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LIST OF ABBREVIATIONS

BWA	Broadband Wireless Access
LTE	Long-Term Evolution
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

INTRODUCTION

This Quarterly Statistical Bulletin on Communications is a reference document that entails segregated data, industry trends and analysis of the communications sector of Ghana. 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 prepared from the monthly and quarterly data received from various licensees[1]. 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".

[1] MTN, Vodafone, AirtelTigo, Glo, Surfline, BBH, Telesol, Busy and BLU

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 mile connection 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-refers to active mobile data subscriptions to GPRS, EDGE, HSPA, UMTS, EV-DO, 3G, and LTE that have generated internet traffic (uploaded and/ or downloaded data) within the last ninety (90) days.

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 Teledensity – 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[2]

A1. Service Providers Authorised/Licensed to Operate

Operator/Service Providers	Number of Authorisation/Licenses	Number in Operation
Mobile Network Operators	4	4
Fixed Network Operators	3	3
Broadband Wireless Access	5	5
Television Stations	142	112
FM Stations	684	489

B1. Total Subscriptions

SUBSCRIPTION	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q3 2021	Q4 2021	*Growth (%)*	Q4 2020	Q4 2021	*Growth (%)*	
Mobile Voice Subscription	41.78	40.45	*-3.18%*	40.46	40.45	*-0.02%*	Million
Fixed Voice Subscription	317.17	315.27	*-0.60%*	307.67	315.27	*2.47%*	Thousand
Mobile Data Subscription	23.29	23.41	*0.52%*	26.47	23.41	*-11.56%*	Million
Fixed Data Subscription	92.75	113.72	*22.61%*	77.02	113.72	*47.65%*	Thousand
Broadband Wireless Access	53.04	50.71	*-4.39%*	42.19	50.71	*20.19%*	Thousand

B2. Voice, Data and SMS Traffic

TRAFFIC	QUARTER-ON-QUARTER			YEAR-ON-YEAR			Units
	Q3 2021	Q4 2021	*Growth (%)*	Q4 2020	Q4 2021	*Growth (%)*	
Mobile Voice Traffic (Domestic)	27.57	26.49	*-3.92%*	26.63	26.49	*-0.53%*	Billion minutes
Fixed Voice Traffic	8.87	9.60	*8.23%*	8.84	9.60	*8.60%*	Million minutes
Incoming International Traffic (Direct to Network Only)	55.16	58.82	*6.64%*	56.06	58.82	*4.92%*	Million minutes
Outgoing International Traffic	113.05	100.08	*-11.47%*	119.07	100.08	*-15.95%*	Million minutes
Mobile Data Traffic (MB)	249.01	296.74	*19.17%*	175.61	296.74	*68.98%*	Billion MB
BWA Data Traffic (MB)	7.36	6.61	*-10.19%*	6.18	6.61	*6.96%*	Billion MB
SMS Count	547.43	592.91	*8.31%*	554.95	592.91	*6.84%*	Million

[2] The decimals may not be exact due to the rounding-off of the actual figures.

B3. Penetration Rate (%)

PENETRATION RATE (%)	QUARTER-ON-QUARTER			YEAR-ON-YEAR		
	Q3 2021	Q4 2021	*Growth (%)*	Q4 2020	Q4 2021	*Growth (%)*
Mobile Voice Subscription	135.67	131.38	*-3.16%*	130.84	131.38	*0.41%*
Fixed Voice Subscription	1.03	1.02	*-0.97%*	1.00	1.02	*2.00%*
Mobile Data Subscription	75.62	76.04	*0.56%*	85.60	76.04	*-11.17%*
Fixed Data Subscription	0.30	0.37	*23.33%*	0.25	0.37	*48.00%*
Broadband Wireless Access	0.17	0.16	*-5.88%*	0.14	0.16	*14.29%*

C1. Broadcasting Sector

FM/TV AUTHORISATION & OPERATIONS	QUARTER-ON-QUARTER			YEAR-ON-YEAR		
	Q3 2021	Q4 2021	*Growth (%)*	Q4 2020	Q4 2021	*Growth (%)*
FM Authorisation	659	684	*3.79%*	630	684	*8.57%*
FM Station Operating	488	489	*0.20%*	459	489	*6.54%*
TV Authorisations	137	142	*3.65%*	145	142	*-2.07%*
TV Stations Operating	111	112	*0.90%*	106	112	*5.66%*

C2. Categories of Authorised FM Radio Stations

CATEGORIES OF FM RADIO STATIONS	QUARTER-ON-QUARTER			YEAR-ON-YEAR		
	Q3 2021	Q4 2021	*Growth (%)*	Q4 2020	Q4 2021	*Growth (%)*
PUBLIC	31	31	*0.00%*	31	31	*0.00%*
PUBLIC FOREIGN	5	5	*0.00%*	5	5	*0.00%*
CAMPUS	24	24	*0.00%*	23	24	*4.35%*
COMMUNITY	103	114	*10.68%*	96	114	*18.75%*
COMMERCIAL	496	510	*2.82%*	475	510	*7.37%*

1.0 MOBILE NETWORK

This section provides details 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, SMS and mobile data subscriptions. The National Communications Authority (NCA) licensed four service providers that provide mobile telecoms services in Ghana, namely AirtelTigo, Glo, MTN and Vodafone.

