QUARTERLY STATISTICAL BULLETIN ON COMMUNICATIONS IN GHANA

Volume 4 Issue 4

NATIONAL COMMUNICATIONS AUTHORITY

FOURTH QUARTER

OCTOBER - DECEMBER, 2019

Communications for Development

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LIST OF ABBREVIATIONS

BWA	Broadband Wireless Access
FM	Frequency Modulation
GH₵	Ghana Cedi
GHp	Ghana pesewas
MB	Megabytes
MNO	Mobile Network Operator
MoU	Minutes of Use
NCA	National Communications Authority
SMS	Short Message Service
TV	Television

VISION AND MISSION

Vision

A world-class communications regulator that facilitates innovative, reliable and sustainable communication solutions to meet stakeholders' expectations.

Mission

Regulate the communications industry in a forward-looking and transparent manner that promotes fair and sustainable competition, stimulates innovation, encourages investment, protects stakeholders' interests and facilitates universal access to quality communications services for national development.

Core Values

- Teamwork
- Accountability
- Consistency
- Trust
- Innovation
- Transparency

Tag Line/Slogan – Communications for Development

INTRODUCTION

This Quarterly Statistical Bulletin on Communications is a reference document that entails segregated data, industry trends and analysis of the Ghanaian communications sector. The purpose of this document is to promote open and enriched public discussions on policies for telecom analysts, consumers, academia, policy makers, investors and other stakeholders for decision-making.

This bulletin is the product of the responses from the monthly and quarterly questionnaires sent to the various licensees; notably the mobile network operators and broadband wireless access operators. It also includes data on internet service providers and broadcasting entities and services providers that was gathered in-house.

The publication of this bulletin is consistent with the National Communications Authority's mandate under section 26 (2) (a) of the Electronic Communications Act 2008, Act 775; "to publish the result of research that it carries out or that is carried out on its behalf on its website and in any other manner that it considers appropriate to bring the results to the attention of the public".

DEFINITION OF TERMS

Average SMS per subscriptions - This is calculated by dividing the total average volume of SMS for the quarter by the total average mobile subscriptions for that quarter.

BWA Data Usage per Subscriptions - This is calculated by dividing the total average volume of BWA's traffic for the quarter by the total BWA subscriptions for that quarter.

Cellular network or mobile network – refers to a communication network where the last link is wireless. The network is distributed over land areas called cells, each served by at least one fixed-location transceiver, known as a cell site or base station. This base station provides the cell with the network coverage, which can be used for transmission of voice, data and others.

Fixed-line network - The term refers to all of the wired networks that are used for voice and data communications. A fixed-line can be seen as a connection to an end-user, by means of a cable, through which they can make phone calls or connect to the Internet.

Minutes of Use per Subscriptions - It is calculated by dividing the total average volume of traffic for that quarter with the total average subscriptions for that quarter

Mobile Data Usage per Subscriptions -It is calculated by dividing the total average volume of data traffic for the quarter with the total average mobile data subscriptions for that quarter.

Mobile Penetration or Tele density – This represents the total number of mobile subscriptions per every 100 inhabitants in a geographical area.

Net Subscriptions Addition – It refers to the total number of new mobile network subscribers minus customers that terminate a service with the service provider at a given time.

On-net traffic - refers to phone calls made to a recipient on the same network as the caller.

Off-net traffic - refers to phone calls made to a recipient on a different network.

Quarter-on-quarter – This is a comparison of the quarter under review with the preceding quarter.

Q1 – First Quarter (January – March)

Q2 – Second Quarter (April – June)

Q3 – Third Quarter (July – September)

Q4 – Fourth Quarter (October – December)

Year-on-year – This is a comparison of a period under review (month, quarter etc.) with the same period of the preceding year.

THE COMMUNICATIONS INDUSTRY AT A GLANCE

A1. Service Providers Authorised/Licensed to operate

Operator/Service Providers	Number of Authorisation/Licences	Number in Operation
Mobile Network Operators	4	4
Fixed Network Operators	3	3
Broadband Wireless Access	5	5
Television Stations	140	96
FM Stations	513	399

B1. Total Subscriptions

SUBSCRIPTION	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q3 2019	Q4 2019	*Growth (%)*	Q4 2018	Q4 2019	*Growth (%)*	
Mobile Voice Subscription	40.46	40.86	*0.99%*	40.93	40.86	*-0.19%*	Million
Fixed Voice Subscription	0.286	0.289	*1.05%*	0.278	0.289	*3.65%*	Thousand
Mobile Data Subscription	27.2	29.9	*10.04%*	27.3	29.9	*9.78%*	Million
Fixed Data Subscription	0.059	0.057	*-3.26%*	0.059	0.057	*-2.28%*	Thousand
Broadband Wireless Access	0.049	0.046	*-6.70%*	0.081	0.046	*-43.21%*	Thousand

B2. Voice, Data and SMS Traffic

TRAFFIC	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q3 2019	Q4 2019	*Growth (%)*	Q4 2018	Q4 2019	*Growth (%)*	
Mobile Voice Traffic	20.8	21.5	*3.42%*	19.1	21.5	*13%*	Billion
Fixed Voice Traffic	3.3	3.4	*0.04%*	3.6	3.4	*-6%*	Million
Incoming International Traffic	61	57	*-6.89%*	112	61	*-46%*	Million
Outgoing International Traffic	128	121	*-5.43%*	148	121	*-17.76%*	Million
Mobile Data Traffic (MB)	89.9	72.8	*-19%*	69.4	72.8	*5%*	Billion MB
BWA Data Traffic (MB)	1.23	1.2	*-2%*	1.2	1.2	*0.00%*	Billion MB
SMS Count	0.701	0.628	*-10%*	0.657	0.628	*-4%*	Million

B3. Penetration Rate (%)

PENETRATION RATE (%)	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q3 2019	Q4 2019	*Growth (%)*	Q4 2018	Q4 2019	*Growth (%)*	
Mobile Voice Subscription	134.80	135.30	*0.4%*	140	135.30	*-3.33%*	%
Fixed Voice Subscription	0.95	0.96	*1.1%*	0.95	0.96	*1.1%*	%
Mobile Data Subscription	90.73	99.24	*9.4%*	93.33	99.24	*6.32%*	%
Fixed Data Subscription	0.20	0.19	*-5.0%*	0.20	0.19	*-5.0%*	%
Broadband Wireless Access	0.16	0.15	*-6.3%*	0.28	0.15	*-46.4%*	%

C1. Broadcasting Sector

FM/TV AUTHORISATION & OPERATIONS	QUARTER-ON-QUARTER			YEAR-ON-YEAR		
	Q3 2019	Q4 2019	*Growth (%)*	Q4 2018	Q4 2019	*Growth (%)*
FM Authorisation	477	513	*7.5%*	487	513	*5.3%*
FM Station Operating	381	399	*4.7%*	398	399	*0.3%*
TV Authorisations	139	140	*0.7%*	136	140	*2.9%*
TV Stations Operating	96	96	*0.0%*	87	96	*10%*

C2. Categories of Authorised FM Radio Stations

CATEGORIES OF FM RADIO STATIONS	QUARTER-ON-QUARTER			YEAR-ON-YEAR		
	Q3 2019	Q4 2019	*Growth (%)*	Q4 2018	Q4 2019	*Growth (%)*
PUBLIC	31	31	*0.00%*	31	31	*0.00%*
PUBLIC FOREIGN	5	5	*0.00%*	5	5	*0.00%*
CAMPUS	21	21	*0.00%*	22	21	*-4.5%*
COMMUNITY	73	75	*2.7%*	71	75	*5.6%*
COMMERCIAL	347	381	*9.8%*	358	381	*6.4%*

1.0 Cellular Mobile Network

This section provides information on the Mobile Network Operators (MNOs) in Ghana by looking at the mobile voice subscriptions, net additions to voice subscriptions, mobile penetration, volume of voice/data traffic and mobile data subscriptions. There are four service providers licensed by the National Communications Authority (NCA) to provide mobile telecoms services in Ghana namely AirtelTigo[1], Glo, MTN and Vodafone.

1.1 Mobile Voice Subscriptions and Penetration

Mobile Voice subscriptions increased from 40.46 million in the third quarter of 2019 to 40.86 million at the end of the fourth quarter of 2019, representing a growth rate of 0.98% (Table 1).

Year-on-year subscriptions decreased from 40.93 million at the end of the fourth quarter of 2018 to 40.86 million at the end of the fourth quarter of 2019, recording a negative growth of 0.19%.

The penetration rate for mobile voice subscriptions at the end of the fourth quarter of 2019 was 135.30% as compared to 134.80% recorded in the third quarter of the same year, indicating an increase of 0.38%.

Table 1: Mobile Voice Subscriptions and Penetration Rate

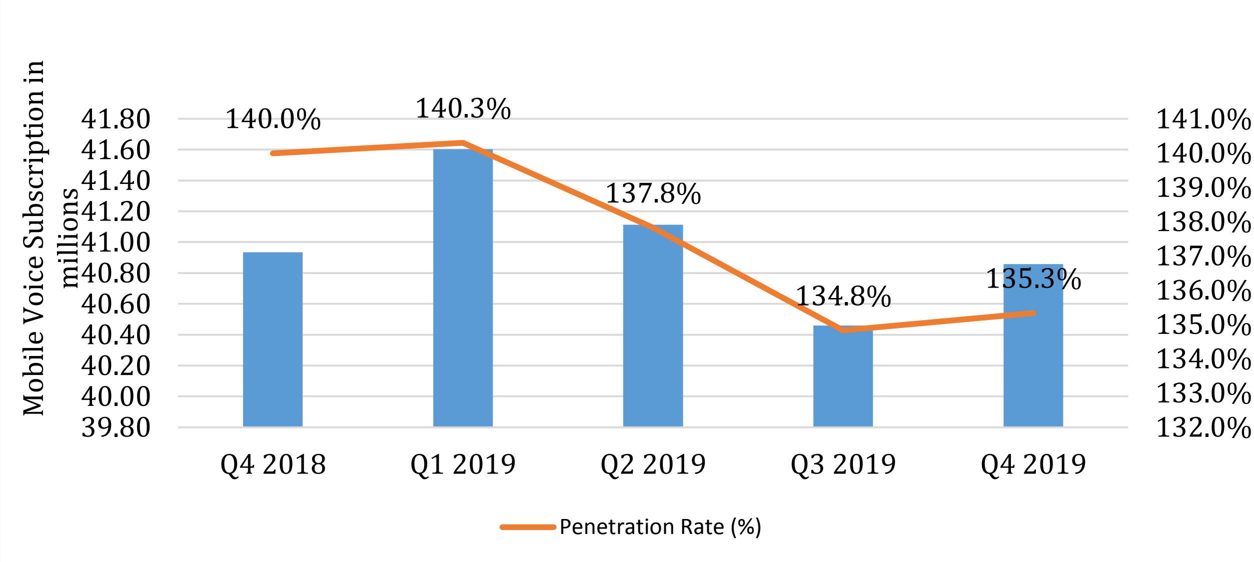
Subscription	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Mobile Subscription	40,934,875	41,602,324	41,113,131	40,460,203	40,857,077
Mobile Subscription Growth rate (%)	2.22%	1.63%	-1.18%	-1.59%	0.98%
Net additions	888,285	667,449	- 489,193	-652,928	396,874
Net additions Growth Rate (%)	30.75%	-24.86%	-173.29%	-33.47%	-160.78%
Population[2]	29,240,226	29,652,054	29,830,322	30,009,663	30,190,081
Penetration Rate (%)	140.0%	140.3%	137.8%	134.8%	135.3%

Source: NCA; Mobile Network Operators, 2019

[1] Airtel and Tigo have merged to become AirtelTigo. prior to the first quarter of 2019, the two service providers submitted their data separately to the Regulator as captured in the report.

[2] Population of Ghana was estimated based on the 2010 Population Census figure 24,658,823 published by Ghana Statistical Service (GSS) with 0.2% projected monthly growth rate.

