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OTT applications driving data revenue growth

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OTT applications driving data revenue growth

Stephen Esselaar and Christoph Stork

Abstract

This paper analyses the impact of Over the Top applications (OTTs) on mobile operator revenues. Operators have argued that OTTs have cannibalised voice and SMS revenues and warned that the resulting decline of overall revenues leads to lower investment in network infrastructure; substandard quality of service; lower tax revenues and lower licensing revenues. This paper investigates this claim by using publicly available information from mobile operators across Africa to analyse trends in voice, SMS and data revenues.

The paper analyses three factors impacting revenue trends: changes in usage pattern across voice, SMS and data, the impact of regulatory interventions and choice of business model.

The paper shows that most operators across Africa have experienced strong revenue growth due to an OTT-induced increase in data revenues that outpaces potential decreases in voice and SMS revenues.

Only a few operators saw a decline in service revenues over the last five years. Factors explaining the decline include regulatory interventions, economic decline of a country (drop in GDP), and being stuck in a voice and SMS centred 2G business model. Operating a mostly 2G network makes an operator vulnerable to losses in international and domestic call and SMS revenues while at the same time not being able to generate more data revenues. Case studies of Liberia, Guinea, Nigeria and Ghana are used to illustrate the impact of a decline in GDP and subscriber numbers, foreign exchange and competition, the impact of regulatory interventions and a data-centric business model.

The paper argues that policy makers and regulators should be more concerned with stimulating network investment into 4G+ and less with attempting to protect operators from the impact of OTTs. The paper concludes that regulation is not suitable to protect outdated business models.

Introduction

This paper analyses the impact of Over the Top applications (OTTs) on mobile operator revenues. OTT applications can be used for communications, replacing traditional voice and SMS services such as Facebook, WhatsApp and WeChat. Or they can be using mobile networks as a platform for service delivery such as mobile money, smart electricity meters and Uber. OTT applications are also sometimes referred to as Rich Interactive Services (Arnold et al, 2017) to distinguish general Internet based services from services tightly linked to the mobile network.

Mobile Network Operators (MNOs) have argued that OTTs have cannibalised voice and SMS revenues and warned that the resulting decline of overall revenues leads to lower investment in network infrastructure, substandard quality of service, lower tax revenues and lower licensing revenues.

In several public fora, regulators and operators have claimed that OTTs have had a “negative impact on the industry”¹ and that telecommunication operator revenues are not growing², caused by declining voice and SMS revenues and stagnant or slow-growing data revenues³. The Communications Authority of Kenya has recommended that "OTT players pay for the infrastructure use" and the Autorité de Régulation des Communications Electroniques et des Postes of Benin recommended that OTTs should be blocked, like in the United Arab Emirates (ARPT 2017).

Table 1 displays selected regulatory responses to OTT. These responses from regulators are often the result of successful lobbying by operators for protection against OTTs. The protection against technological progress strategy worked successfully, for a while, for fixed-line operators against their mobile competitors but did not serve the interests of investors, the state or consumers well in the medium or long term.

Several journal articles have uncritically adopted the operators viewpoint that OTTs have a negative impact on revenues. Jayakar et al (2014) and Barclay (2015) argue that mobile revenues have stagnated or declined as a result of OTTs. Sujata, et al (2015) argues that OTTs represent a measurable threat to operator revenues. Nandhiosa et al (2015) goes further and recommends regulation to prevent the erosion of operator revenues.

Few articles see OTTs as an opportunity for MNOs. MNOs frequently omit that OTTs are the main driver behind mobile broadband adoption and hence data revenues (Stork et al, 2013). Esselaar et al (2017) argue that by adopting flat access pricing models that rely on OTTs for communication, MNOs can increase profitability. Antonopoulos et al (2016) provide an econometric model for France, Germany, Italy, Japan, Spain, United Kingdom and the United States of America. The paper provides some evidence that OTT revenues and MNO revenues are positively related.

¹ Council of African Regulators, 2017. Minutes of the 2nd Meeting of the Council of African Regulators, 11th September 2017 Marriott Hotel, Rwanda.

² WATRA, 2017. West African Telecommunications Regulator’s Assembly (WATRA) conference in Mali in November 2017, author’s minutes.

³ In fact, during the West African Telecommunications Regulator’s Assembly (WATRA) conference in Mali in November 2017, Orange Niger and Sonatel (Senegal) explicitly stated that overall revenues were in significant decline (between 15% and 20%) as a direct result of OTTs. In another conference, the Autorité de Régulation des Communications Electroniques et des Postes of Benin recommended that OTTs should be blocked, like in the United Arab Emirates (Meeting of the Council of African Regulators, meeting minutes).

Table 1: Policy, regulatory or potential regulatory response to OTTs

Cote d'Ivoire	Discussion document on potential impact of OTTs, specifically the impact on operators of declining voice and SMS revenues and the impact on the state of declining tax revenues. Recommendations include: organise a regional response (ECOWAS) focusing on a new taxation regime and data privacy; support operator initiatives to build their own OTTs, particularly around financial services.
Ghana	Press release issued by the NCA stating that they are monitoring the situation and expect regulations "in due course for an enabling regulatory environment".
Kenya	No official position, but several statements on OTTs in public fora.
Liberia	An assessment of the impact of OTTs is included in the determination of relevant markets that is conducted by the LTA on a regular basis. The assessment will determine "whether or not these services should be designated as a relevant market(s)".
Nigeria	Discussion document looking at the impact of OTTs on the Nigerian market. The report concludes that before any regulation of OTTs can be considered, the impact of OTT applications on traditional revenues streams still needs to be analysed.
Senegal	Advertised for a consultant to conduct a study on the regulatory framework for new digital actors/services. The EOI requires an analysis of OTTs in Senegal and their impact on the ecosystem. The EOI deadline was October 25, 2017. No report has been released.
Uganda	Uganda had planned to tax social media usage by UGX 200 per day (about 5 US cents). Following a public outcry on the double taxation that this measure would entail the proposal seems to have been dropped.
Zimbabwe	POTRAZ released a discussion document on the role of OTTs. No regulation has been released.

Generally, revenues depend on many factors, among them the number of subscribers, subscriber profiles, product design, retail prices, level of competition in the sector and regulation. These factors can be grouped into three categories:

- **Economic factors:** population, GDP per capita, exchange rates;
- **Regulatory environment:** number of MNOs, fairness of competition and transparency and predictability of regulatory interventions;
- **Operator strategies:** product design, response to other operators and business model.

Assessing the claims by MNOs that OTTs harm their profits needs to take all three factors into account.

A second question that needs to be answered is under what conditions a regulator should intervene:

- Should a regulator protect mobile operators against technological change?
- Should an operator with declining revenues and market share be protected against those with increasing revenues and market share?

The general answer is that regulators should only intervene when operators abuse their market power and act to reduce competition. OTTs present the same risk and opportunity to all operators and hence do not require regulatory interventions from a competition perspective. Consumer protection may be required, a topic not addressed by this paper.

This paper investigates the claim that OTTs cause decreased or stagnant revenues by using publicly available information from mobile operators in Africa to analyse trends in voice, SMS and data revenues. It first assesses whether revenues declined or not over the past four years. If revenues declined, then economic and regulatory conditions are investigated and whether the decline can be linked to OTT adoption.

OTTs as facilitator for separation of service and access platforms

The number of OTT users is steadily increasing (Figure 1) and so is the number of messages sent each day (Figure 2). If OTTs cause a decline in revenues, then one should be able to see a systematic decline of revenues over time. The overall impact of OTTs on the financial performance of mobile operators depends on whether data revenue growth can make up for declining voice and SMS revenues. It was OTTs, specifically social media, that led to the explosion mobile broadband adoption and usage and consequently to a massive upgrade in mobile network infrastructure across Africa since 2011 (Stork et al, 2013).