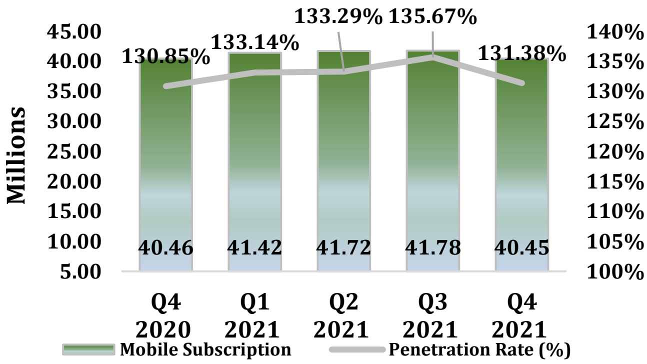
1.1 Mobile Voice Subscriptions and Penetration Rate[3]

Mobile Voice subscriptions decreased from 41.78 million at the end of Q3 2021 to 40.45 million at the end of Q4 2021, representing a decline in growth of 3.17%.

Year-on-year subscriptions dropped from 40.46 million at the end of Q4 2020 to 40.45 million at the end of Q4 2021, recording a decline rate of 0.02%.

The penetration rate as at the end of Q4 of 2021 was 131.38% as compared to 135.67% recorded in Q3 2021, indicating a decline in growth rate by 3.17% (Figure 1) (Appendix, Table 1).

Figure 1: Mobile Voice Subscription and Penetration Rate



1.1.1 Voice Subscription Market Share per Operator

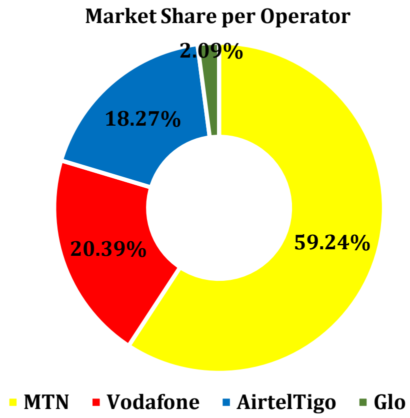
At the end of Q4 2021, MTN recorded 59.24% of the market share with 23.97 million subscriptions.

Vodafone followed with 8.25 million subscriptions (20.39%).

AirtelTigo also recorded a market share of 18.27% with a subscriber base of 7.39 million.

Glo followed with 0.85 million subscriptions with a market share of 2.09% (Figure 2) (Appendix, Table 2).

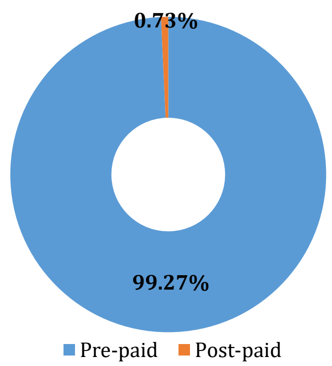
Figure 2: Market Share per Operator



1.1.2 Prepaid and Postpaid Mobile Voice Subscriptions

Mobile voice subscription for prepaid subscribers is 40.16 million representing a market share of 99.27%, Post-paid stood at 0.73% with a subscription of 0.30 million (Figure 3) (Appendix, Table 3).

Figure 3: Prepaid and Postpaid Mobile Voice Subscriptions



1.2 Off-net Mobile and Fixed Voice Traffic (Domestic)

Mobile-to-mobile off-net traffic increased from 1.91 billion minutes at the end of Q3 2021 to 2.13 billion

3The mobile penetration rate is estimated by dividing the total number of mobile subscribers by the total population. Population of Ghana was estimated based on the preliminary result of 2021 Population Census figure 30,792,608 published by Ghana Statistical Service (GSS). The High Penetration Rate is partly attributed to people owning more than one SIM card.

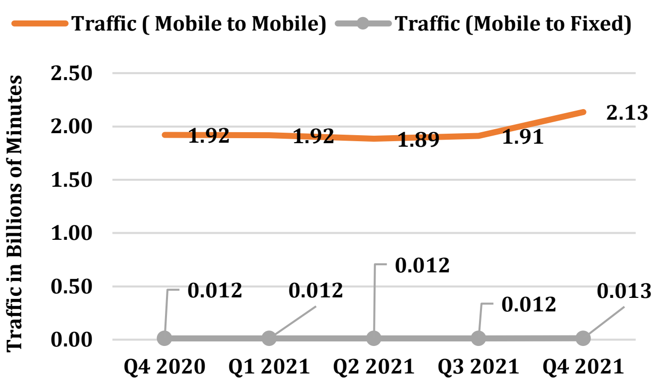
minutes at the end of Q4 2021 representing an increase in growth by 11.61%.

Year-on-year mobile-to-mobile off-net traffic rose from 1.92 billion minutes at the end of Q4 2020 to 2.13 billion minutes at the end of Q4 2021, representing a growth of 11.22%.

Quarter-on-quarter mobile to fixed off-net traffic grew from 12.25 million minutes to 13.27 million minutes indicating a marginal growth of 8.39%.