Figure 1: Mobile Voice Subscriptions and Penetration Rate



Source: NCA; Mobile Network Operators, 2019

1.1.1 Mobile Voice Subscriptions and Market Shares per Operator

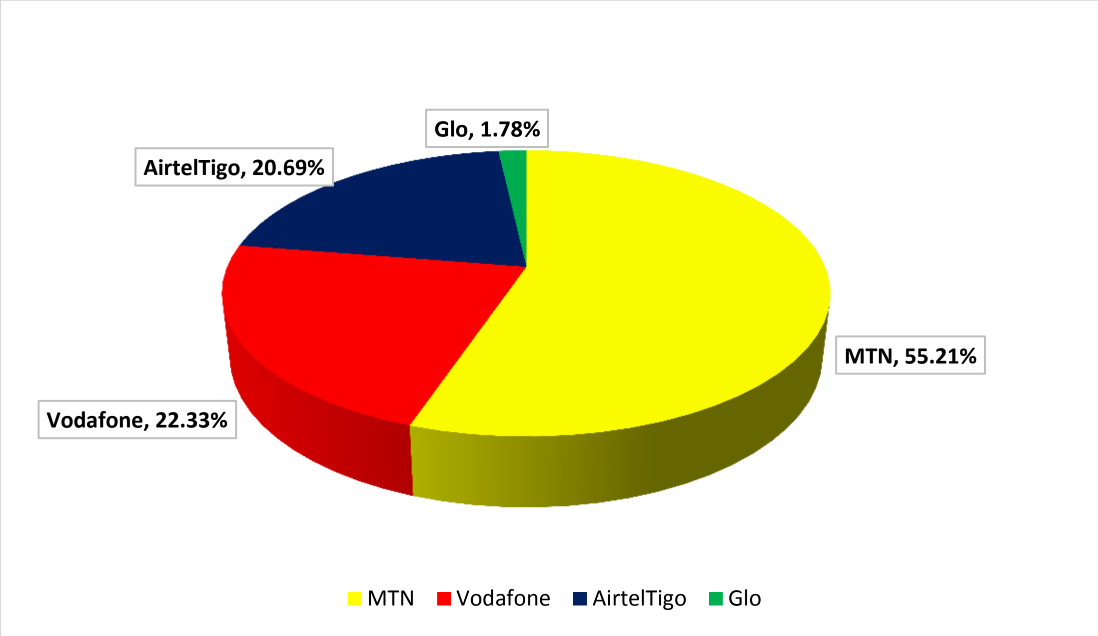
At the end of the fourth quarter of 2019, MTN had 55.21% of the market share with 22.56 million subscriptions, followed by Vodafone with 9.12 million subscriptions, representing a market share of 22.33%. AirtelTigo is the third largest mobile network operator by subscription with a market share of 20.69% and a subscriber base of 8.45 million. Glo recorded 0.72 million subscriptions with a market share of 1.78% (Table 2).

Table 2: Mobile Voice Subscriptions and Market Share per Operator

Mobile Network Operator		Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
MTN	Subscriptions	20,092,798	20,776,731	21,342,887	21,569,033	22,555,848
	Market Share (%)	49.08%	49.94%	51.91%	53.31%	55.21%
Vodafone	Subscriptions	9,813,234	10,302,566	9,974,337	9,407,144	9,122,403
	Market Share (%)	23.97%	24.76%	24.26%	23.25%	22.33%
AirtelTigo	Subscriptions	10,289,491	9,799,138	9,074,284	8,764,093	8,453,053
	Market Share (%)	25.14%	23.55%	22.07%	21.66%	20.69%
Glo	Subscriptions	739,352	723,889	721,623	719,933	725,773
	Market Share (%)	1.81%	1.74%	1.76%	1.78%	1.78%
Total Industry Subscription		40,934,875	41,602,324	41,113,131	40,460,203	40,857,077

Source: NCA; Mobile Network Operators, 2019

Figure 2: Mobile Voice Subscriptions and Market Share per Operator



Source: NCA; Mobile Network Operators, 2019

1.1.2 Prepaid and Post-paid Mobile Voice Subscriptions

The mobile voice subscription for prepaid subscribers is 40.21 million representing a market share of 98.43% whilst postpaid stood at 1.57% with a subscription of 0.64 million (Table 3).

Table 3: Prepaid and Post-paid Voice Subscriptions and Market Share

Subscription	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Prepaid	40,391,558	41,052,360	40,573,825	39,861,332	40,216,604
Market Share	98.67%	98.68%	98.69%	98.52%	98.43%
Post-paid	543,317	549,964	539,306	598,871	640,473
Market Share	1.33%	1.32%	1.31%	1.48%	1.57%
Total mobile subscription	**40,934,875**	**41,602,324**	**41,113,131**	**40,460,203**	**40,857,077**

Source: NCA; Mobile Network Operators, 2019

1.2 Mobile Voice Traffic (Domestic)

Total domestic mobile voice traffic recorded a rise from 20.80 billion minutes in the previous quarter to 21.51 billion minutes, at the end of the fourth quarter of 2019, representing 3.42% growth.

Year-on-year mobile voice traffic also increased from 19.06 billion minutes at the end of the fourth quarter of 2018 to 21.51 billion minutes at the end of the fourth quarter of 2019, representing a growth rate of 19.69% (Figure 3).

On-net traffic increased from 18.91 billion minutes in the previous quarter to 19.69 billion minutes at the end of the quarter under review, representing a growth rate of 4.10%. Year-on-year on-net traffic also grew from 16.89 billion minutes at the end of the fourth quarter of 2018 to 19.69 billion minutes at the end of the fourth quarter of 2019 with a growth rate of 16.59% (Table 4).

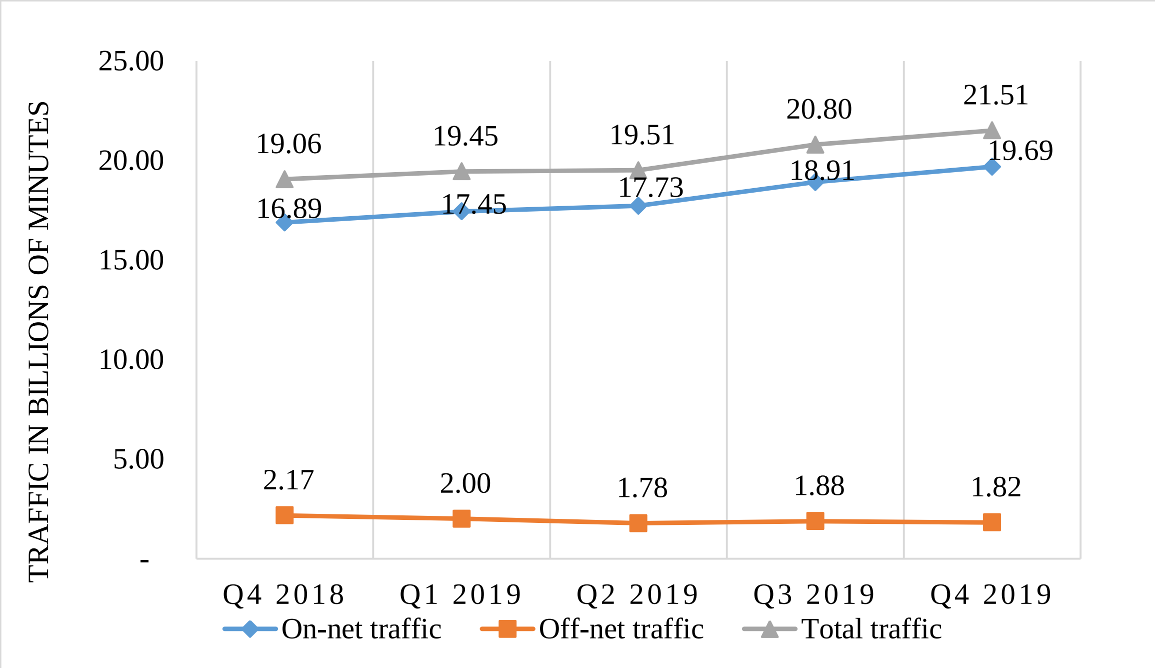
Off-net traffic decreased from 1.88 billion minutes in the previous quarter to 1.82 billion minutes at the end of the fourth quarter of 2019, representing a decrease of 3.37%. Year-on-year off-net traffic declined by 16.08%, from 2.17 billion minutes in the fourth quarter of 2018 to 1.82 billion minutes at the end of the fourth quarter of 2019 (Table **4**).

Table 4: Mobile Voice Traffic (Domestic) in Billions of Minutes

Traffic	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Traffic(Off-net)	2,170,336,837	2,003,832,344	1,781,783,125	1,884,872,036	1,821,302,871
Share (%)	11.39%	10.30%	9.13%	9.06%	8.47%
Growth (%)	-3.57%	-7.67%	-11.08%	5.79%	-3.37%
Traffic(On-net)	16,888,163,680	17,445,962,884	17,726,139,301	18,913,483,330	19,689,209,019
Share (%)	88.61%	89.70%	90.87%	90.94%	91.53%
Growth (%)	11.26%	3.30%	1.61%	6.70%	4.10%
Total traffic	**19,058,500,517**	**19,449,795,228**	**19,507,922,426**	**20,798,355,366**	**21,510,511,890**

Source: NCA; Mobile Network Operators, 2019

Figure 3: Mobile Voice Traffic (Domestic) in Billions of Minutes



Source: NCA; Mobile Network Operators, 2019

1.2.1 Mobile Off-net Traffic Distribution between Mobile and Fixed Networks

Mobile-to-mobile off-net traffic decreased from 1.87 billion minutes at the end of the third quarter of 2019 to 1.81 billion minutes at the end of the fourth quarter of 2019 representing a decline of 3.46% in growth.

Year-on-year mobile-to-mobile off-net traffic decreased from 2.20 billion minutes at the end of the fourth quarter of 2018 to 1.81 billion minutes at the end of the fourth quarter of 2019, representing a decrease of 16.27% in growth.

Mobile to fixed off-net traffic rose from 10.39 million minutes to 11.64 million minutes representing 12.02% growth quarter-on-quarter. Year-on-year mobile-to-fixed off-net traffic increased from 9.06 million minutes at the end of the fourth quarter of 2018 to 11.64 million minutes at the end of the fourth quarter of 2019, representing 28.50% growth (*Table 5***)**.

Table 5: Mobile Off-net Traffic Distribution between Mobile and Fixed Network

Breakdown of Off-net Traffic	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Mobile to Mobile					
Traffic	2,161,276,383	1,994,167,300	1,771,736,664	1,874,456,752	1,809,660,639
Share (%)	99.58%	99.53%	99.44%	99.45%	99.36%
Growth (%)	-3.58%	-7.73%	-11.15%	5.80%	-3.46%
Mobile to Fixed					
Traffic	9,060,404	9,512,847	10,046,461	10,393,342	11,642,232
Share (%)	0.42%	0.47%	0.56%	0.55%	0.64%
Growth (%)	-1.88%	4.99%	5.61%	3.45%	12.02%
Total Off-net Traffic	**2,170,336,837**	**2,003,680,147**	**1,781,783,125**	**1,884,850,094**	**1,821,302,871**

Source: NCA; Mobile Network Operators, 2019

1.2.2 Minutes of Use (MoU)[3]

Average minutes of use per subscription rose from 158.3 minutes in the third quarter of 2019 to 177.6 minutes (0.41%) in the quarter under review (figure 4). Year-on-year minutes of use per subscription grew from 156.4 minutes in the fourth quarter of 2018 to 177.6 minutes in the fourth quarter of 2019, representing 12.16% growth. (Table 6).

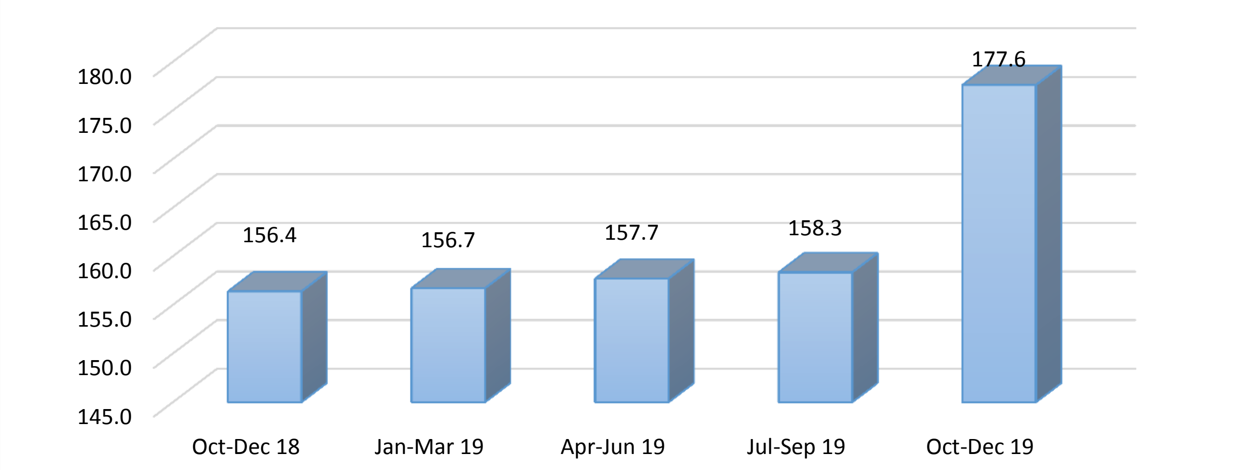
Table 6: Mobile Voice Traffic Minutes of Use (MoU) per Subscriptions

Traffic	Oct-Dec 18	Jan-Mar 19	Apr-Jun 19	Jul-Sep 19	Oct-Dec 19
Total mobile voice traffic	6,352,833,506	6,483,265,076	6,502,640,809	6,655,447,392	7,170,170,630
Mobile voice subscription	40,622,584	41,370,572	41,222,786	41,133,345	40,372,522
Minutes of Use (MoU) per Subscription	156.4	156.7	157.7	158.3	177.6
MoU growth rate (%)	12.13%	0.21%	0.63%	0.41%	12.16%

Source: NCA; Mobile Network Operators, 2019

[3] Minutes of use per subscriptions is calculated by dividing the total average volume of traffic for the quarter with the total average subscriptions for that quarter.

Figure 4: Mobile Voice Traffic Minutes of Use (MoU) per Subscriptions



Source: NCA; Mobile Network Operators, 2019

1.3 International Traffic

During the quarter under review, inbound international traffic dropped from 61.02 million minutes to 56.81 million minutes, representing a decrease of 6.89% (Table 7). Year-on-year inbound international traffic also declined from 112.31 million minutes to 56.81 million minutes representing a decrease in growth by 49.41%.