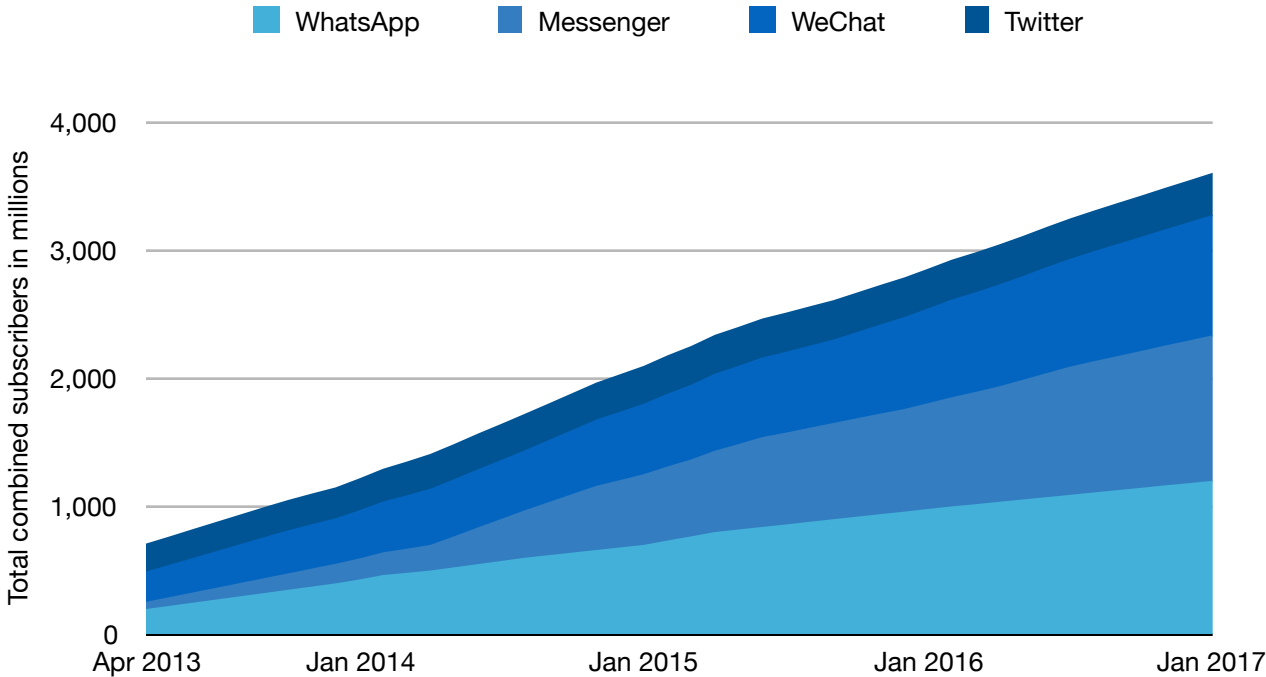


Figure 1: Consistently increasing subscriber numbers (Source: statista.com)

OTTs allow for cheaper and more convenient communication between customers of the same network as well across networks and countries. Being able to call a name instead of a number and effortless multimedia messaging (instead of clumsy and expensive MMS), along with cost effective video calling, means that voice and SMS services are gradually being replaced by consumers through OTTs applications.

WhatsApp Usage Shows No Signs of Slowing Down

Number of WhatsApp messages sent worldwide per day*

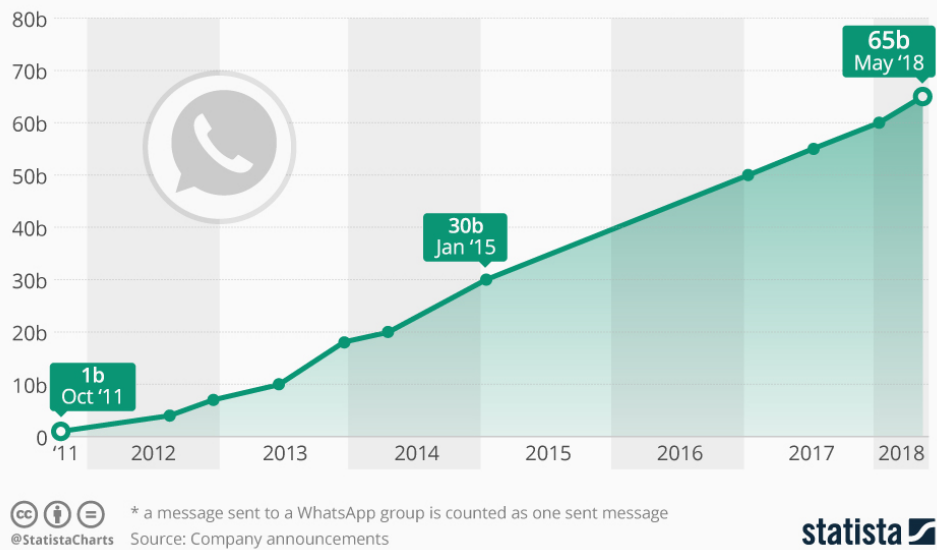


Figure 2: Number of WhatsApp messages sent worldwide per day (Source: Statista)⁴

Esselaar et al (2017) predict that OTTs will replace regular voice and messaging services in the near future altogether. Figure 3 depicts the transition from traditional voice and SMS to data-access-only services, which rely on OTTs for communication. The x-axis is an average period of time, because some countries may reach a phase sooner than others, and some countries will lag behind these trends for a longer period of time, depending on the level of competition within the ICT sector of each country.

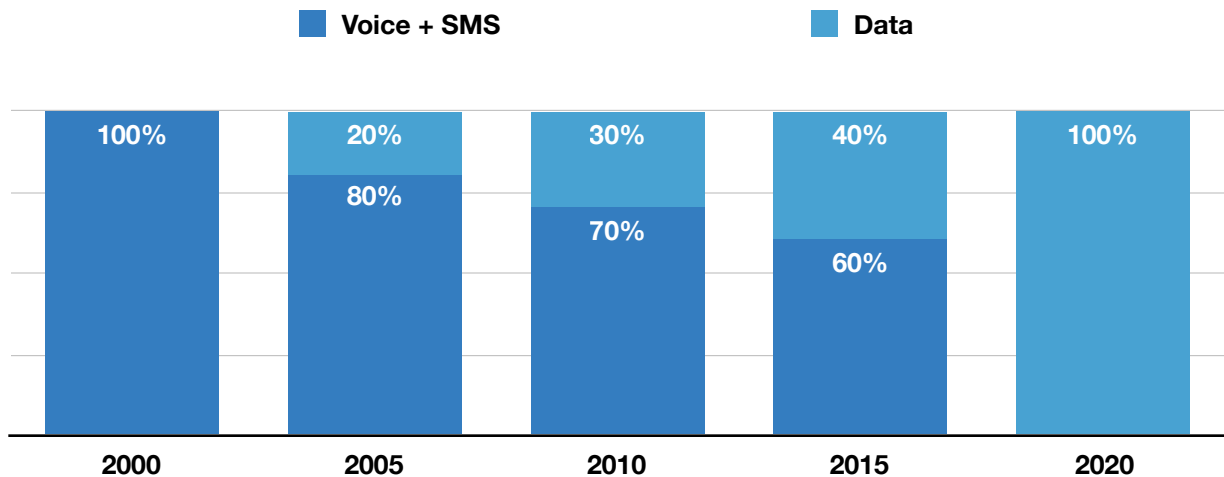


Figure 3: Trends towards "Access" only business models (source: authors' own graphic)

The general trend is a shift away from voice and SMS revenues towards data revenues, driven by OTT applications, such as social media and other IP-based applications, which will be increasingly used for voice

⁴ <https://www.statista.com/chart/13762/whatsapp-messages-sent-per-day/>

and message communication. Mobile operators will eventually become “access” providers, distinguishing their products by speed and quality of service, and competing with other forms of access, such as Public WiFi and connectivity in places of work, study and home. Apart from competitive pressure, the trend described in Figure 3 depends on smartphone penetration and 3G+ network coverage. The migration to a data-only business model will take longer for countries that have little 3G and 4G coverage and low smart phone penetration. Insufficient 3G+ network coverage may be a reason why some mobile operators struggle to generate enough data revenues to compensate for revenue decline for voice and SMS.