Year-on-year mobile-to-fixed off-net traffic grew at 8.46% from 12.24 million minutes at the end of Q4 2020 to 13.27 million minutes at the end of Q4 2021. (Figure 4) (Appendix, Table 4)

Figure 4: Off-net Traffic Distribution between Mobile and Fixed Networks



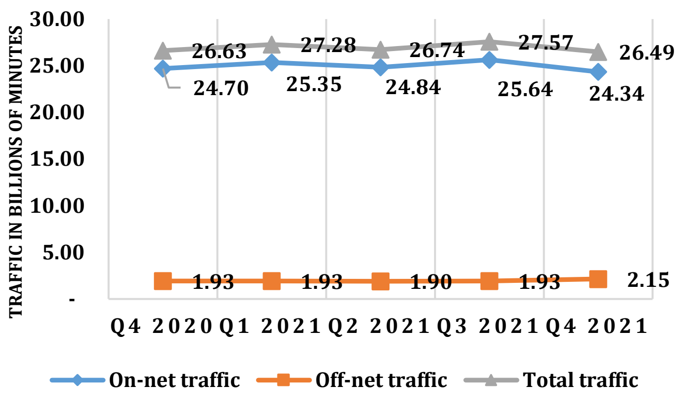
1.2.1 Total Domestic Mobile Voice Traffic

Total domestic mobile voice traffic recorded a decrease from 27.57 billion minutes in Q3 2021 to 26.49 billion minutes in Q4 2021, representing a 3.93% decrease in growth. Year-on-year mobile voice traffic also dropped from 26.63 billion minutes at the end of Q4 2020 to 26.49 billion minutes at the end of Q4 2021, representing a decrease rate of 0.54%.

Off-net traffic increased from 1.93 billion minutes at the end of Q3 2021 to 2.15 billion minutes at the end of Q4 2021, giving an increase in growth by 11.59%. Year-on-year off-net traffic moved from 1.93 billion minutes in Q4 2020 to 2.15 billion minutes at the end of Q4 2021 representing 11.21% growth.

On-net traffic dropped from 25.64 billion minutes in the previous quarter to 24.34 billion minutes at a rate of 5.10% during the quarter under review. Year-on-year on-net traffic also declined from 24.70 billion minutes in Q4 2020 to 24.34 billion minutes at the end of Q4 2021 representing a 1.45% decrease in growth rate. (Figure 5) (Appendix, Table 5)

Figure 5: Total Domestic Mobile Voice Traffic in Billions of Minutes

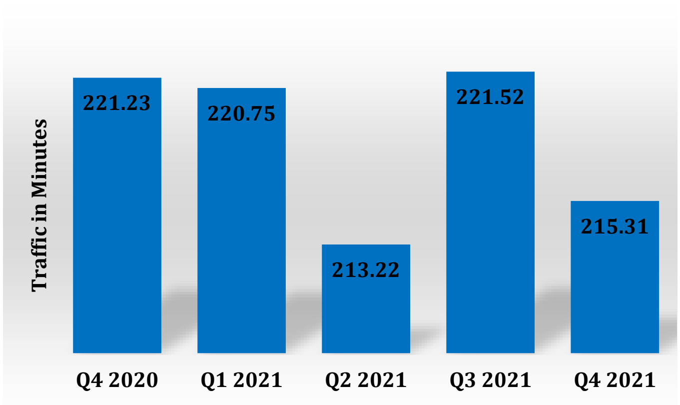


1.2.2 Minutes of Use (MoU)[4]

Quarter-on-quarter average minutes of use per subscription decreased from 221.52 minutes in Q3 2021 to 215.31 minutes (2.81%) in Q4 2021.

Year-on-year minutes of use per subscription dropped from 221.23 minutes in Q4 2020 to 215.31 minutes in Q4 2021, representing 2.68% decline in growth (figure 6) (Appendix, Table 6).

Figure 6: Mobile Voice Traffic Minutes of Use (MoU) per subscriptions



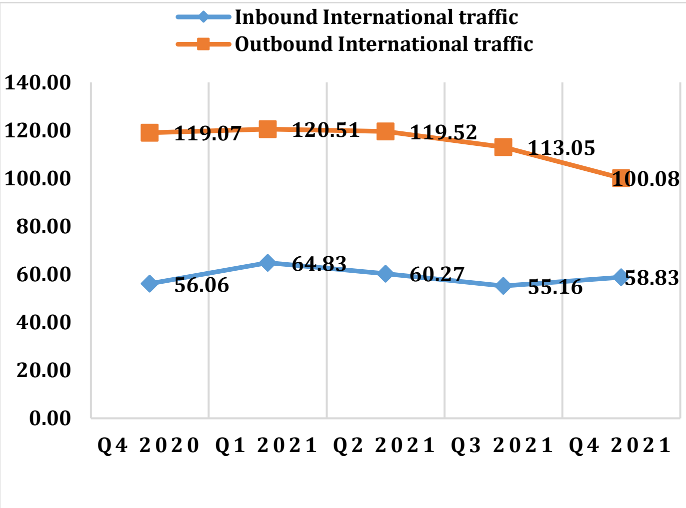
[2]. Minutes of use per subscriptions is calculated by dividing the total average volume of traffic for the quarter by the total average subscriptions for that quarter.

1.3 International Traffic

During the quarter under review, inbound international traffic increased from 55.16 million minutes to 58.83 million minutes, representing an increase of 6.64%. Year-on-year inbound international traffic increased from 56.06 million minutes to 58.83 million minutes showing an increase in growth by 4.94%.