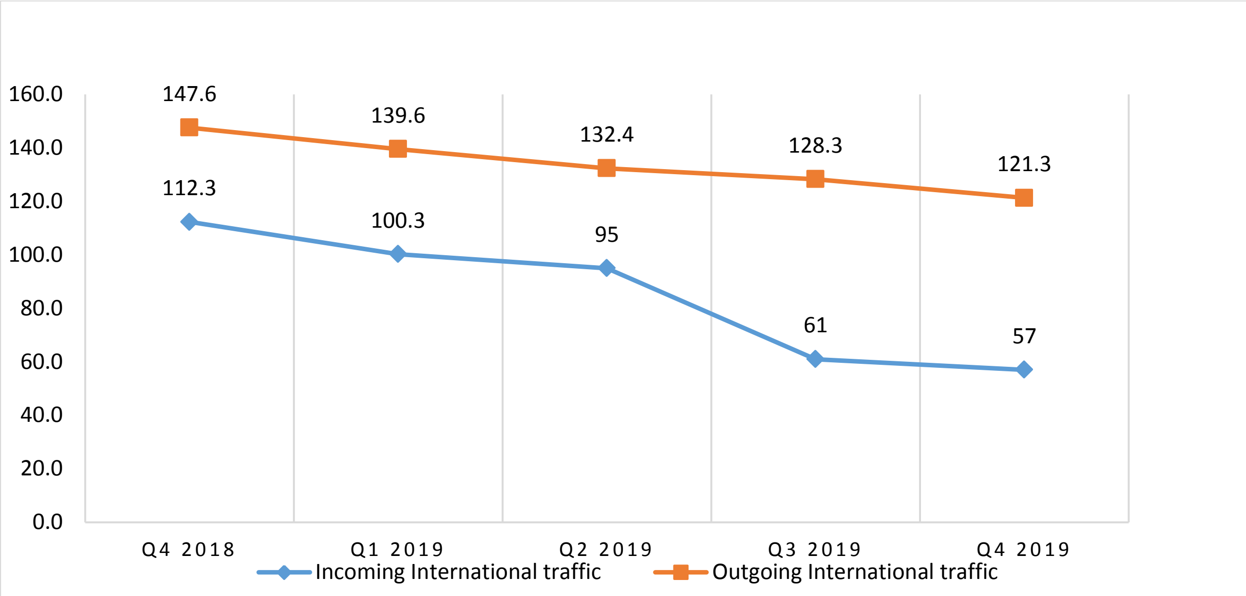
Outbound international traffic decreased from 128.32 million minutes at the end of the third quarter of 2019 to 121.35 million minutes at the end of the fourth quarter of 2019, representing a decline of 5.43%. Year-on-year outbound international traffic also declined from 147.56 million minutes to 121.35 million minutes, indicating a decrease of 17.76%.

Table 7: International Traffic

Traffic	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Incoming International Traffic	112,308,053	100,300,254	94,897,262	61,018,472	56,814,366
Growth (%)	-9.34%	-10.69%	-5.39%	-35.70%	-6.89%
Outgoing International Traffic	147,561,318	139,577,839	132,383,628	128,321,232	121,347,629
Growth (%)	-1.98%	-5.41%	-5.15%	-3.07%	-5.43%

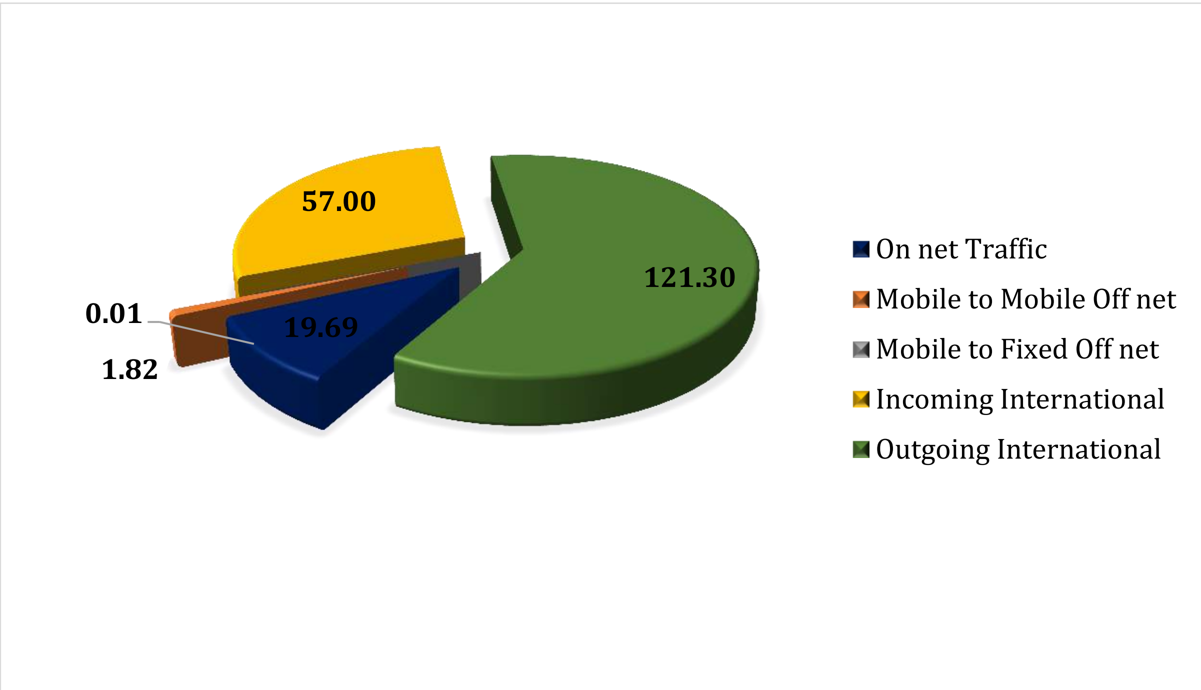
Source: NCA; Mobile Network Operators, 2019

Figure 5: International Traffic in minutes



Source: NCA; Mobile Network Operators, 2019

Figure 6: Breakdown of Mobile Voice Traffic in Minutes



Source: NCA; Mobile Network Operators, 2019

1.4 Short Messages Service (SMS) per Operator[4]

The total number of short messages service (SMS) sent at the end of the quarter under review was 628.26 million as compared to 700.55 million at the end of the preceding quarter, recording 11.51% decrease. Year-on-year SMS counts went down from 657.15 million at the end of the fourth quarter of 2018 to 628.26 million at the end of the fourth quarter of 2019, representing a decrease of 4.60% (Figure 7).

The volume of SMS traffic originating from MTN was 337.66 million at the end of the fourth quarter of 2019, representing a market share of 53.74% of the total SMS count. The volume of SMS traffic from Vodafone was 280.44 million, representing a market share of 44.64% of the total SMS count. AirtelTigo had an SMS count of 9.92 million, representing 1.58% of the market share of the total SMS count. At the end of the quarter under review, Glo generated 0.24 million SMS counts recording a share of 0.04%. (Table 8).

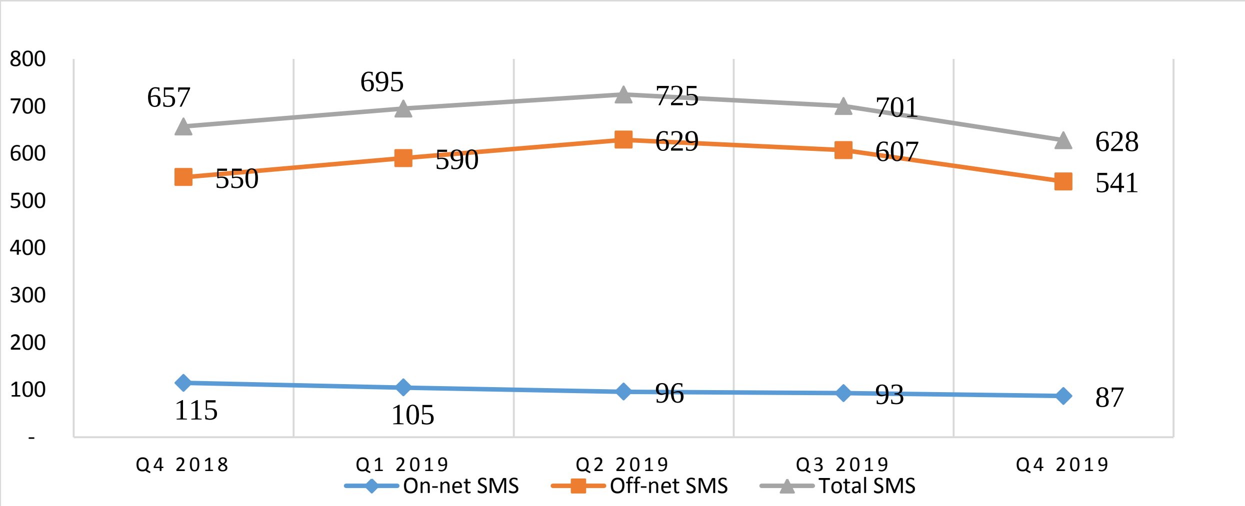
[4] Airtel and Tigo have merged to become AirtelTigo. prior to the first quarter of 2019, the two service providers submitted their data separately to the Regulator as captured in the report.

Table 8: Total Number of SMS per Mobile Network Operator in Millions

Mobile Operators	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
OFF-NET SMS					
MTN	27,618,329	39,555,977	32,640,281.0	37,306,986	32,595,204
Vodafone	75,466,020	61,060,118	59,623,032	51,763,218	51,687,036
Tigo	2,508,089	-	-	-	-
Airtel	520,353	-	-	-	-
AirtelTigo	-	3,309,986	3,035,708	3,119,560	2,260,095
Glo	1,019,738	973,572	1,063,280	920,272	231,790
Total	**114,863,657**	**104,899,653**	**96,362,301**	**93,110,036**	**86,774,125**
ON-NET SMS					
MTN	257,782,465	309,840,024	313,244,554.0	330,421,743	305,060,095
Vodafone	280,334,432	264,511,026	302,909,431	265,778,541	228,752,668
Tigo	11,728,767	-	-	-	-
Airtel	-	-	-	-	-
AirtelTigo	-	15,685,847	12,408,355	11,121,701	7,655,834
Glo	168,064	89,345	106,512	118,848	12,461
Total	**550,013,728**	**590,126,242**	**628,668,852**	**607,440,833**	**541,481,058**
TOTAL					
MTN	285,400,794	349,396,001	345,884,835	367,728,729	337,655,299
Vodafone	355,800,452	325,571,144	362,532,463	317,541,759	280,439,704
Tigo	14,236,856	-	-	-	-
Airtel	520,353	-	-	-	-
AirtelTigo	-	18,995,833	15,444,063	14,241,261	9,915,929
Glo	1,187,802	1,062,917	1,169,792	1,039,120	244,251
Total	**657,146,257**	**695,025,895**	**725,031,153**	**700,550,869**	**628,255,183**

Source: NCA; Mobile Network Operators, 2019

Figure 7: Total Number of SMS



Source: NCA; Mobile Network Operators, 2019

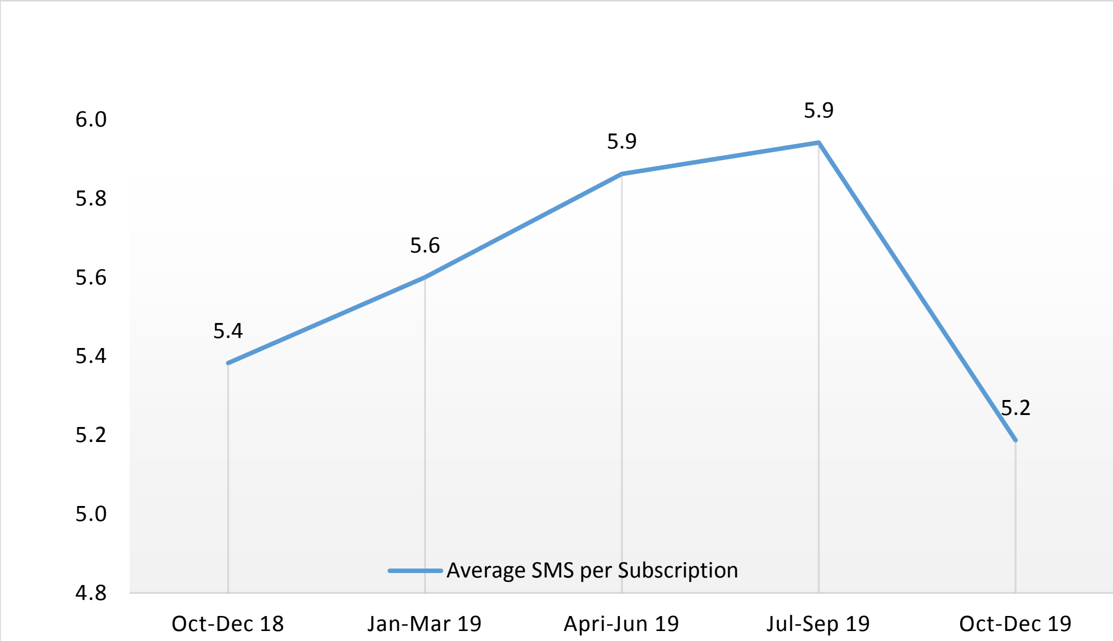
1.4.1 Average SMS per Subscription

Average SMS sent per subscription at the end of the quarter under review was approximately 5.2 SMS, indicating a decrease as compared to the end of the previous quarter, which was about 5.9 SMS. Year-on-year average SMS volume per subscription also decreased from 5.4 SMS at the end of the fourth quarter of 2018 to 5.2 at the end of the fourth quarter of 2019, recording a growth of -4% (Figure 8).

