of African residents, with the age of 15 years and over, do not use the Internet. Internet penetration is found to track GNI per capita. High income Latin American countries have higher Internet penetration than most of African countries. South Africa is the only African country with similar incomes to the relatively more affluent Latin America countries and is the only African country that has more than half (53%) of its population using the Internet. Yet, half of the population who are not online, do not look very different from the nearly 90% of Rwandans, Ugandans and Mozambicans offline. They are poor, less educated and earn less. Amongst such people those who are located in rural areas and are women are even less likely to be online.

Among the surveyed countries, the affordability of devices and the lack of digital skills are the main barriers to Internet use among the surveyed countries. Of the people who do not use the Internet in Mozambique, Tanzania, Uganda and Rwanda, it was found that 76, 64 and 43 percent respectively could not afford Internet-enabled devices. In Ghana and Nigeria of those group people who do not use the Internet, it was found that 43 and 40percent respectively do not know what the Internet is. And 22 percent in Nigeria and 14 percent in Mozambique and Ghana of those who do not use the Internet are digitally illiterate. In South Africa and Rwanda, of those who do not use the Internet 15 and 33 percent stated that the cost of services are unaffordable. With this information the cause of the digital divide and inequalities cannot only be measured by supply-side and aggregated socio-economic factors such as penetration rates, GNI per capita, infrastructure coverage and so on. By conducting a demand-side analysis a better insights into the origins of digital inequities is most likely to be gained and ways to rectify the inequalities will be indicated.

## Conclusion

Collecting and building a reliable and up to date price database that captures the real costs of data products is a significant component of policy formulation, as prices are a crucial component in assessing affordability and benchmarking exercises, *Cable* recently publicised their worldwide mobile data prices for a 1GB data package. *Cable* collected the lowest and highest prices for a 1GB and used the average price to rank countries. Apart from the average estimate not reflecting the actual costs paid by mobile data users, *Cable* did not consider the price differentials between small and large data packages. An assessment of headline prices has shown that operator headline retail price has shown that consumers of small packages pay more on a per GB basis than those who consume large data

packages. The effect of this is that countries are not benchmarked on similar products and therefore the results are wrong.

While it is difficult to find similar data products across countries, there are methodologies which can be used to compare or map country prices. According to the ITU's definition, the development of pricing indices should be constructed based on numbers of MBs offered and the validity period. One such method, which provides a practical solution to ranking countries is that used in the *RAMP Index*. The *RAMP Index* collects historical quarterly price information for daily, weekly and monthly 100MB, 500MB and 1GB plans across 50 African countries.

The difference between the *RAMP Index* and *Cable* pricing information is that, *Cable* ranks countries using the **average** cost of 1GB while the *RAMP Index* ranks countries based on the **cheapest** 1GB price. Most importantly, in the *RAMP Index*, countries are ranked on similar products in terms of MBs provided and data validity period. This explains the significant discrepancies in both prices and ranking between the *RAMP Index* and *Cable*.

According to the *Cable*, Rwanda, the Democratic Republic of Congo and Sudan performs better than all other African countries and sit among top 10 countries in the world. This is in contrast to the *RAMP* finding, which shows that North African countries perform better than Sub-Saharan African countries in terms of data costs. The *RAMP Index* shows that Egypt and Tunisia offers the cheapest 1GB data in Africa, at USD 1.12 and USD 1.73 respectively. *Cable* significantly underestimate prices in African countries with variations hitting more than 80 percent in most countries.

The *Cable* data for the 1GB price is inaccurate and should not be considered for policy and benchmarking purposes. The data was not constructed based on the set international standards. It is not clear which 1GB packages were collected. Are they are post-paid packages (a fraction of users in Africa) or prepaid, for which validity period, are they bundled products providing some minutes and SMSs or data only products?. For this reason we caution against the use of the *Cable's* data by regulators making pricing or competition determinations, by policy makers assessing the outcomes of policy and regulation or by researchers involved in affordability studies.

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