Mobile revenue trends in Africa

This section assesses whether revenues have declined over the period 2012 to 2017 for major African operator groups. If overall revenues have not declined, then OTTs overall impact cannot be negative and data revenue gains offset any potential voice and SMS revenue declines. This section focuses on operator groups that publish audited financial statements (AFS) publicly. These include Vodacom, Orange, MTN, Airtel and Maroc Telecom.

Vodacom

Vodacom is part of the Vodafone Group and has operations in Tanzania, DRC, Mozambique, Lesotho and South Africa. Vodacom started reporting revenues for Tanzania, Democratic Republic of Congo (DRC), Mozambique and Lesotho separately starting in 2016. Prior to 2016, Vodacom reported only international revenues. Table 2 shows that revenues increased for all countries in the international segment with the exception of DRC in 2017. Vodacom states that the reason for the lower revenues in the DRC was a loss of subscribers and macro-economic turmoil in the latter half of 2016.⁵

Table 2: Service revenues		2016	2017	2018
Tanzania	TSH million	923,347	933,292	977,994
	YoY		1.1%	4.8%
DRC	USD '000	429,605	407,413	428,169
	YoY		-5.2%	5.1%
Mozambique	MZN million	11,896	14,641	17,635
	YoY		23.1%	20.4%
Lesotho	LSL millions	1,027	1,116	1255
	YoY		8.7%	12.5%

Vodacom DRC has seen a 24% loss of subscribers in 2016 due to customer registration requirements⁶ as well as a recession with GDP declining by 3.2% between 2015 and 2016.⁷ DRC revenues rebounded in 2018 by over 5%.

⁵ Vodacom Annual Report (2017).

⁶ Vodacom Preliminary Results (2016), page 31, available at

⁷ World Bank Development Indicators Database

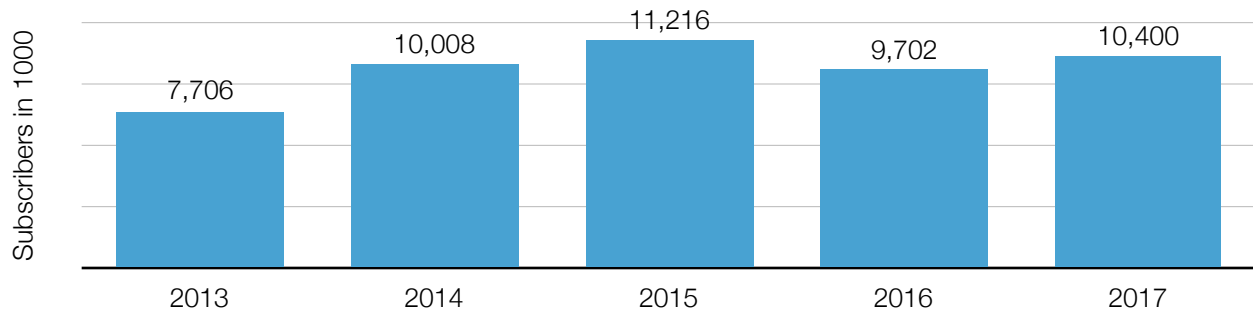


Figure 4: Vodacom's DRC subscriber numbers

For South Africa, service revenue grew by 13% between 2012 and 2018 (Table 3). Vodacom South Africa's data revenue as a share of total service revenues continues to climb, reaching 43% and 4G population coverage reached 80% for the financial year that ended March 2018.

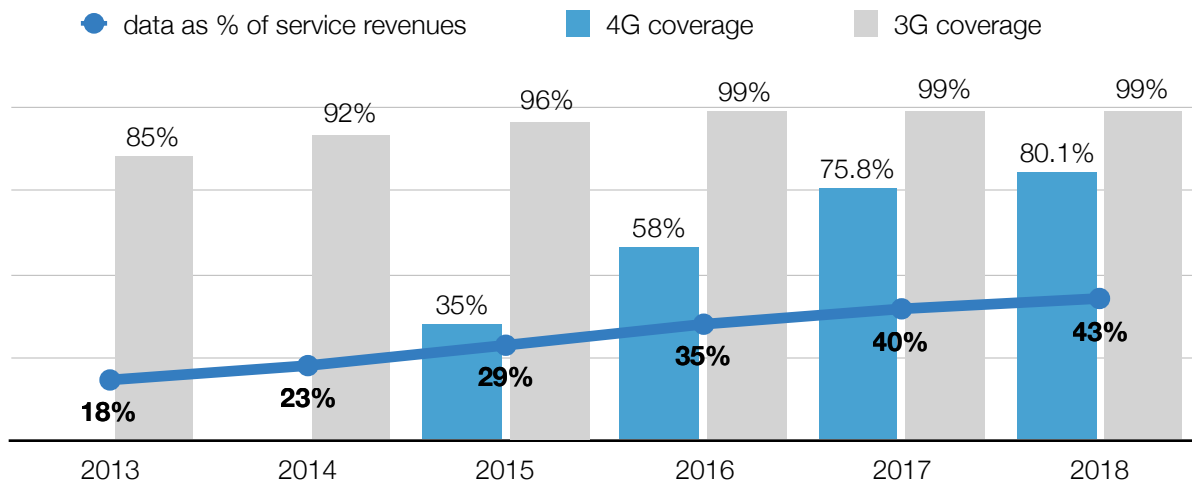


Figure 5: Vodacom South Africa

Vodacom South Africa upgraded its 3G and 4G infrastructure consistently and benefited from OTT induced data revenue growth.

Table 3: Vodacom Service revenues		2013	2014	2015	2016	2017	2018
South Africa	R million	56,821	59,314	59,203	62,279	64,729	69,967
	YoY		4.4%	-0.2%	5.2%	3.9%	8.1%
Group	R million	68,131	73,219	74,500	80,077	81,278	86,370
	YoY		7.5%	1.7%	7.5%	1.5%	6.3%

Overall revenues on group level increased for each year since 2013. There is no reason to suspect that Vodacom is adversely affected by OTTs.

Orange

Orange operates in Senegal, Mali and Guinea Bissau under the Sonatel brand and in Burkina Faso, Cote d'Ivoire and Niger and Cameroon under the Orange brand. Of the eight countries under the Orange/Sonatel

brand, four countries have seen a decline in revenues at some point: Orange Niger, Sonatel Guinea, Orange Cameroon and Orange DRC. Only Sonatel Niger and Orange Cameroon have seen consistent declines in revenues.

Table 4: Orange mobile revenues		2013	2014	2015	2016	2017
Cote d'Ivoire ¹	Euro million	623	680	760	798	821
	YoY		9.1%	11.8%	5.0%	2.9%
Guinea	Euro million	133	216	249	246	280
	YoY		62.4%	15.3%	-1.2%	13.8%
Mali	Euro million	347	415	456	494	569
	YoY		19.6%	9.9%	8.3%	15.2%
Niger	Euro million	91.0	104.0	103.0	94.0	88.0
	YoY		14.3%	-1.0%	-8.7%	-6.4%
Senegal ²	Euro million	439	442	454	464	
	YoY		0.7%	2.7%	2.2%	
Cameroon	Euro million	287	285	284	278	281
	YoY		-0.7%	-0.4%	-2.1%	1.1%
Burkina Faso	Euro million				195	246
	YoY					26.2%
DRC	Euro million	62	105	149	257	239
	YoY		69.4%	41.9%	72.5%	-7.0%
Notes		¹ Combined revenues for mobile and fixed-lines ² Sonatel Senegal only reports revenues for mobile and fixed-lines combined since FY 2017				

Sonatel Niger's revenues grew between 2013 and 2014 and then started to decline. There are several factors that are likely explanations. 3G coverage remains one of the lowest in the region and mobile broadband penetration is amongst the lowest in the world.⁸ Airtel was awarded a 3G license in 2014, but only began rollout 3G in 2015.⁹ 3G services are only available in major cities, like Niamey, Dosso and Filingue. 4G has not yet been rolled out. As a result of the poor rollout of mobile broadband networks, Sonatel Niger loses voice and SMS revenues to OTTs without being able to benefit from the increase in data revenues. Niger is a good example of the threats and opportunities that OTTs represent for mobile operators. As a result Orange Niger can either lobby the regulator to protect its voice and SMS business model or it could upgrade its networks to offer wider 3G and 4G population coverage. The first option is unlikely to be helping Orange in the medium term.