Table 9: Average SMS per Subscription

	Oct-Dec 18	Jan-Mar 19	Apr-Jun 19	Jul-Sep 19	Oct-Dec 19
Total SMS	219,048,752	231,675,298	241,677,051	242,015,054	209,418,394
Mobile Subscription	40,622,584	41,370,572	41,222,786	41,133,345	40,372,522
Average SMS per Subscription	5.4	5.6	5.9	5.9	5.2

Figure 8: Average SMS per Subscriptions



Source: NCA; Mobile Network Operators, 2019

1.5 Mobile Data Subscriptions and Penetration Rate (%)

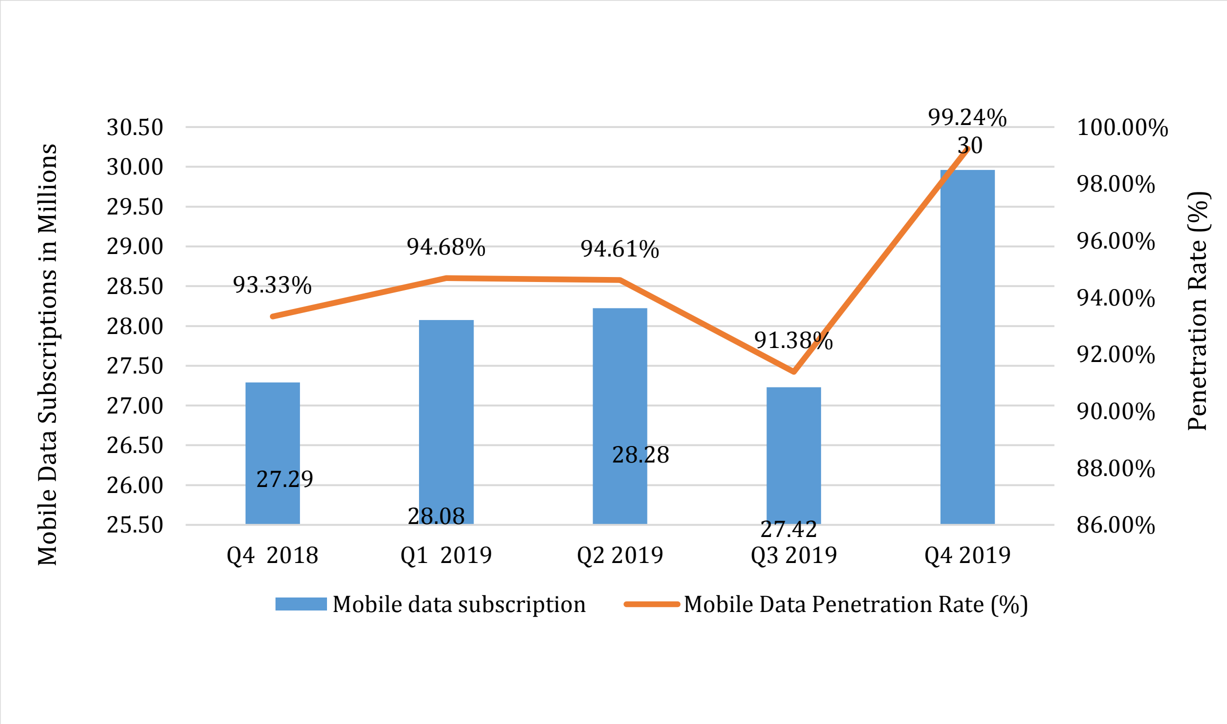
At the end of the fourth quarter of 2019, mobile data subscriptions increased by 10.04% from 27.42 million at the end of the third quarter 2019 to 29.96 million. Year-on-year subscriptions also registered an increase of 9.78%, from 27.30 million at the end of the fourth quarter of 2018 to 29.96 million at the end of the fourth quarter (Table 10). At the end of the quarter under review, mobile data penetration rate increased from 91.38% to 99.24% (Figure 9).

Table 10: Mobile Data Subscriptions and Penetration

Subscription	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Mobile data subscription	27,290,960	28,075,236	28,528,467	27,578,664	30,341,293
Data Subscription Growth Rate (%)	12.17%	2.87%	1.61%	-3.33%	10.02%
Net Additions	2,960,758	784,276	453,231	-949,803	2,762,629
Net Additions Growth Rate (%)	56.01%	-73.51%	-42.21%	-309.56%	190.86%
Population	29,240,226	29,652,054	29,830,322	30,009,663	30,190,081
Mobile Data Penetration Rate (%)	93.33%	94.68%	95.64%	91.38%	99.24%

Source: NCA; Mobile Network Operators, 2019

Figure 9: Mobile Data Subscriptions and Penetration



Source: NCA; Mobile Network Operators, 2019

1.5.1 Mobile Data Prepaid and Post-paid Subscriptions

At the end of the fourth quarter of 2019, mobile data prepaid subscriptions increased from 27.42 million to 29.96 million subscriptions, representing 98.75% of the market share. Post-paid subscriptions recorded a rise from 0.35 million to 0.38 million subscriptions, representing a share of 1.25% at the end of the fourth quarter. (Table 11).

Table 11 : Mobile Data Prepaid and Post-paid Subscriptions

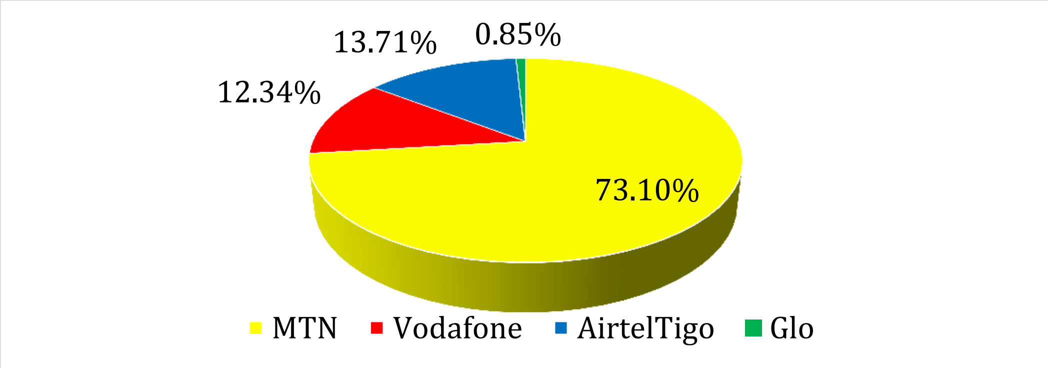
Mobile Data Subscriptions		**Q4 2018**	**Q1 2019**	**Q2 2019**	**Q3 2019**	**Q4 2019**
Prepaid	Subscriptions	26,930,768	27,773,900	28,223,237	27,422,481	29,960,572
	Market Share (%)	*98.89*	*98.93*	*98.93*	*98.73*	98.75
Post-paid	Subscriptions	301,384	301,336	305,230	350,604	380,721
	Market Share (%)	*1.11*	*1.07*	*1.07*	*1.27*	1.25
Total mobile data subscriptions		**27,232,152**	**28,075,236**	**28,528,467**	**27,578,664**	**30,341,293**

Source: NCA; Mobile Network Operators, 2019

1.5.2 Mobile Data Subscriptions per Operator

MTN recorded 22 million subscriptions with a market share of 73.10%. Vodafone also recorded 3.70 million subscriptions with a market share of 12.34%. AirtelTigo registered 4.11 million in mobile data subscriptions with a market share of 13.71%. Glo ended the fourth quarter of 2019 with total subscriptions of 0.26 million and a market share of 0.85%.

Figure 10: Mobile Data Subscription per Operator



Source: NCA; Mobile Network Operators, 2019

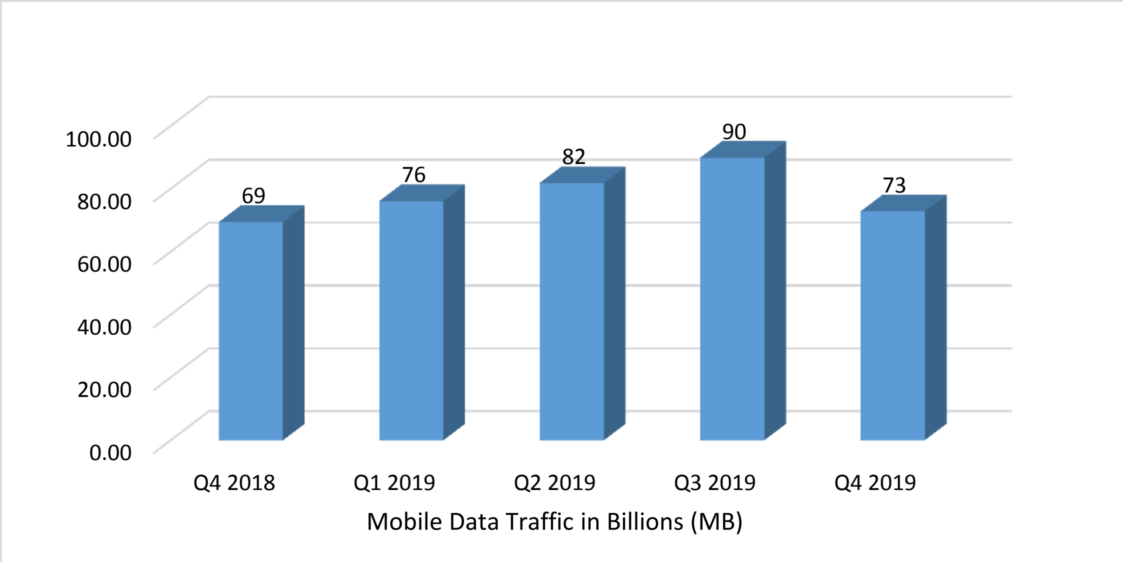
1.6 Mobile Internet Traffic

At the end of the fourth quarter of 2019, internet traffic generated by the mobile network operators was 72.81billion megabytes of data, recording a growth rate of -19%. Year-on-year internet traffic increased from 69.42 billion megabytes in the previous year to 72.81 billion megabytes at the end of the fourth quarter of 2019, representing an increase of 5% (Figure 11).

Table 12: Mobile Data Traffic in Billions of Megabytes (MB)

Mobile Operator	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Mobile data usage (MB)	69,424,932,213	76,070,215,470	81,835,188,472	89,863,150,227	72,813,159,867

Figure 11: Mobile Data Traffic in Billions of Megabytes (MB)



Source: NCA; Mobile Network Operators, 2019

1.6.1 Mobile Internet Usage per Subscription (MB)[5]

The average mobile internet usage per subscription increased from 837.0 megabytes at the end of the third quarter of 2019 to 842.2 megabytes at the end of the fourth quarter of 2019 recording a growth rate of 0.62% (Figure 12). Year-on-year internet usage per subscription declined from 886.3 megabytes per subscription in the previous year to 842.2 megabytes per subscription at the end of the fourth quarter of 2019 representing a fall of 4.98% (Figure 12).

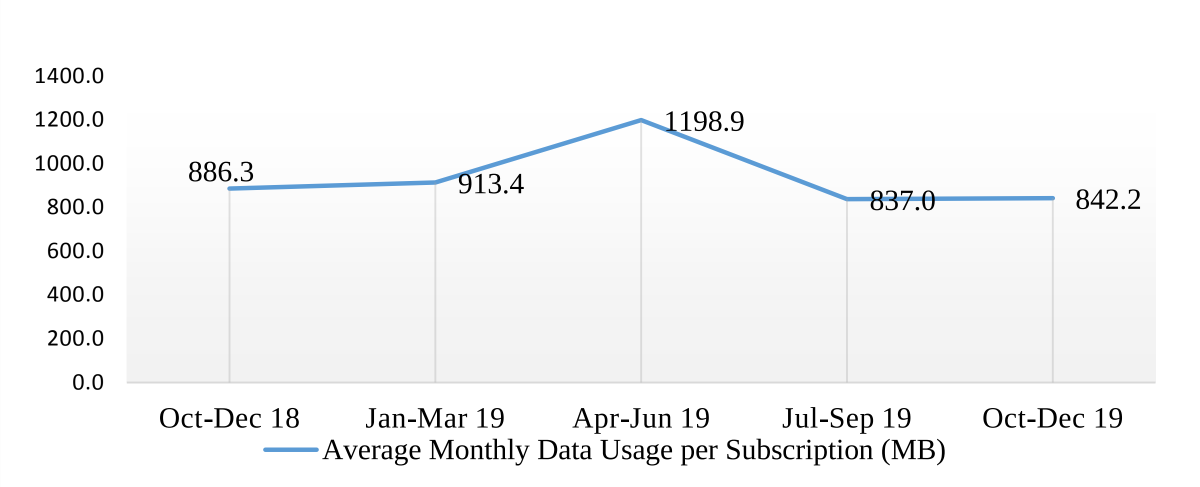
Table 13: Mobile Internet Usage per Subscription (MB)

Mobile Operator	Oct-Dec 18	Jan-Mar 19	Apr-Jun 19	Jul-Sep 19	Oct-Dec 19
Mobile data usage (MB)	23,141,644,071	25,356,738,490	32,978,998,942	23,265,746,330	24,271,053,289
Total Subscription	26,110,919	27,759,351	27,507,363	27,798,219	28,820,282
Average Data Usage per Subscription (MB)	886.3	913.4	1198.9	837.0	842.2

Source: NCA; Mobile Network Operators, 2019

[5] Mobile Internet usage per subscription is calculated by dividing the total average volume of internet traffic for the quarter with the total average mobile internet subscription for that quarter.