Outbound international traffic showed 11.47% decline in growth from 113.05 million minutes in Q3 2021 to 100.08 million minutes at the end of Q4 2021. Year- on –year outbound international traffic fell from 119.07 million minutes to 100.08 million minutes, indicating a decline of 15.95% (Figure 7) (Appendix, Table 7).

Figure 7: International Traffic in Minutes (Millions)

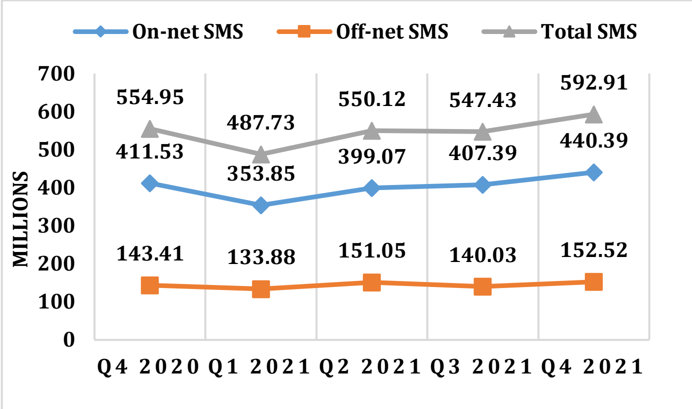


1.3.1 Short Messaging Services (SMS)

The total number of short messages service (SMS) sent at the end of Q4 2021 was 592.91 million as compared to 547.43 million in the preceding quarter, recording an 8.31% increase.

Year-on-year SMS counts increased from 554.95 million in Q4 2020 to 592.91 million at the end Q4 2021, representing a growth rate of 6.84% (figure 8) (Appendix, Table 8).

Figure 8: Total Number of SMS



1.3.2 SMS Counts per Mobile Network Operator/Market Share

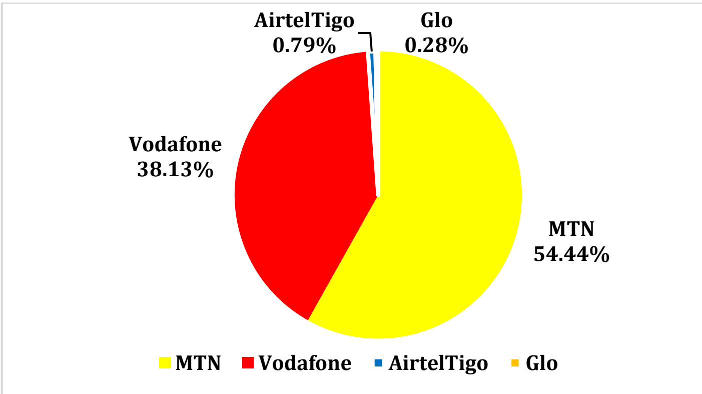
The volume of SMS traffic originating from MTN was 322.78 million at the end of Q4 2021; representing a market share of 54.44% of the total, SMS count.

The volume of SMS traffic from Vodafone was 226.05 million, representing a market share of 38.13% of the total SMS count.

AirtelTigo had an SMS count of 4.67 million, representing 0.79% of the market share of the total SMS count.

Glo generated 1.67 million SMS count recording a share of 0.28% (Figure 9) (Appendix, Table 8).

Figure 9: SMS Counts Market Share per Operator

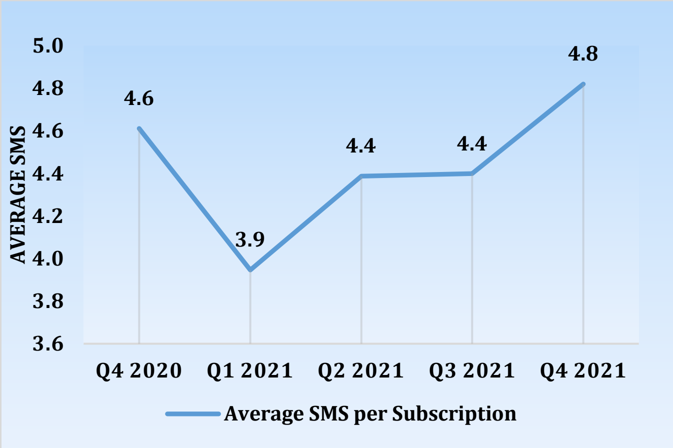


1.3.3 Average SMS per subscription

Quarter-on-quarter average SMS sent per subscription at the end of Q4 2021 was 4.8 SMS, indicating a slight increase in the average SMS per subscriptions as compared to the end of Q3 2021 (4.4).

Year-on-year average SMS volume per subscription also recorded a slight increase from 4.6 at the end of Q4 2020 to 4.8 at the end of Q4 2021. (Figure 10) (Appendix, Table 9).