Sonatel Guinea saw a small decline of 1.2% of revenues in 2016 but saw a sharp increase of 14% in 2017 and overall revenues grew by 110% between 2013 and 2017.

Orange Cameroon had declining revenues between 2014 and 2016. In 2017, there was a small uptick in revenues. There have been several challenges in the Cameroonian telecoms sector:

⁸ GSMA, 2016, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/01/Digital-inclusion-and-mobile-sector-taxation-in-Niger_English_report.pdf

⁹ Telegeography, <https://www.telegeography.com/products/commsupdate/articles/2015/02/19/airtel-selects-ericsson-for-3g-rollout-in-niger/>

- Nextel had an exclusive license to offer 3G services until the 2nd quarter of 2015¹⁰. 3G was only launched by Nextel in September 2014.
- MTN Cameroon and Orange Cameroon were in a dispute with the regulator over license fees and renewal terms for nearly two years. MTN had its operating license reduced by one year and was fined USD 6.6 million for not complying with SIM registration requirements.¹¹
- Vodafone Cameroon ceased operations in November 2017.¹²
- An additional tax of 2% was imposed on mobile services (voice calls and internet services) in 2017.¹³

If the claim that OTTs were negatively affecting revenues were true, then all Orange operators should have experienced consistently declining revenues. Of the eight operators, four had consistently increasing revenues, two were subject to revenue volatility but overall saw growth in revenues between 2013 and 2017. Only two had consistently declining revenues and had either macro-economic or sector specific challenges that rule out OTTs as the only explanation for declining revenues.

Airtel

Airtel operates in Nigeria, Chad, Congo Brazzaville, Democratic Republic of Congo, Gabon, Madagascar, Niger, Ghana, Kenya, Malawi, Seychelles, Tanzania, Uganda, Zambia and Rwanda.¹⁴ Airtel's mobile operation in Africa turned profitable for the first time in the quarter ending in March 2017 and the EBITDA margin climbed to a new high of 32.3% in September 2017. Airtel reports on its African operations as a combined unit. It divested from two countries in 2016: Sierra Leone and Burkina Faso. Comparing longer time series is not possible based on information made public by Airtel.

Figure 6 shows that data traffic in megabytes overtook voice traffic in minutes on Airtel's network in September 2016. It also shows that voice traffic still has the potential to grow, reflected in the late 2017 voice minute increases. If OTTs had a negative impact on voice and SMS revenues then there would have been a decline in minutes on the network, which has not taken place.

¹⁰ Telegeography, 2015. MTN, Orange renew Cameroon licenses for XAF 75bn, available at <https://www.telegeography.com/products/commsupdate/articles/2015/03/11/mtn-orange-to-renew-cameroon-licences-for-xaf75bn/>

¹¹ Telegeography, 2015. MTN, Orange renew Cameroon licenses for XAF 75bn, available at <https://www.telegeography.com/products/commsupdate/articles/2015/03/11/mtn-orange-to-renew-cameroon-licences-for-xaf75bn/>

¹² Telegeography, 2017. Afrimax closes Vodafone branded business in Cameroon, available at <https://www.telegeography.com/products/commsupdate/articles/2017/11/13/afri-max-closes-vodafone-branded-business-in-cameroon/>

¹³ Telegeography, 2015. Cameroon to impose 2% tax on mobile services in 2016, available at <https://www.telegeography.com/products/commsupdate/articles/2015/12/17/cameroon-to-impose-2-tax-on-mobile-services-in-2016/>

¹⁴ Bharti Airtel (2017). Quarterly report on the results for the fourth quarter and year ended March 31, 2017. Available at <http://www.bharti-infratel.com/cps-portal/web/results.html>

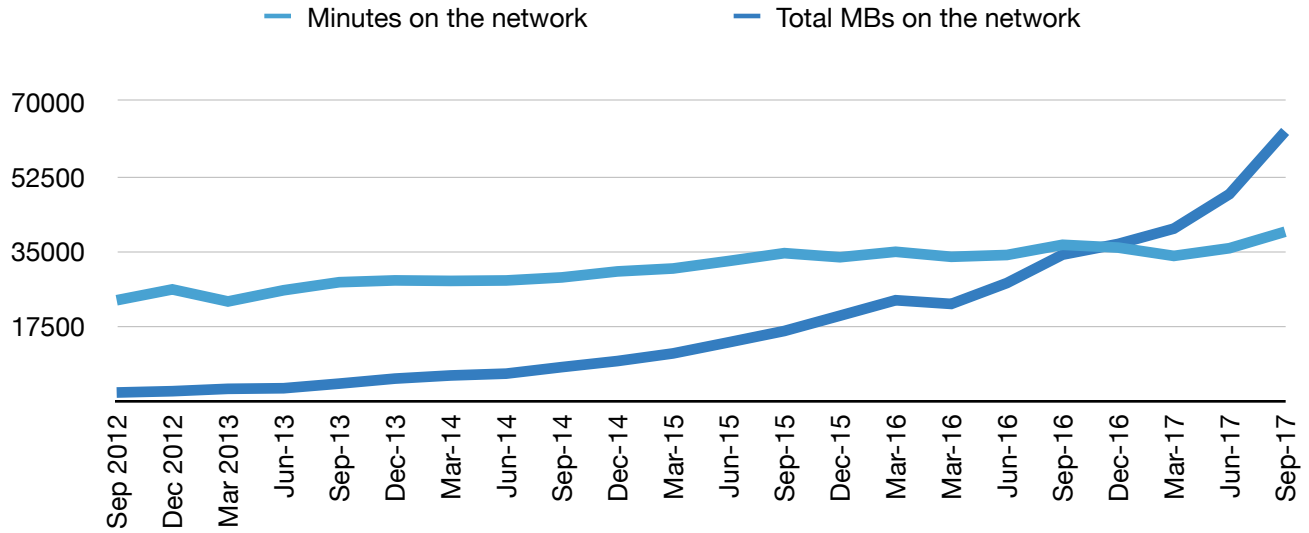


Figure 6: Minutes and MB on Airtel's Africa networks (without Burkina Faso and Sierra Leone from March 2016)

Also, one would expect SMS revenues as a share of mobile revenues¹⁵ to decline. Figure 6 shows that across Airtel's Africa operations, SMS revenue has continued to increase.