Figure 12: Mobile Internet Usage per Subscription (MB)



1.6.2 Mobile Internet Traffic (MB) per Operator

MTN generated the highest volume of internet traffic of 83.33 billion megabytes with a market share of 64.55%, followed by Vodafone with a traffic of 29.41 billion megabytes and a market share of 22.78%. AirtelTigo also registered 13.30 billion megabytes of data, recording a market share of 10.31%. Glo recorded the least data usage, generating 3.05 billion megabytes with a market share of 2.36% (Table 14).

Table 14: Mobile Data Traffic (MB) per Operator

Mobile Operator	Data Usage (MB)	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
MTN	Data Usage (MB)	41,601,302,161	46,540,643,000	51,065,520,052	75,944,166,843	83,293,912,024
	Market Share (%)	*59.92%*	*61.18%*	*62.40%*	84.51%	64.55%
Vodafone	Data Usage (MB)	18,262,375,366	18,435,292,768	19,125,129,557	-	29,399,350,038
	Market Share (%)	*26.31%*	*24.23%*	*23.37%*	-	22.78%
Airtel Tigo	Data Usage (MB)	8,221,194,104	9,670,376,838	10,059,886,695	12,605,850,897	13,302,050,366
	Market Share (%)	11.84%	12.71%	12.29%	14.03%	10.31%
Glo	Data Usage (MB)	1,340,060,583	1,423,902,864	1,584,652,168	1,313,132,487	3,051,183,214
	Market Share (%)	*1.93%*	*1.87%*	*1.94%*	1.46%	2.36%
Total Industry Traffic (MB)		69,424,932,213	76,070,215,470	81,835,188,472	89,863,150,227	129,046,495,642

Source: NCA; Mobile Network Operators, 2019

1.7 Mobile Telecommunications Service Tariffs

Quarter- on -quarter average tariffs for both mobile voice and SMS have not changed. However, the industry average tariff for year-on-year mobile data declined to 0.09 pesewas per megabyte. (Table 15).

Table 15: Average Mobile Tariff per Service (GHp)

Tariff	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Average on-net mobile tariff	0.11	0.11	0.11	0.11	0.11
Average off-net mobile tariff	0.12	0.12	0.12	0.12	0.12
Average on-net SMS tariff	0.05	0.05	0.05	0.05	0.05
Average off-net SMS tariff	0.06	0.06	0.06	0.06	0.06
Average data/Mb tariff	0.11	0.09	0.11	0.09	0.09

Source: NCA; Mobile Network Operators, 2019

2.0 BROADBAND WIRELESS ACCESS (BWA)

There are five (5) Broadband Wireless Access operators in Ghana namely; BLU Telecommunications, Broadband Home (BBH), Busy Internet, Surfline and Telesol. However, this quarter's report will cover four broadband wireless access providers.

2.1 BWA Subscriptions and Penetration

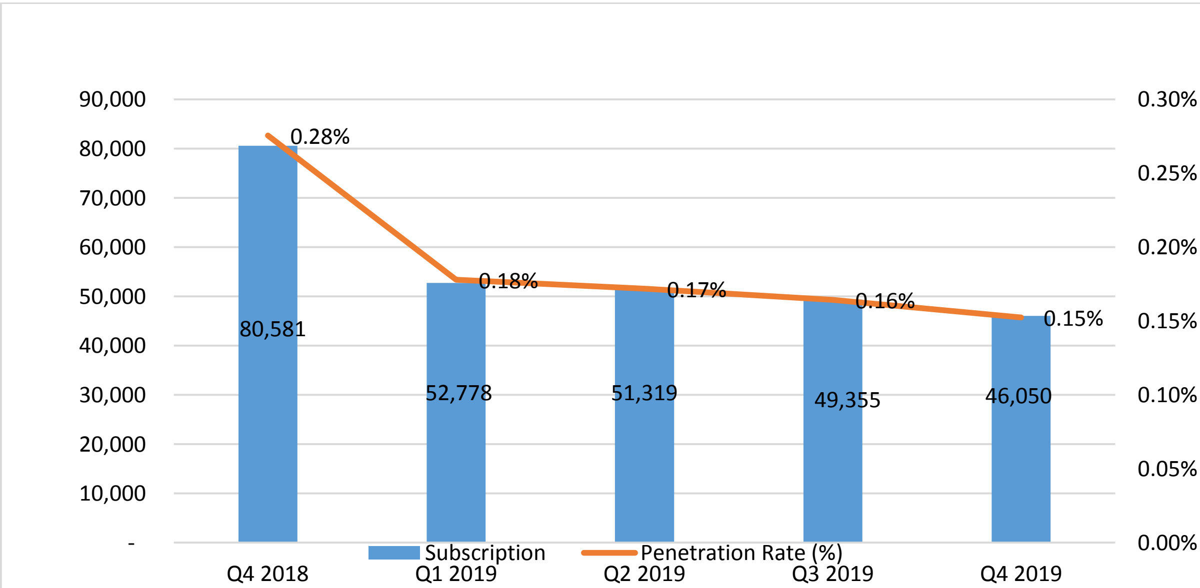
BWA subscriptions declined from 49,355 at the end of the third quarter of 2019 to 46,050 at the end of the fourth quarter, recording a 6.70% decrease (Figure 13). Year-on-year subscriptions also decreased from 80,581 at the end of the fourth quarter of 2018 to 46,050 at the end of the fourth quarter of 2019, recording a 42.85% decrease. Penetration rate for Broadband Wireless Access decreased from 0.16% to 0.15% (Table 16).

Table 16: BWA Data Subscriptions and Penetration

BWA Operator	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Subscription	80,581	52,778	51,319	49,355	46,050
Growth rate (%)	-11.22%	-34.50%	-2.76%	-3.83%	-6.70%
Net Additions	-27,803	-27,803	-1,459	-1,964	-3,305
Population	29,240,226	29,652,054	29,830,322	30,009,663	30,190,081
Penetration Rate (%)	0.28%	0.18%	0.17%	0.16%	0.15%

Source: NCA; Broadband Wireless Access Operators, 2019

Figure 13: BWA Data Subscriptions and Penetration



Source: NCA; Broadband Wireless Access Operators, 2019

2.1.1 Subscriptions per Broadband Wireless Access (BWA) Operator

Surfline recorded a change in subscriptions from 46,462 in the previous quarter to 43,735 at the end of the quarter under review, representing a decline of 5.87% and a market share of 94.97%. Telesol recorded 2,104 subscriptions this quarter with a market share of 4.57%. Broadband Home (BBH) subscriptions recorded no growth with a subscriber base of 1,058 and a market share of 2.30%. BLU telecommunications subscription decreased from 235 at the end of the previous quarter to 211 at the end of the quarter under review, with a market share of 0.46% (Table 17).

Table 17: Subscriptions per Broadband Wireless Access (BWA) Operator

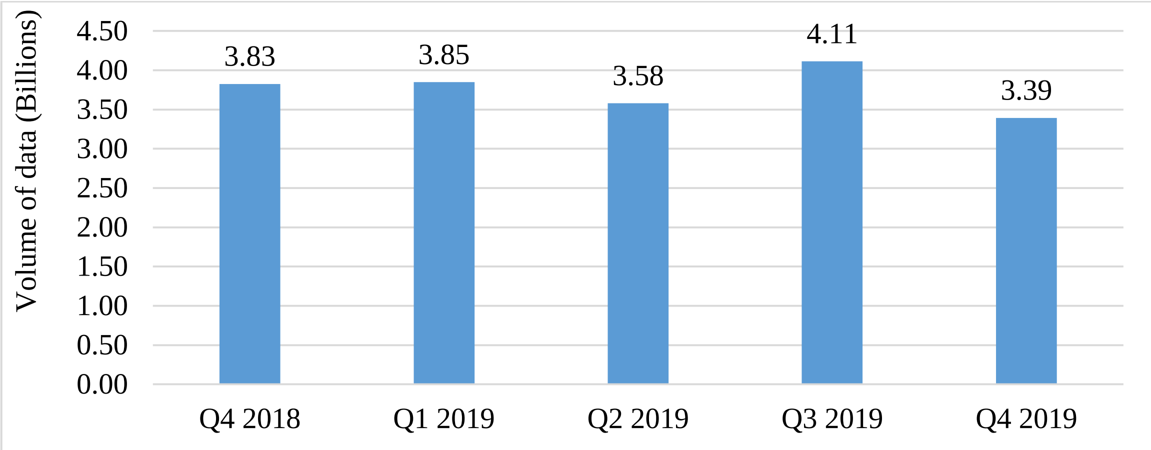
BWA operator	Subscription and Market Share	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Surfline	Subscription	55,134	51,350	48,432	46,462	43,735
	Market share (%)	68.42%	94.92%	94.37%	94.14%	94.97%
Telesol	Subscription	-	1,323	1,543	1,600	2,104
	Market share (%)	-	2.45%	3.01%	3.24%	4.57%
BBH	Subscription	25,100	1,083	1,060	1,058	1,058
	Market share (%)	31.15%	2.00%	2.07%	2.14%	2.30%
BLU	Subscription	347	345	284	235	211
	Market share (%)	0.43%	0.64%	0.55%	0.48%	0.46%
Industry Total		**80,581**	**54,101**	**51,319**	**49,355**	**46,050**

Source: NCA; Broadband Wireless Access Operators, 2019

2.2 Broadband Wireless Access (BWA) Volume of Internet Traffic

The total volume of internet traffic generated by the BWAs decreased from 4.11 billion megabytes at the end of the third quarter of 2019 to 3.39 billion megabytes at the end of the fourth quarter of 2019, indicating a decline in growth of 17.49% (Figure 14). Year-on-year internet traffic also decreased from 3.83 billion megabytes at the end of the previous year to 3.39 billion megabytes at the end of the fourth quarter of 2019, representing a decrease of 11.30%.

Figure 14: BWA Internet Usage in Megabyte (MB)



Source: NCA; Broadband Wireless Access Operators, 2019

2.2.1 Volume of Broadband Internet Traffic per Operator

Surfline's total volume of internet traffic for the quarter under review was 3.29 billion MB, representing 97.05% of the total volume of traffic. BBH recorded 0.55 billion MB of internet traffic, representing 1.64% of the market. Blu registered 0.44 billion MB (1.31% market share) and Telesol recorded 0.02 billion MB (0.006% market share). (Table 18).

Table 18: Data Traffic (MB) per Broadband Wireless Access (BWA) Operator

BWA operator		Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Surfline	Data usage (MB)	3,526,460,670	3,568,114,190	3,286,417,500	3,320,389,950	3,294,049,738
	Market share (%)	92.15%	92.73%	91.82%	80.71%	97.05%
BBH	Data usage (MB)	200,386,607	176,264,864	166,853,980	660,855,380	55,572,920
	Market share (%)	5.24%	4.58%	4.66%	16.06%	1.64%
BLU	Data usage (MB)	99,876,934	96,217,583	80,785,806	132,424,093	44,302,566
	Market share (%)	2.61%	-	2.26%	3.22%	1.31%
Telesol	Data usage (MB)		7,193,006	45,093,461	183,264	213,833
	Market share (%)	-	0.19%	1.26%	0.004%	0.006%
Industry Total (MB)		**3,826,724,211**	**3,847,789,643**	**3,579,150,748**	**4,113,852,687**	**3,394,139,057**

Source: NCA; Broadband Wireless Access Operators, 2019

2.2.2 Average Monthly Internet Usage per BWA Subscription[6]

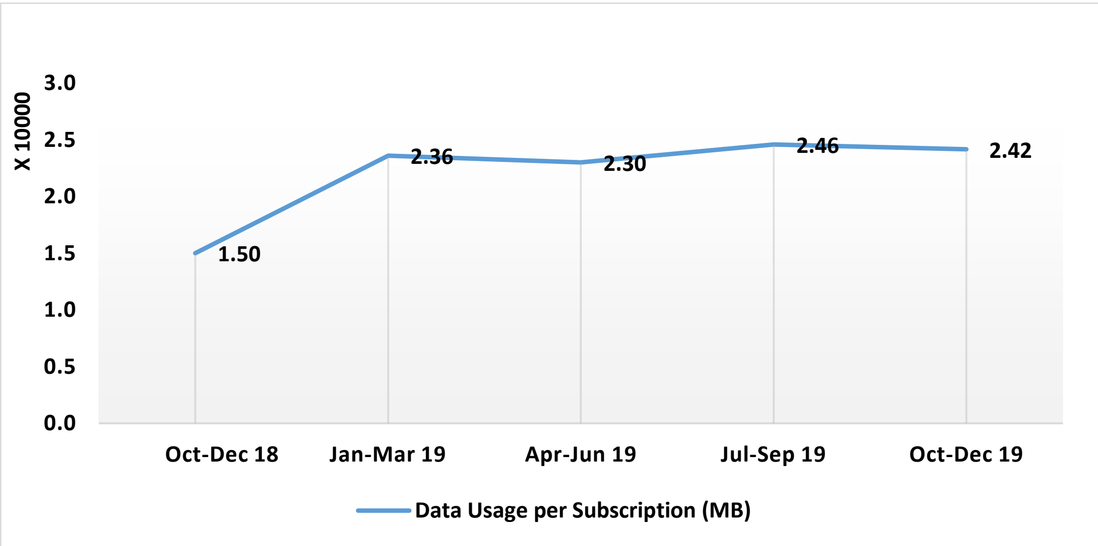
Average internet usage per BWA subscription increased to 24.16 megabytes at the end of the fourth quarter of 2019 from 24.59 megabytes at the end of the previous quarter, indicating a growth of 6.87% (Figure 15). Year-on-year data usage per subscription also increased by 43.81%, from 15.01 thousand megabytes in the fourth quarter of 2018 to 24.16 thousand megabytes at the end of the fourth quarter of 2019.