Figure 10: Average SMS per Subscription

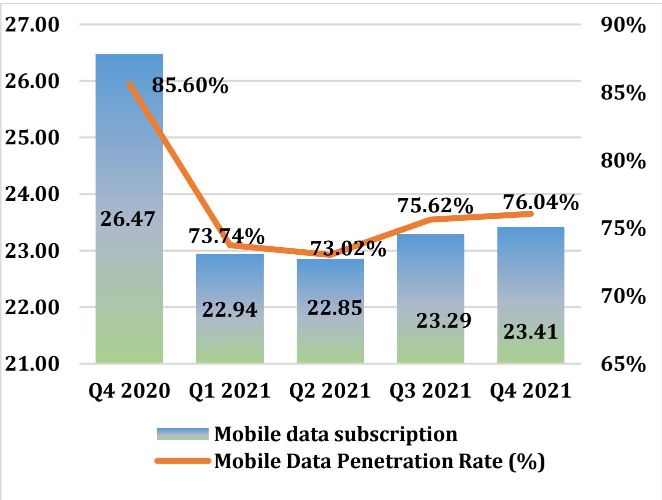


1.4 Mobile Data Subscriptions and Penetration Rate (%)

At the end of Q4 2021, mobile data subscriptions increased by 0.56% from 23.29 million at the end of Q3 2021 to 23.41million.

Year-on-year subscriptions decreased by 11.54% from 26.47 million at the end of Q4 2020 to 23.41 million at the end of Q4 2021. The penetration rate as at the end of the fourth quarter of 2021 was 76.04% (Figure 11) (Appendix, Table 10).

Figure 11: Mobile Data Subscriptions and Penetration Rate (%)

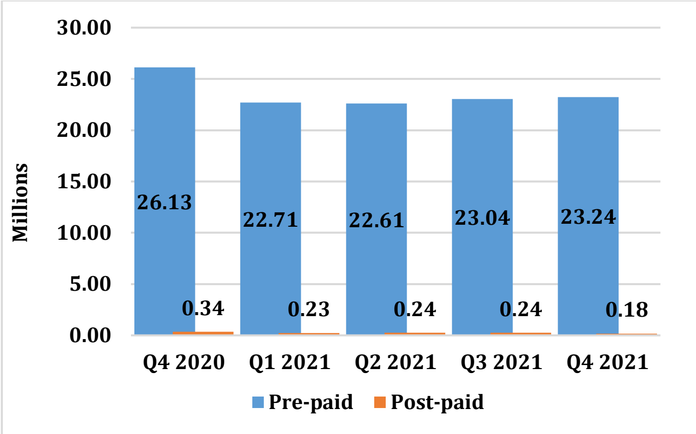


1.4.1 Mobile Data Pre-paid and Post-paid Subscriptions/Market Share

Mobile data pre-paid subscriptions increased from 23.04 million at the end of Q3 2021 to 23.24 million subscriptions at the end of Q4 2021, representing 99.24% of the total mobile data subscriptions.

Mobile data post-paid subscriptions decreased from 243,738 at the end of Q3 2021 to 177,189 subscriptions representing 0.76% of the total mobile data subscriptions at the end of Q4 2021 (Figure: 12) (Appendix, Table 10).

Figure 12: Mobile Data Pre-paid and Post-paid Subscriptions



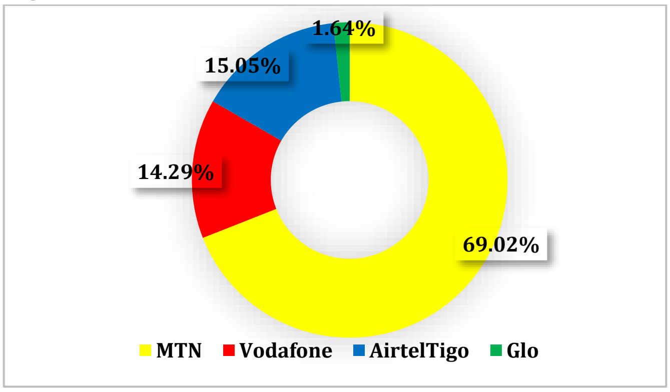
1.4.2 Mobile Data Subscriptions per Mobile Network Operator /Market Share

MTN recorded 16.16 million subscriptions, which represents 69.02% of the market.

While Vodafone recorded 3.35 million subscriptions with a 14.29% share of the market, AirtelTigo had 3.52 million in mobile data subscriptions with a 15.05% share of the market.

Glo ended the fourth quarter of 2021 with a total data subscription of 0.38 million and a market share of 1.64% (Figure 13).

Figure 13: Market Share per Operator

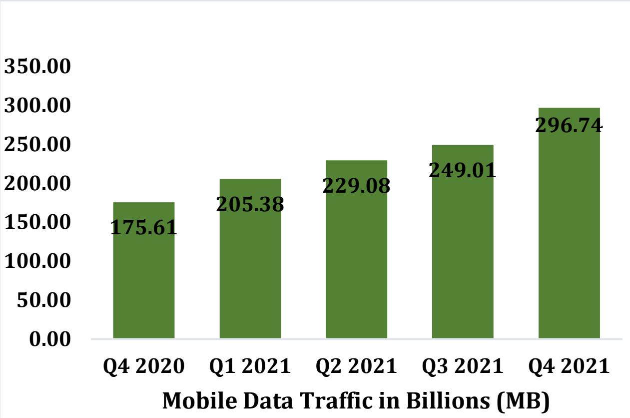


1.5 Mobile Data Traffic in Billions of Megabytes (MB)

At the end of Q4 2021, internet traffic generated by the mobile network operators was 296.74 billion megabytes of data, recording an increase in growth by 19.17 % as compared to 249.01 billion megabytes of data at the end of Q3 2021.

Year-on-year internet traffic increased from 175.61 billion megabytes at the end of Q4 2020 to 296.74 billion megabytes at the end of Q4 2021, representing an increase of 68.97% (Figure 14) (Appendix, Table 11).