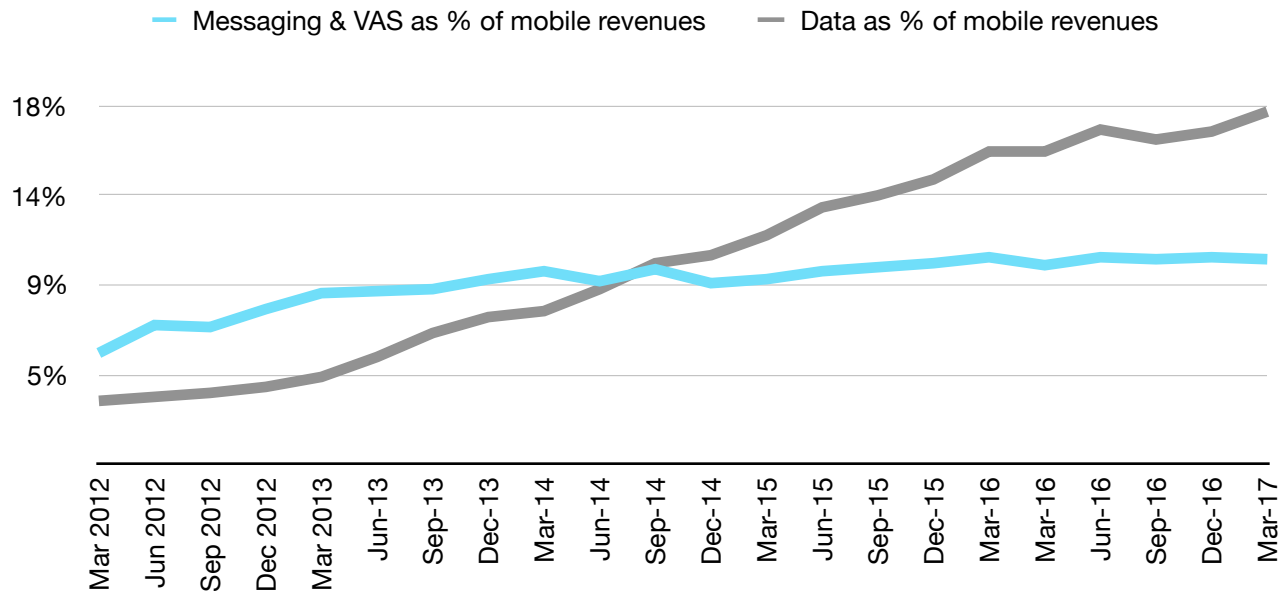


Figure 7: Airtel's data and SMS as percent of mobile revenues (without Burkina Faso and Sierra Leone from March 2016).

Figure 7 also shows the importance of data revenues in proportion to mobile revenues. While it has steadily increased to 18% of mobile revenues, that itself is low for modern operators with wide 3/4G network

¹⁵ Mobile revenues include data, SMS and voice revenues.

coverage, which typically make as much money from data as they make from voice, i.e., 100% of voice revenues or 50% of mobile revenues.¹⁶

Overall, Airtel was able to benefit from the rise of OTTs and any negative impact on traffic and revenues shares cannot be deduced based on publicly available data.

Maroc Telecom

Maroc Telecom owns or manages mobile operators in Benin, Burkina Faso, Gabon, Ivory Coast, Mali, Mauritania, Niger, Togo, and the Central African Republic. Maroc Telecom reports for these countries only as a group in Moroccan Dirham (MAD). Revenues dipped slightly in Q2 2016, Q4 2016 and Q1 2017, but the general trend across its operations is stable or increasing. Since OTT use has increased consistently, the dips are likely to be operational in nature or due to currency fluctuations and not linked to OTTs.

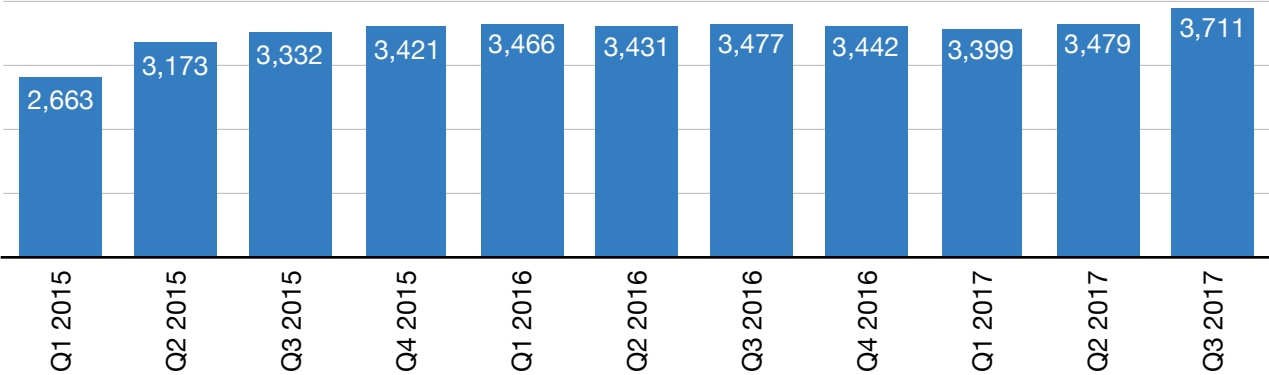
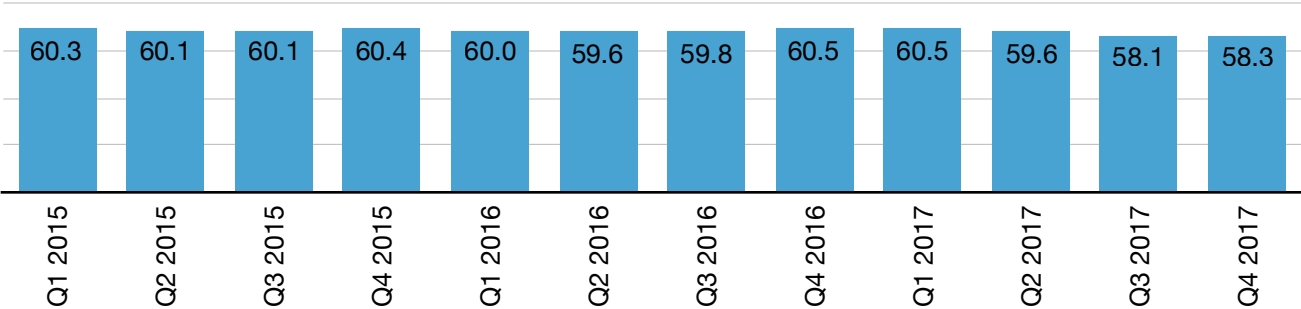


Figure 8: Mobile service revenues (international) of Maroc Telecom in MAD million IFRS

Most countries that Maroc Telecom operates in belong to the CFA area (XAF or XOF) which is pegged to the Euro, while the Moroccan Dirham is pegged against the USD and the Euro and the weighting changes from time to time.¹⁷



¹⁶ Telkom South Africa’s mobile data made up 67.5% of mobile revenues in 2017, for example. The share of data revenues of voice revenues for MTN South Africa in the same year were 105.3% and expressed as share of mobile revenues 49.7%.

¹⁷ <https://www.bloomberg.com/news/articles/2015-04-13/morocco-central-bank-revises-currency-basket-weightings>

Figure 9: CFA per MAD (Source Oanda)

Maroc Telecom’s revenue increased despite the weakening Dirham in Q2, Q3 and Q4 of 2017, which is inconsistent with an overall revenue loss due to OTTs.

MTN

MTN reports separately for its operations in Benin, Guinea Bissau, Guinea Conakry, Ghana, Ivory Coast, Liberia, Nigeria, South Africa and Uganda in South African Rand. However, ARPUs are reported in USD and local currency. To remove the impact of foreign exchange fluctuations, we estimated quarterly revenues based on local currency ARPU multiplied by subscribers. To compare these across countries we expressed the quarterly revenue in terms of Q1 2013 revenue. This means that the value for all MTN countries starts at 100% in Q1 2013.