Table 19: Internet Usage per BWA Subscriptions (MB)

BWA Operator	Oct-Dec 18	Jan-Mar 19	Apr-Jun 19	Jul-Sep 19	Oct-Dec 19
Volume of data traffic	1,275,574,737	1,280,198,879	1,192,833,362	1,236,648,960	1,193,050,112
Subscription	84,961	54,241	51,845	50,294	49,373
Data Usage per Subscription (MB)	15,013.60	23,602.10	23,007.70	24,588.40	24,163.90

Source: NCA; Broadband Wireless Access Operators, 2019

Figure 15: Data Usage per BWA Subscriptions (MB)



Source: NCA; Broadband Wireless Access Operators, 2019

[6] BWA data per subscriptions is calculated by dividing the total average volume of BWA's traffic for the quarter with the total average of BWA subscriptions for that quarter.

3.0 FIXED NETWORK

This section analyses the fixed telephone industry in Ghana. Three (3) operators namely Vodafone, AirtelTigo and MTN have been licensed by the NCA to provide fixed telephone services in Ghana. This section reports on Vodafone and AirtelTigo.

3.1 Fixed Voice Subscriptions and Penetration

Total number of fixed line subscriptions increased from 285,931 at the end of the third quarter of 2019 to 288,531 at the end of the fourth quarter of 2019 (Table 20). This represents a fixed voice penetration rate of 0.96% and a growth in subscriptions by 0.91% quarter-on-quarter. Year-on-year subscription changed from 278,379 in the fourth quarter of 2018 to 288,531 at the end of the fourth quarter of 2019 indicating a growth of 2.37% (Figure 16).

Vodafone subscriptions increased from 279,247 at the end of the third quarter of 2019 to 280,321 at the end of the fourth quarter of 2019, representing a 0.38% growth in subscription. Year-on-year subscription for Vodafone also increased from 271,732 to 280,321, indicating a growth of 3.16%. Vodafone ended the quarter with a market share of 97.15% (Table 20).

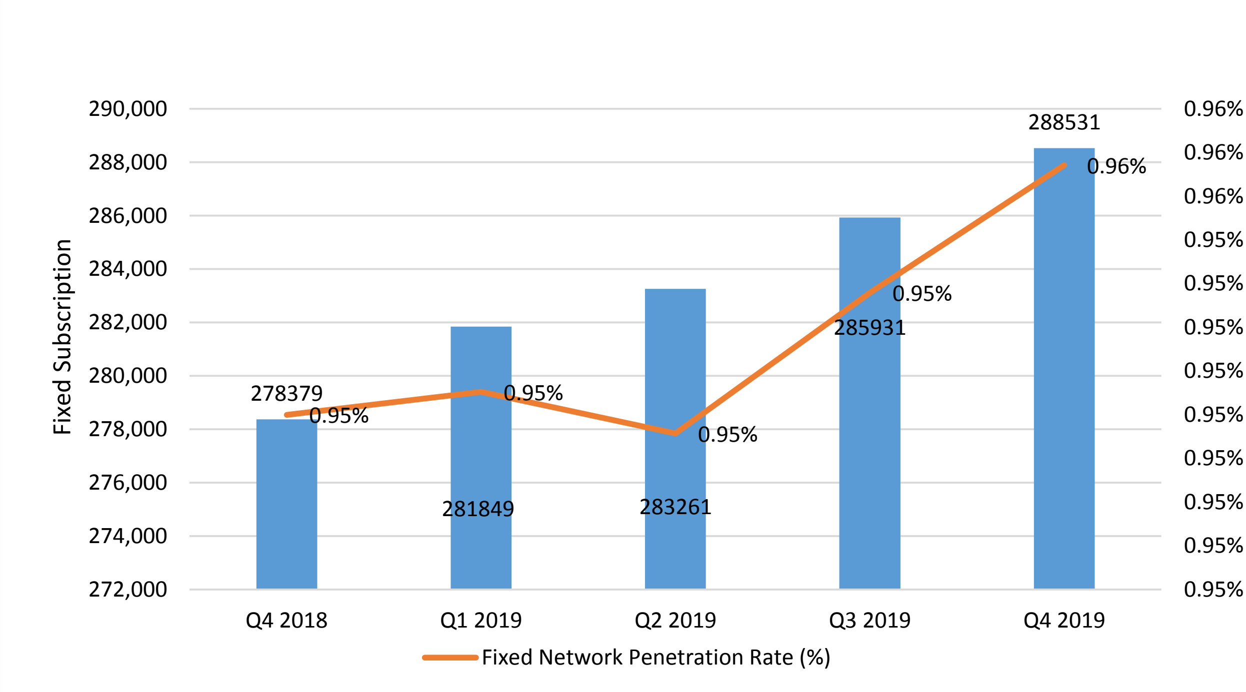
AirtelTigo's subscriptions increased from 6,684 in the third quarter of 2019 to 8,210 at the end of the fourth quarter of 2019 (22.83%). Year-on-year subscriptions increased by 23.51% with a market share of 2.85% (Table 20).

Table 20: Fixed Network Voice Subscriptions and penetration

Fixed Operator	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Vodafone	271,732	272,661	273,398	279,247	280,321
	97.61%	96.74%	96.52%	97.66%	97.15%
AirtelTigo	6,647	9,188	9,863	6,684	8,210
	2.39%	3.26%	3.48%	2.34%	2.85%
Total industry subscription	278,379	281,849	283,261	285,931	288,531
Population	29,240,226	29,652,054	29,830,322	30,009,663	30,190,081
Fixed Network Penetration Rate (%)	0.95%	0.95%	0.95%	0.95%	0.96%

Source: NCA; Fixed Network Operators, 2019

Figure 16: Fixed Network Voice Subscriptions and penetration



Source: NCA; Fixed Network Operators, 2019

3.2 Fixed Network Traffic[7]

Total volume of off-net fixed network traffic decreased by 19.54% during the quarter under review, from 15.79 million minutes to 12.70 million minutes. Year-on-year total volume of off-net fixed network traffic also increased by 16.67%, from 10.89 million minutes to 12.70 million minutes. (Table 21).

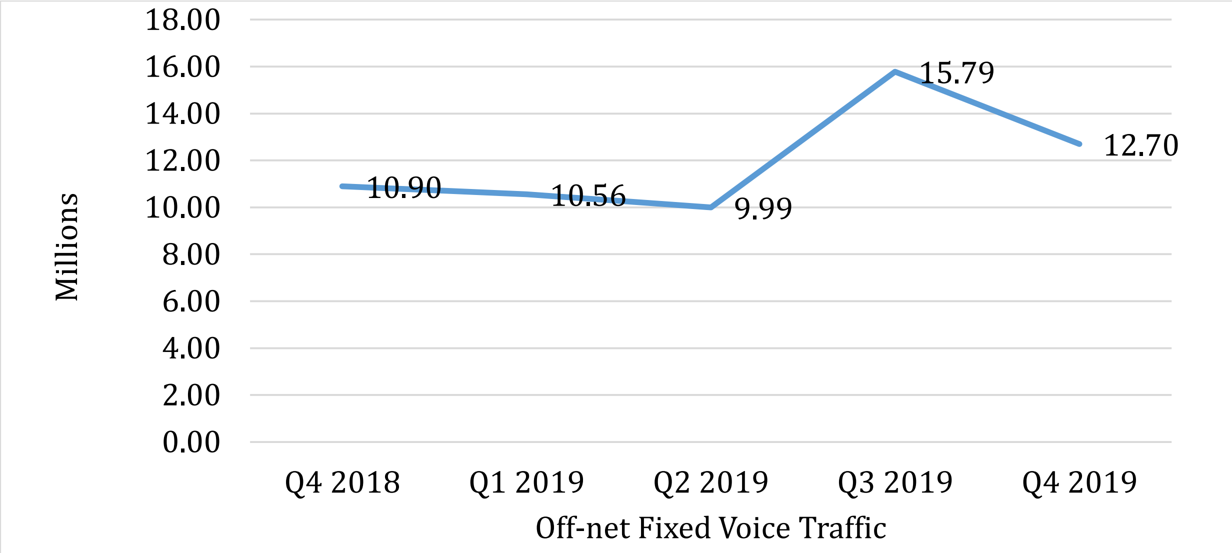
Table 21: Fixed Network Volume of Traffic in Minutes

Traffic	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
On-net Fixed voice traffic	-	-	-	-	-
Off-net fixed voice traffic	10,887,797	10,558,609	9,994,343	15,786,823	12,702,490
Total Fixed Voice Traffic	10,887,797	10,558,609	9,994,343	15,786,823	12,702,490

Source: NCA; Fixed Network Operators, 2019

[7] On-net data for Vodafone and AirtelTigo not available.

Figure 17: Off-net fixed voice traffic



Source: NCA; Fixed Network Operators, 2019

3.3 Fixed Voice Average Minute of Use[8]

Average fixed voice traffic per subscription increased from 11.7 to 12.1 minutes at the end of the fourth quarter of 2019 representing a 3.29% growth rate.

Year-on-year minutes of use per subscription, however, declined from 13.0 minutes at the end of the fourth quarter of 2018 to 12.1 minutes at the end of the fourth quarter of 2019, representing a decrease in growth by 7.16%. (Table 22).

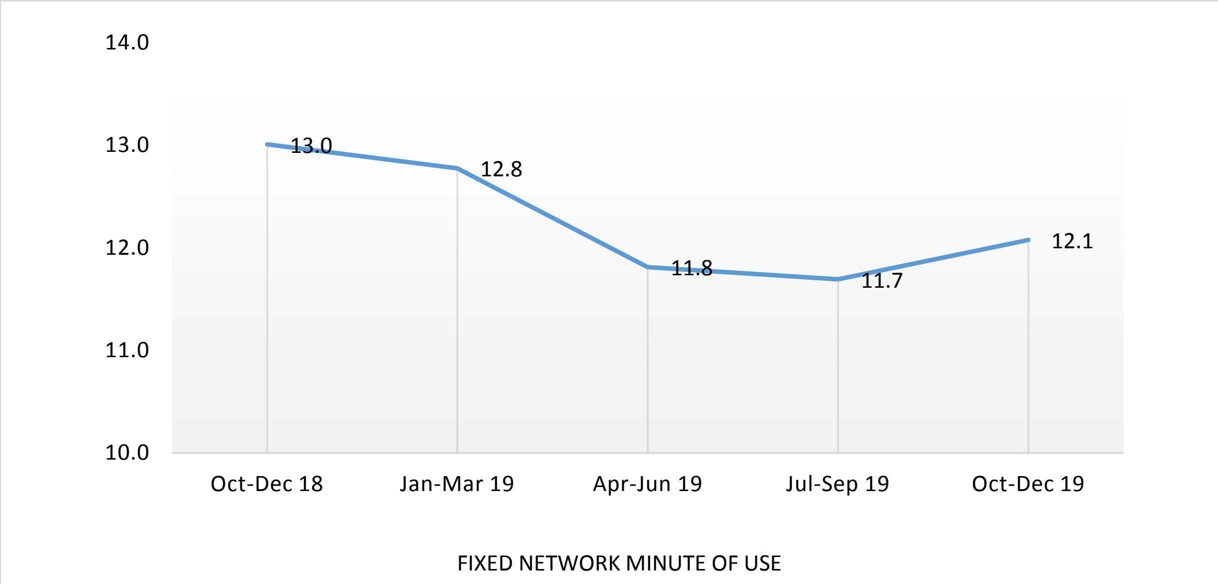
Table 22: Fixed Network Minute of Use per Subscriptions

Traffic	Oct-Dec 18	Jan-Mar 19	Apr-Jun 19	Jul-Sep 19	Oct-Dec 19
Total Fixed Voice Traffic	3,631,980	3,519,536	3,331,448	3,312,569	3,446,917
Subscription	279,162	275,512	282,091	283,366	285,429
Minutes of Use per Subscription (MoU)	13.0	12.8	11.8	11.7	12.1
Growth Rate	1.82%	8.17%	1.01%	-1.00%	3.29%

Source: NCA; Fixed Network Operators, 2019

[8] Fixed Network Minutes of use per subscriptions is calculated by dividing the total average volume of traffic for the quarter with the total average fixed subscriptions for that quarter.