Figure 14: Mobile Data Traffic in Billions of Megabytes (MB

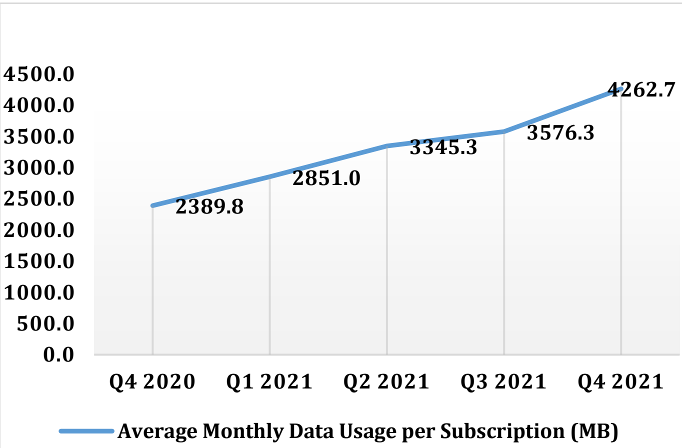


1.5.1 Mobile Internet Usage per Subscription (MB)[5]

The average mobile internet usage per subscription increased from 3576.3 MB at the end of Q3 2021 to 4262.7 MB at the end of Q4 2021 recording a growth of 19.19%.

Year-on- year average data usage per subscription increased from 2389.8 MB at the end of Q4 2020 to 4262.7 MB at the end of Q4 2021, recording a growth of 78.37% (Figure 15) (Appendix, Table 12).

Figure15: Mobile Data Usage per Subscription (MB)0



1.5.2 Mobile Internet Traffic (MB) per Mobile Network Operator

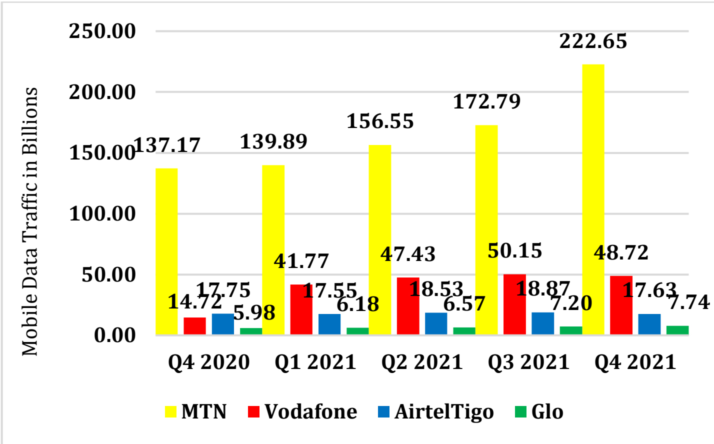
MTN generated the highest volume of internet traffic of 222.65 billion megabytes with a market share of 75.03%.

Vodafone followed with a traffic of 48.72 billion megabytes and a market share of 16.42%.

AirtelTigo also had 17.63 billion megabytes of data, recording a market share of 5.94%.

Glo recorded the least data usage, generating 7.74 billion megabytes with a market share of 2.61% (Figure 16) (Appendix, Table 13)

Figure 16: Mobile Internet Traffic (MB) per Operator



1.6 Mobile Telecommunications Service Tariffs

Quarter- on -quarter average tariffs for off net mobile voice stood at 0.12 pesewas at the end of Q4 2021

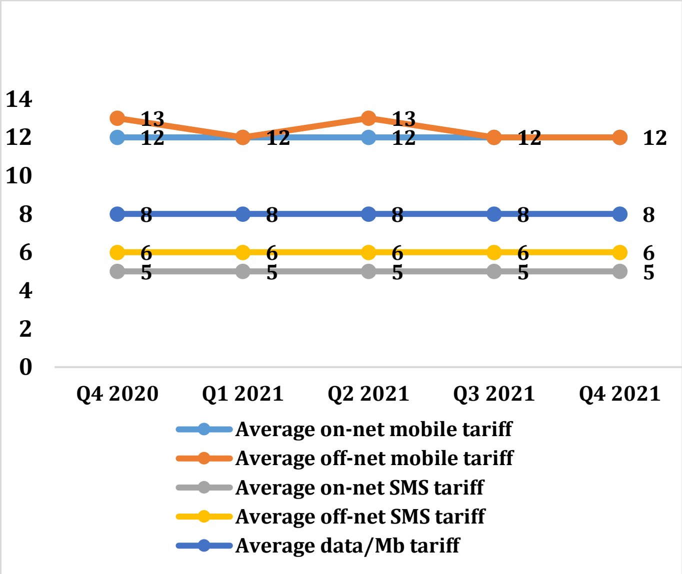
Average on net tariff mobile voice also remained at 0.12 pesewas.

Average off net and on net SMS tariffs stood at 0.06 and 0.05 pesewas respectively.

The average data tariff for the quarter also maintained its price of 0.08 pesewas. (Figure 17) (Appendix, Table 14).

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

Figure 17: Average Mobile Tariffs per Service



2.0 BROADBAND WIRELESS ACCESS (BWA)

There are five (5) Broadband Wireless Access operators in Ghana namely; BLU Telecommunications[6], Broadband Home (BBH), Busy Internet, Surfline and Telesol.