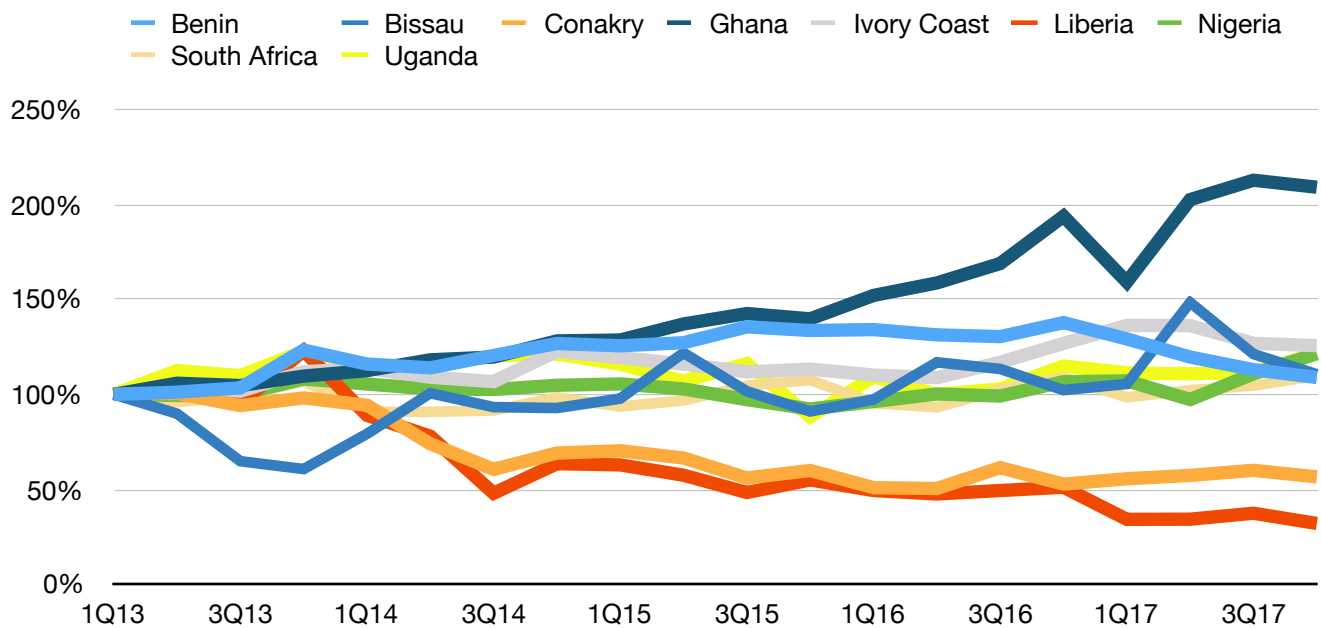


Figure 10: Revenue in local currency expressed in % of Q1 2013 revenues

Only MTN Guinea and MTN Liberia have experienced a significant downward trend in revenues. Liberia was severely affected by the Ebola crisis and consequently faced a severe economic downturn. Guinea is a more complex environment and the two major operators have had divergent experiences, with MTN Guinea seeing a reduction in revenues prior to 2015 and then revenues stabilizing, while Sonatel Guinea has seen a steady increase in revenues.

Identifying impact factors

This section investigates the reasons for declining revenues for MTN Guinea, MTN Liberia and MTN Nigeria. MTN Ghana is an example of how MTN Nigeria could have performed had the Nigerian regulator not intervened in the market.

MTN Liberia - Economic shock and declining subscriber numbers

The decline in revenues was likely caused by the Ebola crisis, which occurred between 2014 and 2015. In per capita terms, GDP growth has been negative since 2014 and fell by over 4% in 2016 (Figure 10).

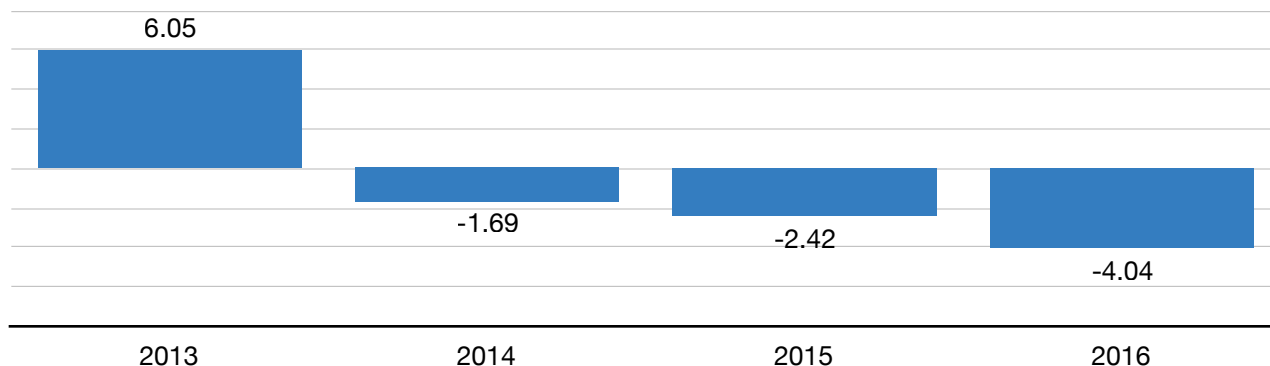


Figure 11: GDP per capita annual growth in % (Source: WDI)

Liberia is experiencing a macro economic shock and operating conditions for operators are tough. Orange has adjusted to the adverse operating conditions better than MTN. While MTN lost significant numbers of subscribers, Orange managed to steadily increase its customer based.

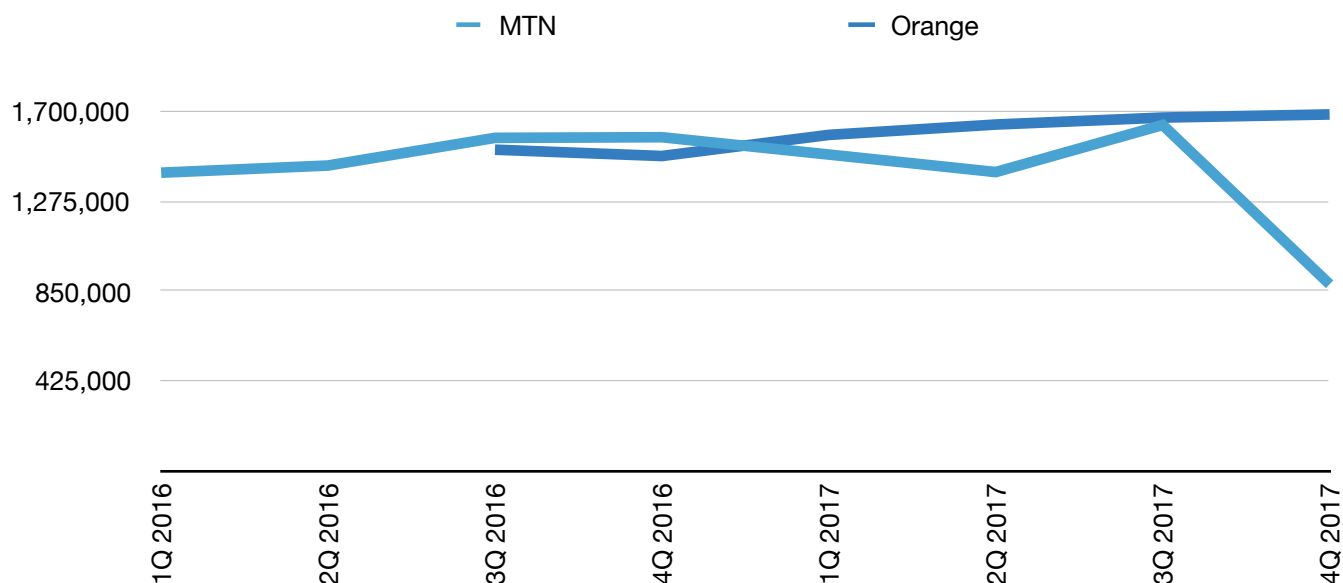


Figure 12: Subscriber numbers of MTN and Orange in Liberia (Source: annual reports)

MTN Guinea - Foreign exchange and competitive factors

Revenues for MTN Guinea declined significantly between 2014 and 2017 when expressed in South African Rand.