Figure 18: Fixed Network Minute of Use



Source: NCA; Fixed Network Operators, 2019

3.4 Broadband Internet Subscriptions and Penetration

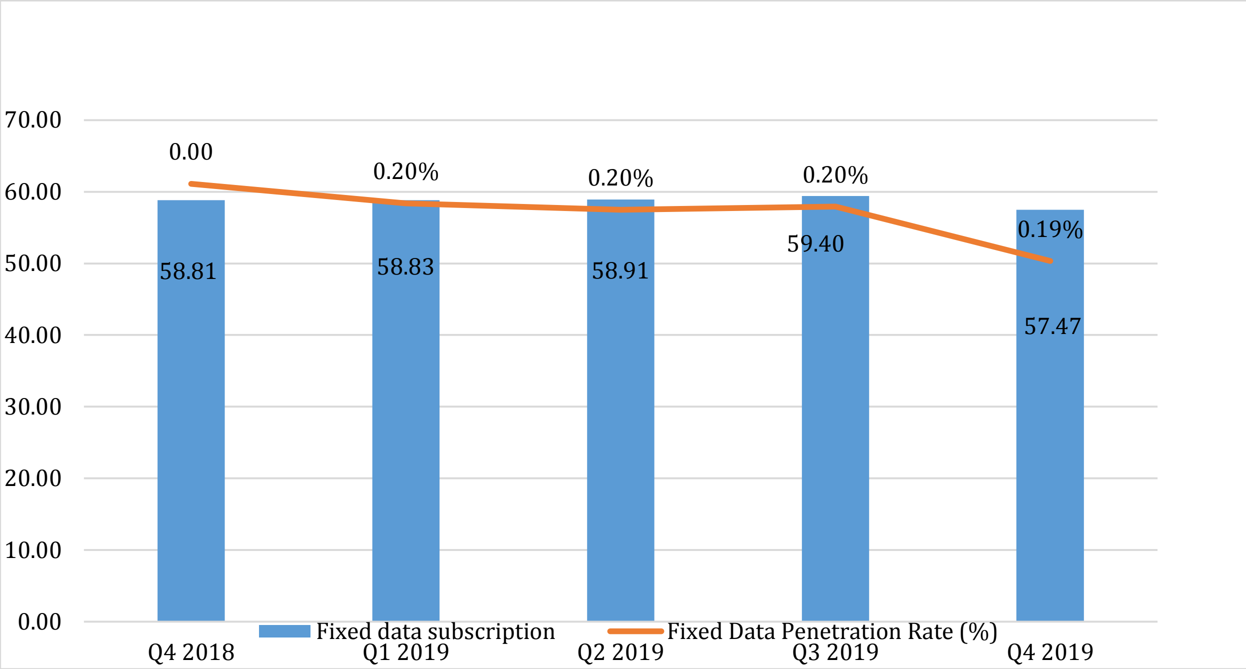
Fixed Broadband Internet subscriptions declined from 59,401 at the end of the previous quarter to 57,465 at the end of the quarter under review recording a decrease of 3.26%. The year-on-year fixed data subscriptions decreased from 58,808 at the end of the preceding year to 57,465 at the end of the fourth quarter of 2019, recording a fall of 2.28%. Fixed data penetration rate was at 0.19% at the end of the fourth quarter of 2019 (Figure 19).

Table 23: Fixed Broadband Data Subscriptions and Penetration

Fixed network operator	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Vodafone	57,216	57,305	58,123	58,697	56,677
	97.29%	97.41%	98.66%	98.81%	98.63%
Airtel	1,592	1,521	788	704	788
	2.71%	2.59%	1.34%	1.19%	1.37%
Total fixed data subscription	58,808	58,826	58,911	59,401	57,465
Population	29,240,226	29,652,054	29,830,322	30,009,663	30,190,081
Fixed Data penetration rate (%)	0.20%	0.20%	0.20%	0.20%	0.19%

Source: NCA; Fixed Network Operators, 2019

Figure 19: Fixed Broadband Data Subscriptions and Penetration



Source: NCA; Fixed Network Operators, 2019

3.5 Fixed Broadband Data Subscriptions per Operator

Vodafone's subscriptions at the end of the fourth quarter of 2019 was 56,677, representing 98.63% of the market share. Its quarter-on-quarter subscriptions decreased by 3.44% whilst the year-on-year subscriptions decreased by 0.94 %.(Table 24).

AirtelTigo recorded 788 fixed data subscriptions with a 1.37% market share. Its subscriptions increased by 11.94%. However, there was about 51% decrease on the year-on-year, as the fourth quarter of the previous year recorded 1,592 fixed data subscriptions; the fourth quarter of 2019 was 788.

Table 24: Fixed Network Data Subscriptions per Operator

Fixed network operator	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Vodafone	57,216	57,305	58,123	58,697	56,677
	97.29%	97.41%	98.66%	98.81%	98.63%
AirtelTigo	1,592	1,521	788	704	788
	2.71%	2.59%	1.34%	1.19%	1.37%

Source: NCA; Fixed Network Operators, 2019

4.0 BROADCASTING

4.1 Authorised Frequency Modulation (FM) Radio Station

The total number of authorised FM stations in Ghana at the end of the fourth quarter of 2019 was 513, increasing from 477 at the end of the previous quarter. The total number of operational FM stations increased from 381 to 399 at the end of the quarter under review.

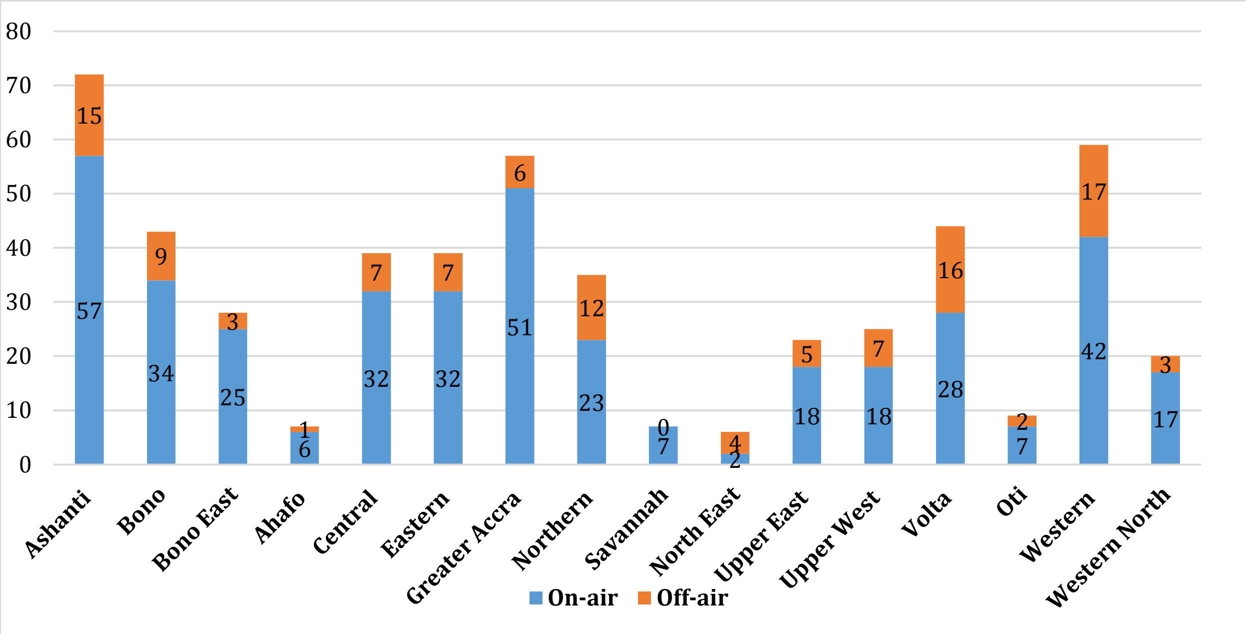
The Ashanti Region had the highest number of FM stations (72), representing 14.04% of the total number of operational FM stations in the country. The North East on the other hand, recorded the least number of operational FM Stations, with six stations, representing 1.16% (Figure 20).

Table 25: Regional Distribution of FM Stations as at the end of Q4 2019

Name Of Regions	Authorised Fm Stations (End Of Q4 2019)	Fm Stations In Operation (Q4 2019)
Ashanti	72	57
Bono	43	34
Bono East	28	25
Ahafo	7	6
Central	39	32
Eastern	39	32
Greater Accra	57	51
Northern	35	23
Savannah	7	7
North East	6	2
Upper East	23	18
Upper West	25	18
Volta	44	28
Oti	9	7
Western	59	42
Western North	20	17
Total	**513**	**399**

Source: NCA, 2019

Figure 20: Regional distribution of On-air and Off-air FM stations as at end of Q4 2019



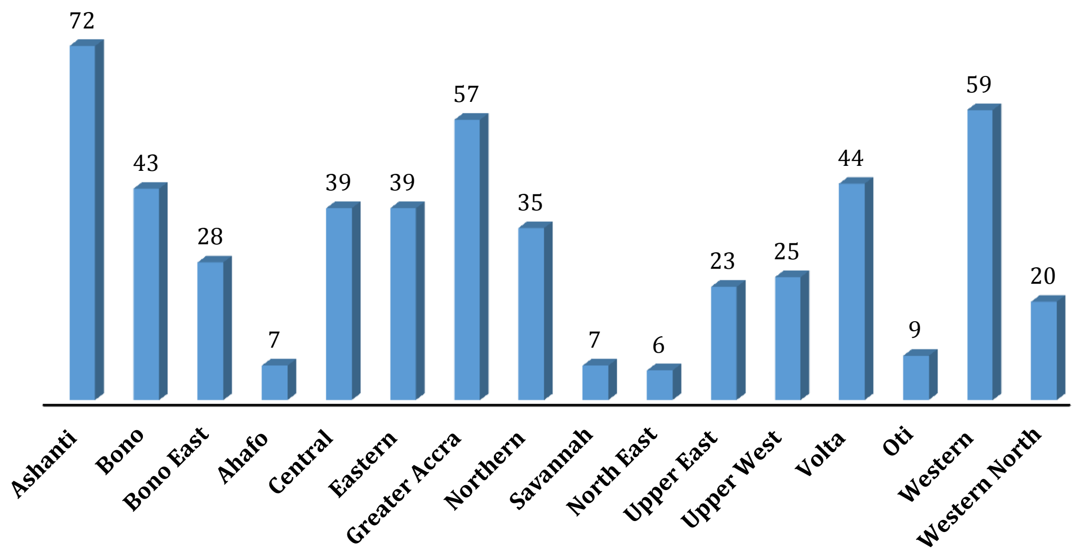
Source: NCA, 2019

Table 26: Regional Distribution of FM Stations by Purpose (Q4 2019)

Name of Regions	Public	Public (Foreign)	Community	Campus	Commercial
Ashanti	2	1	8	3	58
Bono	1	-	3	2	37
Bono East	2	-	3	-	23
Ahafo	-	-	1	-	6
Central	2	-	9	3	25
Eastern	2	-	7	1	29
Greater Accra	2	3	3	4	45
Northern	3	-	8	2	22
Savannah	3	-	3	-	1
North East	1	-	4	-	1
Upper East	2	-	8	1	12
Upper West	2	-	7	2	14
Volta	3	-	5	1	35
Oti	1	-	2	-	6
Western	2	1	4	2	50
Western North	3	-	-	-	17
Total	**31**	**5**	**75**	**21**	**381**