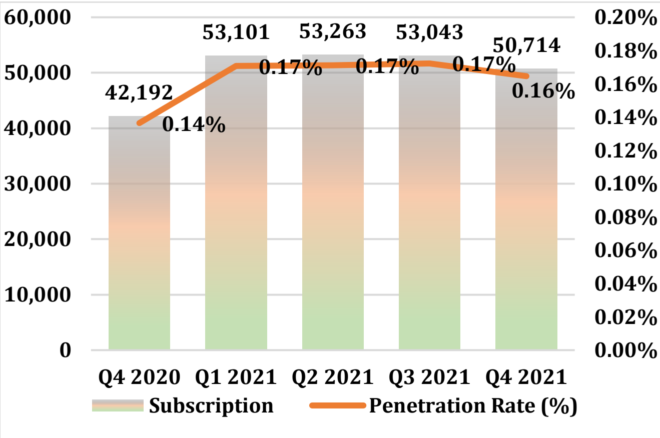
2.1 BWA Subscriptions and Penetration Rate

BWA subscriptions decreased from 53,043 in Q3 2021 to 50,714 in Q4 2021, representing a decline in growth of 4.39%.

Year-on-year subscriptions also grew by 20.20%, which was from 42,192 in Q4 2020 to 50,714 at the end Q4 2021.

Penetration rate for broadband wireless access also decreased from 0.17% in the previous quarter to 0.16% in the quarter under review. (Figure 18) (Appendix, Table 15).

Figure 18: BWA Subscription and Penetration Rate



2.1.1 Subscriptions per Broadband Wireless Access (BWA) Operator

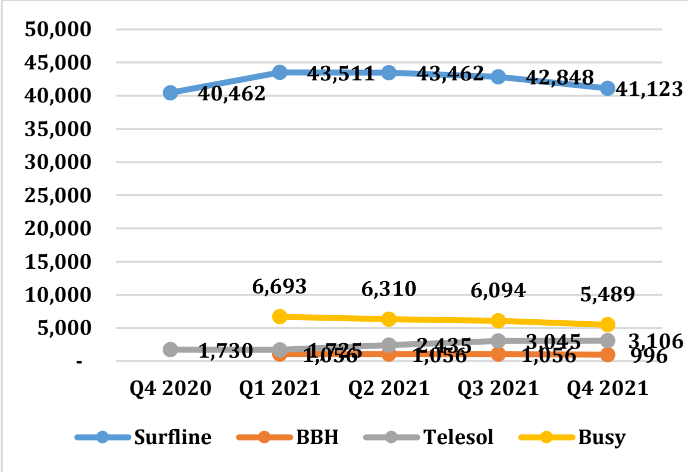
Surfline recorded 41,123 subscriptions at the end of the quarter under review representing 81.09% of the market share, as against 42,848 in the previous quarter.

Busy ended this quarter with a subscription of 5,489 and a market share of 10.82%.

Telesol recorded 3,106 subscriptions this quarter with a market share of 6.12%

BBH had a subscription of 996 and a market share of 1.96% at the end of Q4 2021. (Figure 19) (Appendix, Table 16).

Figure 19: Subscriptions per Broadband Wireless Access (BWA) Operator

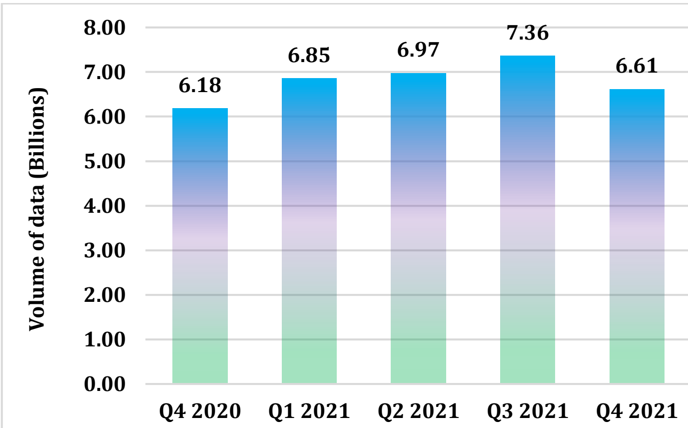


2.2 Broadband Wireless Access (BWA) Volume of Internet Traffic

The total volume of internet traffic generated by the BWAs decreased from 7.36 billion megabytes at the end of Q3 2021 to 6.61 billion megabytes at the end of Q4 2021, indicating a decline in growth of 10.13%.

Year-on-year internet traffic generated by the BWAs increased from 6.18 billion megabytes at the end of Q4 2020 to 6.61 billion megabytes at the end of Q4 2021, representing a growth of 7.05% (Figure 20) (Appendix A, Table 17).