Table 5: MTN Guinea		2013	2014	2015	2016	2017
Total Revenues	R million	1,501	1,274	1,203	1,032	932

Table 5: MTN Guinea		2013	2014	2015	2016	2017
	YoY		-15%	-6%	-14%	-10%
EBITDA	R million	447	193	121	-169	39
EBITA Margin	%	30%	15%	10%	-16%	4%
Subscribers Q4	in 1000s	2,723	3,035	3,244	2,563	2,648
Cost	R million		1,081	1,082	1,201	892

However, MTNs revenue expressed in Guinea Francs was stable between 2015 and 2017, pointing to foreign exchange variations as the explanation for declining revenues in Rand terms. In Figure 13, revenues are expressed in local currency. There was a sharp decline between 2013 and 2015, but then stable revenues between 2015 and 2017. OTTs were growing quickly at this time, so the decline in revenues is due to other factors apart from OTTs.

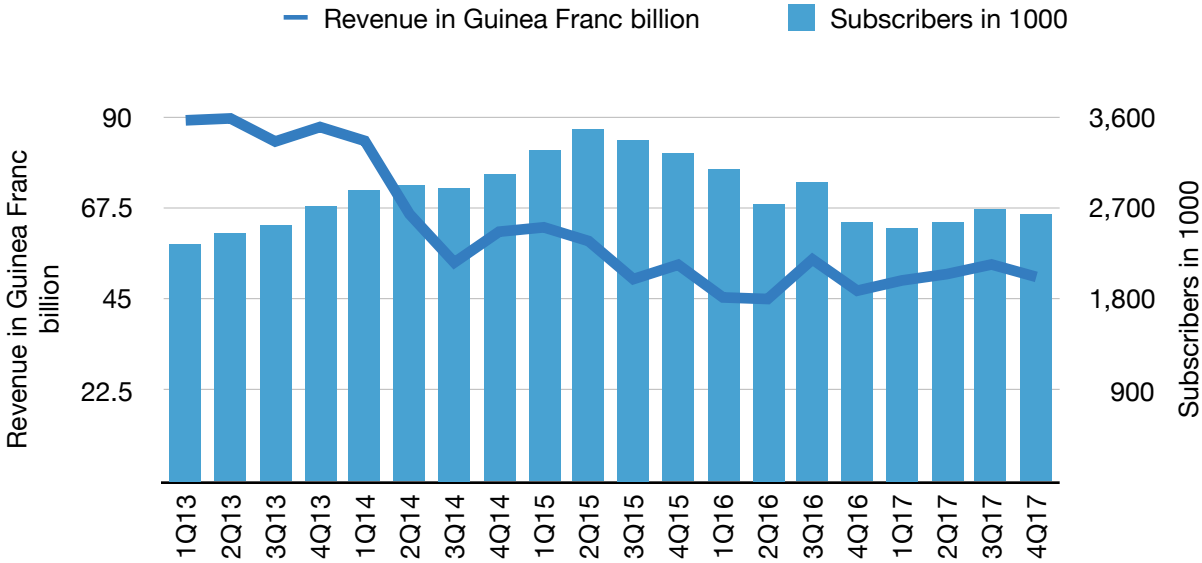


Figure 13: MTN Guinea - Revenues estimated based on ARPU multiplied by subscribers compared to subscribers

Also, Sonatel Guinea (Table 6) revenues in local currency increased every year between 2014 and 2017. MTN Guinea’s revenue decline between 2013 and 2015 is thus likely due to competitive factors rather than OTTs.

Table 6: Sonatel’s Guinea KPIs		2014	2015	2016	2017
Guinea	ARPU	29,570	25,500	26,006	26,448
	Subscribers in 1000	4,506	5,276	6,033	6,783
	Revenues (local) billion	133.2	134.5	156.9	179.4
	YoY		1.0%	16.6%	14.4%
Source		Sonatel Financial year 2017 presentation			

MTN Nigeria - Revenue impact of regulatory interventions

Nigeria has four national mobile operators: MTN, Airtel, Globacom and 9mobile, of which only MTN provides investors with significant country specific information. The last three years has been a tumultuous period in the Nigerian telecom sector leading to decreasing revenues when expressed in South African Rand (Table 6):

- As part of SIM registration procedures implemented by the Nigerian Communications Commission (NCC), registration of new subscribers must take place in a “permanent building with logos and structures”,¹⁸ adding to the cost of subscriber acquisition.
- On 10 June 2016, as a result of not complying with SIM registration procedures, MTN agreed to pay 330 billion Naira (USD 1.67 billion) over three years in full and final settlement, in addition to complying with certain other regulatory conditions (MTN Interim Results, Aug 2016).
- MTN lost 8.8 million subscribers between Dec 2016 and June 2017 (Figure 17). The massive reduction in subscriber numbers in the second half of 2016 is due to the SIM registration requirements imposed on MTN by the NCC.
- The NCC has implemented price floors for data in 2015, withdrawn the regulations in the 4th quarter of 2015, then issued similar price floor regulations in November 2016, only to withdraw them in December 2016.¹⁹

The net effect is an uncertain regulatory environment with significant reductions in subscribers.

Table 7: MTN KPIs (Source: Investor Relations)			2013	2014	2015	2016	2017
Revenue	Revenue	R million	48,159	53,995	51,942	47,122	36,005
		YoY		12%	-4%	-9%	-24%
	Voice Revenues	R million	39,177	42,405	40,845	36,430	26,756
		% of total	81.3%	78.5%	78.6%	77.3%	74.3%
	SMS Revenues	R million	1,166	1,036	840	646	514
		% of total	2.4%	1.9%	1.6%	1.4%	1.4%
	Data Revenues	R million	7,285	10,047	10,113	9,943	8,249
		% of total	15.1%	18.6%	19.5%	21.1%	22.9%
		% of voice	18.6%	23.7%	24.8%	27.3%	30.8%
EBITDA		R million	27,457	31,620	27,504	21,854	14,041
EBITA Margin		%	57%	59%	53%	46%	39%
Subscribers Q4		in 1000s	56,766	59,893	61,252	61,970	52,273

For MTN, the decline in Rand-denominated revenues is partly due to exchange rate fluctuations. In Naira, total revenues increased from 2013 to 2016 by 6.3% (Figure 13). In 2017, revenues declined in both Rand terms and also local currency because of the loss of 8.8 million subscribers.

¹⁸ Techpoint, <https://techpoint.ng/2017/03/03/no-umbrella-kiosk-sim-registrations/>

¹⁹ See Telegeography, available at <https://www.telegeography.com/products/commsupdate/lists/country/nigeria/>

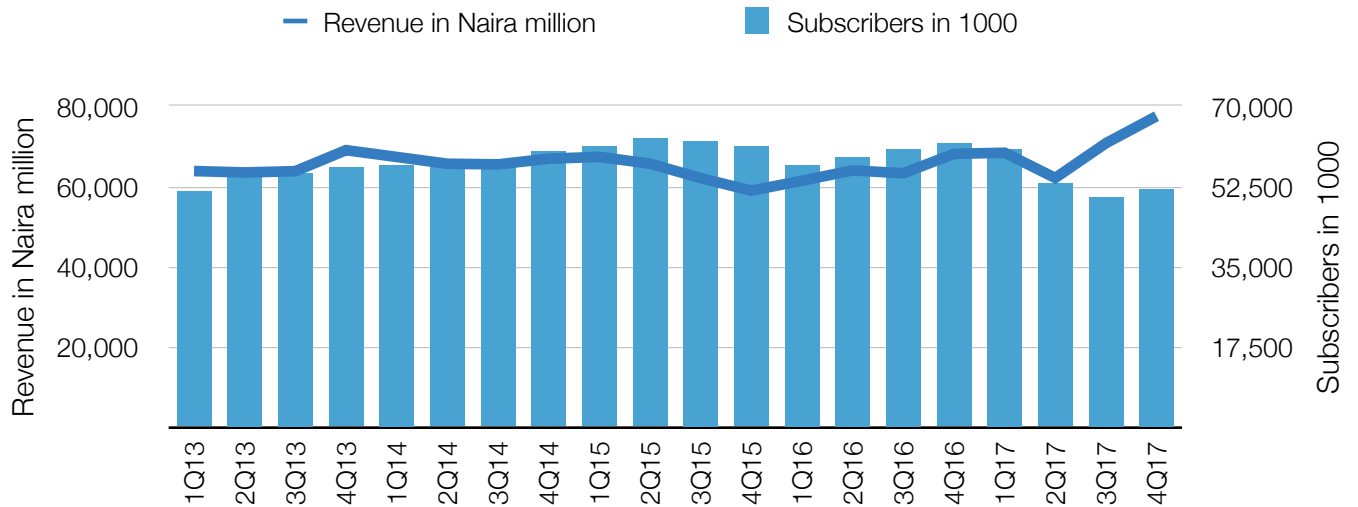


Figure 13: MTN Nigeria - Revenues estimated based on ARPU multiplied by subscribers compared to subscribers