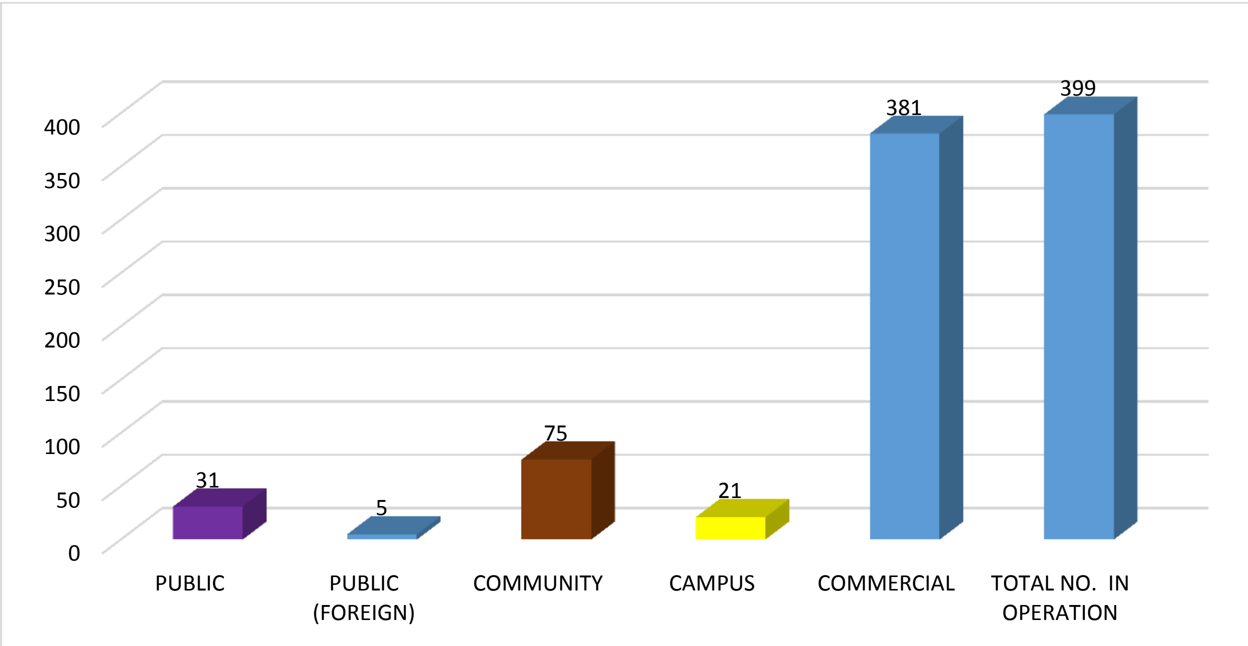
Source: NCA, 2019

Figure 21: Regional distribution of authorised FM stations as at end of Q4 2019



Source: NCA, 2019

Figure 22: Purpose of Authorised Radio Stations as at Q4 2019



Source: NCA, 2019

4.2 Authorised Television Stations

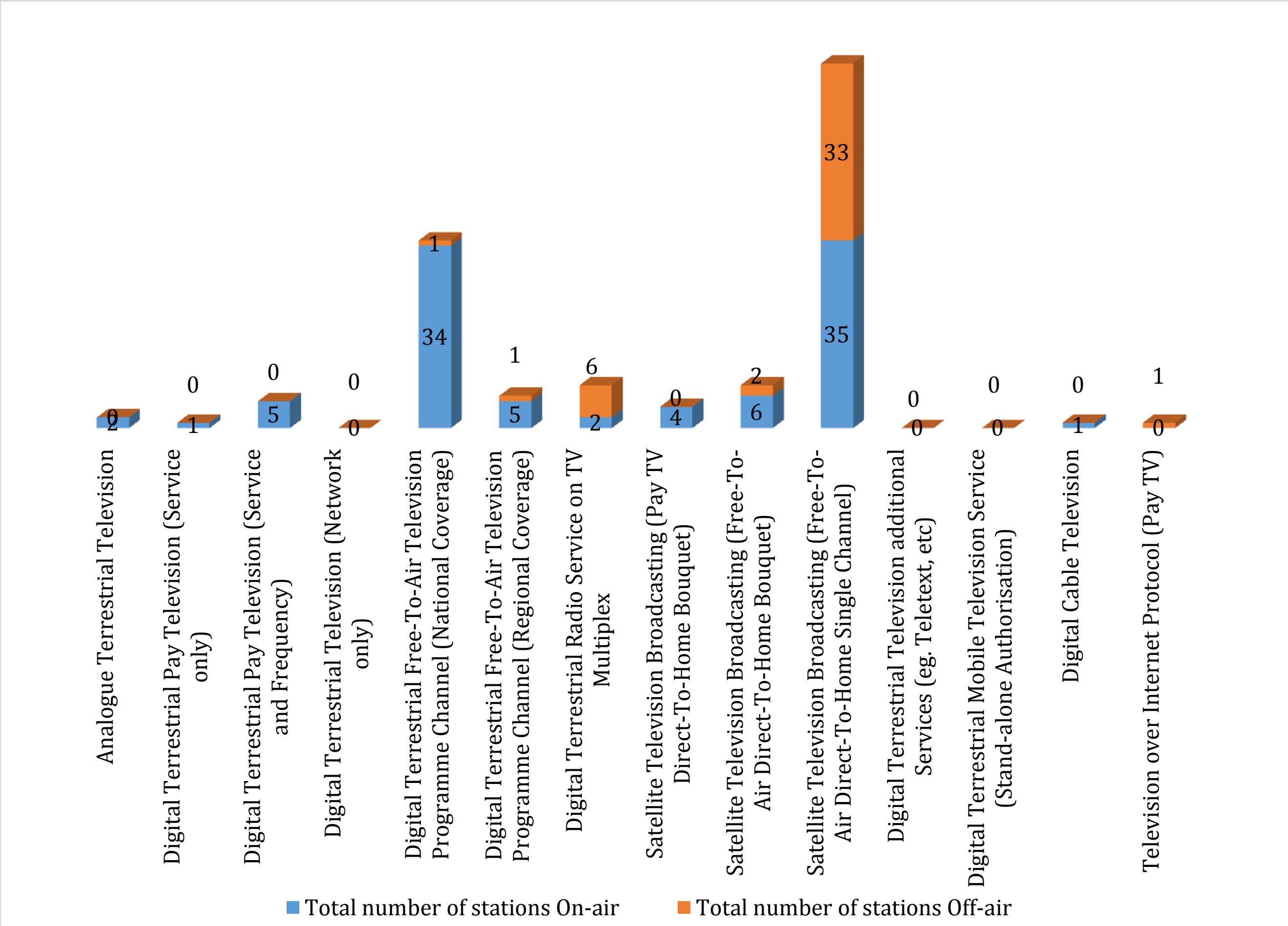
The total number of authorised TV stations in Ghana at the end of fourth quarter was 140, out of which 96 were operational.

Table 27: Authorised TV Services in Ghana as at end of Q4 2019

Types of TV stations	Authorised TV stations			No. of TV Stations in Operation (Q4 2019)	No. of TV Stations not in Operation (Q4 2019)
	End of Q3 2019	Q3 2019	End of Q4 2019		
Analogue Terrestrial Television	2	0	2	2	0
Digital Terrestrial Pay Television (Service only)	1	0	1	1	0
Digital Terrestrial Pay Television (Service and Frequency)	5	0	5	5	0
Digital Terrestrial Television (Network only)	0	0	0	0	0
Digital Terrestrial Free-To-Air Television Programme Channel (National Coverage)	35	0	35	34	1
Digital Terrestrial Free-To-Air Television Programme Channel (Regional Coverage)	6	0	6	5	1
Digital Terrestrial Radio Service on TV Multiplex	8	0	8	2	6
Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	5	-1	4	4	0
Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet)	9	-1	8	6	2
Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel)	66	2	68	35	33
Digital Terrestrial Television additional Services (eg. Teletext, etc)	0	0	0	0	0
Digital Terrestrial Mobile Television Service (Stand-alone Authorisation)	0	0	0	0	0
Digital Cable Television	1	0	1	1	0
Television over Internet Protocol (Pay TV)	1	0	1	0	1
Subscription Management Service for a Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	1	0	1	1	0
Total	**140**		**140**	**96**	**44**

Source: NCA, 2019

Figure 23: Distribution of On-Air and Off-Air TV Stations as at end of Q4 2019



Source: NCA, 2019

Disclaimer:

The National Communications Authority has been diligent to ensure the data in this bulletin are accurate. However, the Authority is not liable for inconsistencies, errors, and gaps in any data or information contained in this bulletin, which is dependent upon the various licensees data submissions to the Authority.

NCA CONTACTS AND PRESENCE COUNTRYWIDE

The Authority currently has eight (8) regional offices to support its operations. Their addresses are listed below

- ### Accra, Head Office

National Communications Authority,
NCA Tower, No 6 Airport City
Close to the Marina Mall
P. O. Box CT 1568, Cantonments, Accra
Tel: +233 (0) 302 776621, 771701
Fax: +233 (0) 302 763449
E-mail: info@nca.org.gh
Complaints: +233 (0) 30 701 1419
complaints@nca.org.gh
Website: www.nca.org.gh

- ### Accra Office

National Communications Authority
1st Rangoon Close,
Switchback Road, Cantonment, Accra
P. O. Box CT 1568,
Cantonment, Accra
Tel: +233 (0) 553 369862, (0) 553 432215
E-mail: complaints.accra@nca.org.gh

- ### Bolgatanga Office

National Communications Authority,
H/No ZB 70, Zorbisi Estates
Bolgatanga, Upper East Region
Tel: +233 (0) 3820 21141
E-mail: complaints.bolgatanga@nca.org.gh

- ### Ho Office

National Communications Authority,
H/No A6/29, Stadium Road
P. O. Box HP1576, Ho, Volta Region
Tel: +233 (0) 3620 26339
E-Mail: complaints.ho@nca.org.gh

- ### Koforidua Office

National Communications Authority,
Residency Road
Behind New Juabeng Municipal Library
Private Mail Bag, Koforidua, Eastern Region
Tel: +233 (0) 3420 28378, 28380, 28382
E-Mail: complaints.koforidua@nca.org.gh

- ### Kumasi Office

National Communications Authority,
Danyame, Kumasi
P. O. Box KS 10768, Kumasi,
Ashanti Region, Ghana
Tel: + 233 (0) 32 202 0014 / 32 202 0018 / 32 202 0019
Fax: (+233) 32 002 0064
E-Mail: complaints.kumasi@nca.org.gh

- ### Sunyani Office

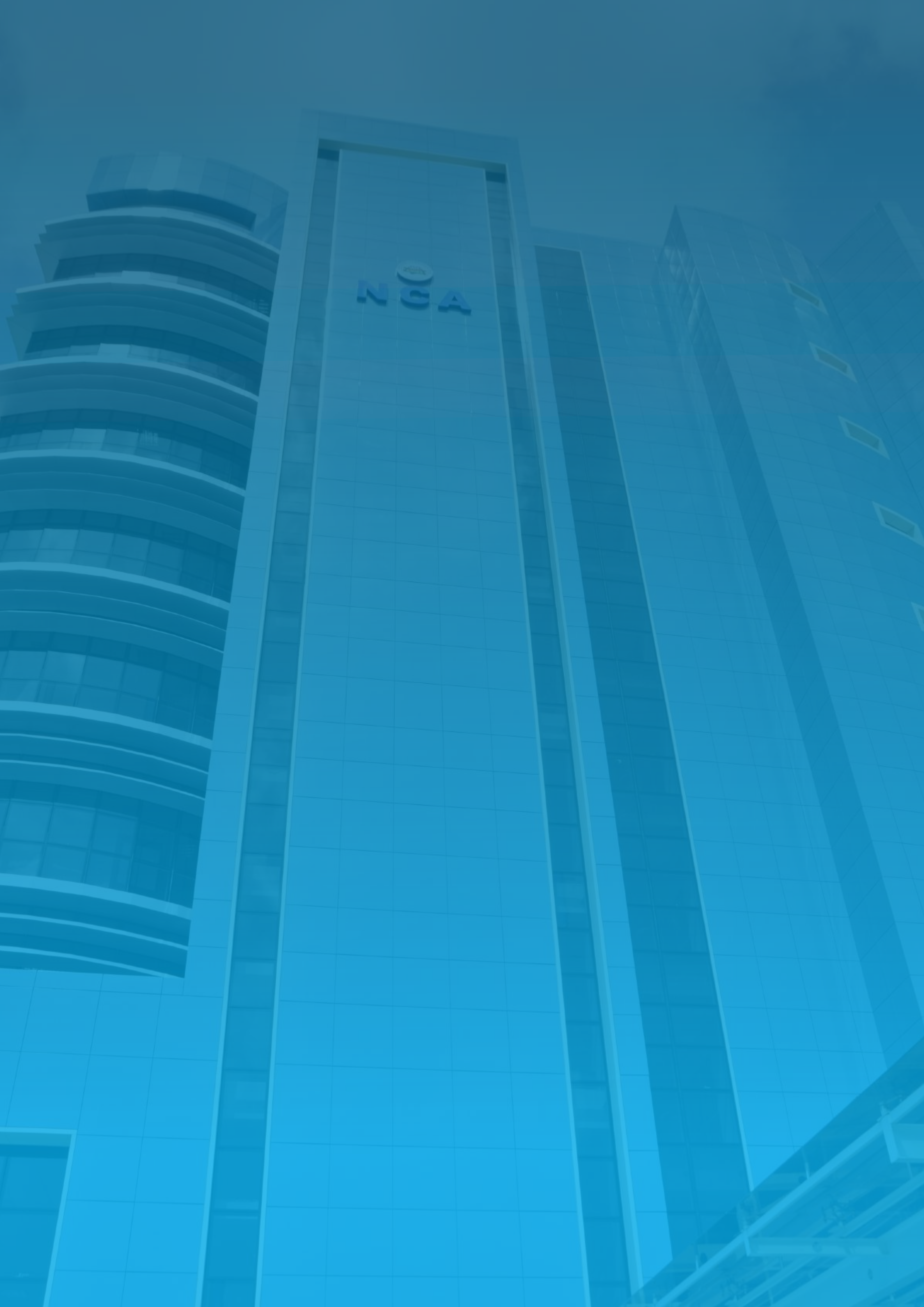
National Communications Authority,
Plot No 83/D Peakwase
P. O. Box SY125, Sunyani, Brong Ahafo Region
Tel: +233 (0) 3520 27564
E-Mail: complaints.sunyani@nca.org.gh

- ### Takoradi Office

National Communications Authority,
Bakado, 1.2kms away from the Female Prisons
P. O. Box SL 409, Sekondi,
Western Region, Ghana
Tel: +233 (0) 31 202 8073 / 31 202 8049
Fax: +233 (0) 31 202 8063
E-Mail: complaints.takoradi@nca.org.gh

- ### Tamale Office

National Communications Authority,
Watherson Residential Area
P. O. Box TL 1590, Tamale,
Northern Region, Ghana
Tel: + 233 (0) 37 202 8105 / 37 020 8104
Fax: +233 (0) 37 202 8104
E-Mail: complaints.tamale@nca.org.gh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