MTN Ghana - Success of a data centric business model

The traditional MNO business model is dependent upon voice and SMS revenues. With the advent of OTTs, voice and SMS has been replaced by a data-centric business model. The data-centric business model is dependent upon 4G coverage and smartphone penetration. MTN Ghana is an example of adopting a data-centric business model, while MTN Nigeria is an example of a business model constrained by regulation and forced to rely on voice and SMS revenues.

Data continues to drive revenues, but only represents 32% of voice and SMS revenues for MTN Nigeria. In comparison to Ghana, this is low. MTN Ghana has data as a percentage of voice and SMS of 85%. This shows that there is significant data growth potential in Nigeria, especially because data as a percentage of voice and SMS was higher for MTN Nigeria than MTN Ghana in the second half of 2013. Since then, there has been a sharp divergence, with data driving MTN Ghana's growth.

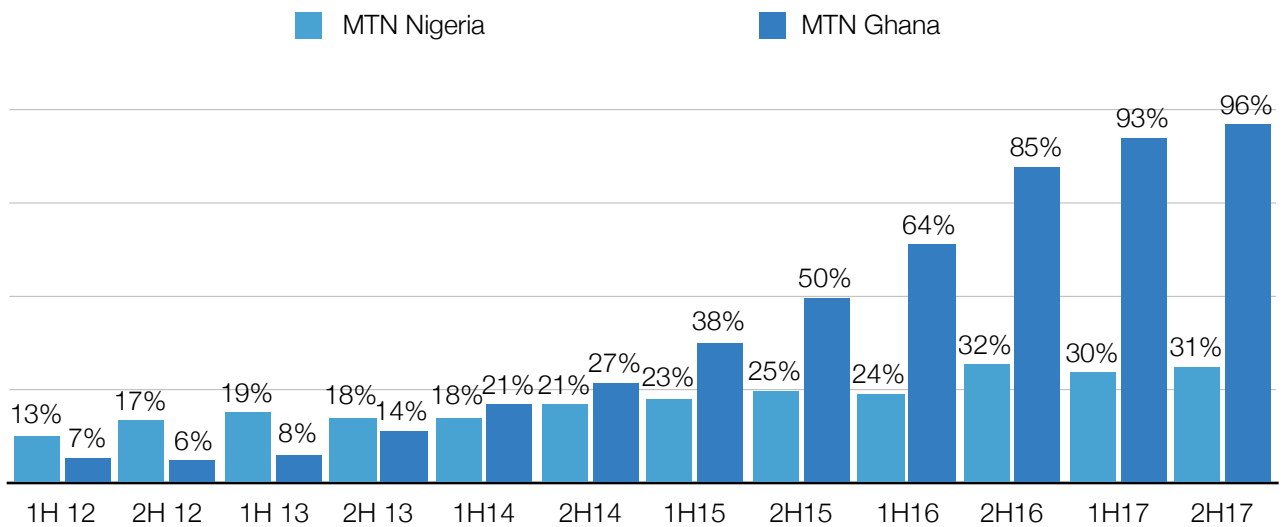


Figure 14: MTN Data as % of voice and SMS for Nigeria and Ghana (Source: MTN annual reports)

Figure 14 shows that data has been growing strongly and makes up 85% of voice and SMS revenues, from 7% at the beginning of 2012. OTTs are driving data usage and therefore revenue increases.

Table 8: MTN Ghana			2013	2014	2015	2016	2017
Revenues	Total	R million	8,269	7,149	7,903	10,291	10,382
		YoY		-14%	11%	30%	1%
	Voice Revenues	R million	6,966	5,559	5,336	5,794	5,113
		% of total	84%	78%	68%	56%	49%
	SMS Revenues	R million	324	82	78	86	86
		% of total	4%	1%	1%	1%	1%
	Data Revenues a)	R million	801	1,343	2,418	4,337	4,924
		% of total	10%	19%	31%	42%	47%
EBITDA		R million	3,102	2,674	3,197	4,184	4,116
EBITA Margin		%	38%	37%	40%	41%	40%
Subscribers Q4		in 1000s	12,930	13,852	16,255	19,296	15,667
Notes			a) Since 2017 reported data and digital separately. The combined value is taken for consistency.				

Conclusion

The analysis shows that most operators have experienced strong revenue growth due to an OTT-induced increase in data revenues that outpace potential decreases in voice and SMS revenues. The declining revenues of a subset of operators are due to insufficient 3G or greater network coverage or excessive regulation or adverse operating conditions. Operating a mostly 2G network makes an operator vulnerable to losses in domestic and international voice and SMS revenues because they are unable to generate data revenues off 3G or 4G networks. Operators with extensive 3/4G coverage are able to increase their data revenues, which then compensates for any losses in voice or SMS.

International trends show a sharp increase in data usage and a general decline in voice and SMS usage. In south Asia, data usage is driven by smartphone penetration, 4G coverage, OTTs and low mobile broadband prices. Africa is following the same trend but at a slower pace.

MTN Liberia is an example of the impact of macro-economic shocks, and the subsequent decline in subscriber numbers, on revenues. MTN Guinea shows the impact of foreign exchange variations as well as increasing competition on revenues. MTN Nigeria and MTN Ghana are contrasting case studies, where regulatory interventions stymied business model innovation in Nigeria, resulting in declining revenues, while Ghana saw significant increases in revenues based on a data-centric business model that encourage OTT usage.

We argue that policy makers and regulators should be more concerned with stimulating network investment into 4G+ and less with attempting to protect operators from the impact of OTTs.

Five operator groups consisting of 31 operators have been analyzed, and only two have seen consistent revenue declines, contradicting the claim that OTTs cause a reduction in revenues and therefore lower taxes paid to government.

What these case studies show is that operators that argue for OTT regulation are generally protecting an outdated business model, one that is dependent upon voice and SMS revenues. Operators that have invested in network upgrades, particularly 4G, have changed their business models to take advantage of rapidly increasing data usage and consequently see strong growth in revenue. These operators see OTTs as a tool to drive data usage and to expand their subscriber base. For example, Vodacom South Africa has consistently upgraded its 3G and 4G infrastructure and benefited from OTT induced data revenue growth.

Several countries in south Asia offer “free basic internet”²⁰ in order to expand their subscriber base. Users that want faster access must buy a data package. As a result, a key factor in explaining increasing revenues is subscriber numbers, not OTT adoption. Operators that fail to offer OTT-friendly services see lower subscriber numbers and therefore look towards regulation as a mechanism to protect their market position. We conclude that regulation is not a suitable strategy to protect outdated business models.

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²⁰ For example, Jio in India, all Malaysian operators offer free basic internet, where the user doesn't pay for throttled internet access, where internet access is at 64 kbps. For faster access, users must buy a data package.

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