Figure 20: BWA Internet Traffic in Megabyte (MB)



6 As at the time of preparation of the report, there was no available data for BLU Telecommunications.

2.2.1 Volume of BWA Traffic per Operator

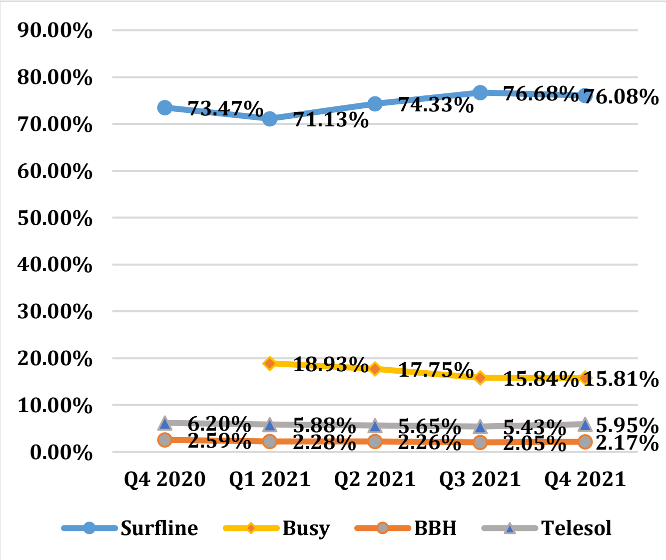
Surfline's total volume of internet traffic for the quarter under review was 5.03 billion MB, as against 5.64 billion MB in the previous quarter representing 76.08% of the total volume of traffic.

Busy had a total internet traffic of 1.05 billion MB at the end of Q4 2021 with a market share of 15.81%

Telesol recorded 0.394 billion MB with a market share of 5.95%.

BBH ended Q4 2021 with 0.143 billion MB of volume of internet traffic and a market share of 2.17%. (Figure 21) (Appendix, Table 17).

Figure 21: BWA Traffic Market Share per Operator (MB)

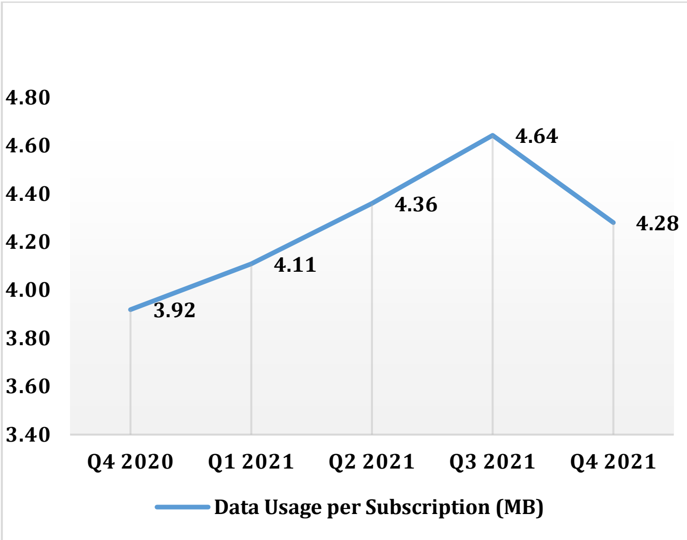


2.2.2 Average Monthly Internet Usage per BWA Subscription[7]

Average internet usage per BWA subscription decreased from 4.64 thousand megabytes in Q3 2021 to 4.28 thousand megabytes in Q4 2021.

Year-on-year internet usage per subscription also increased from 3.92 thousand megabytes in Q4 2020 to 4.28 thousand megabytes at the end of Q4 2021 (Figure 22) (Appendix, Table 18).

Figure 22: Average Internet Usage per BWA Subscription



7BWA data per subscriptions is calculated by dividing the total average volume of BWA's traffic for the quarter by the total average of BWA subscriptions for that quarter.

3.0 FIXED NETWORK

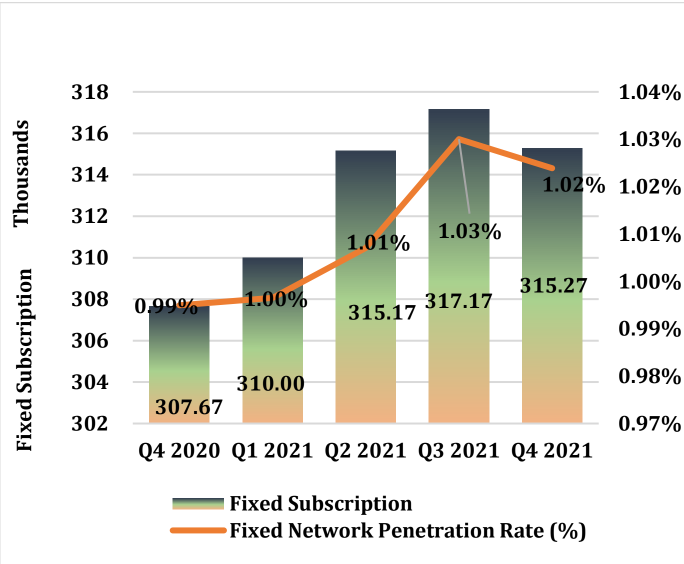
This section analyses the fixed telephone industry in Ghana. Three (3) operators namely Vodafone, AirtelTigo and MTN have been licensed by the NCA to provide this service.

3.1Fixed Voice Subscriptions and Penetration Rate

Total number of fixed line subscriptions decreased from 317,172 in Q3 2021 to 315,271 at the end of Q4 2021. This shows a penetration rate of 1.02% and a 0.60% decline in growth.

Year-on-year subscription increased from 307,668 in Q4 2020 to 315,271 at the end of Q4 2021, representing a growth rate of 2.47% (Figure 23) (Appendix, Table 19).

Figure 23: Fixed Network Voice Subscription and Penetration Rate

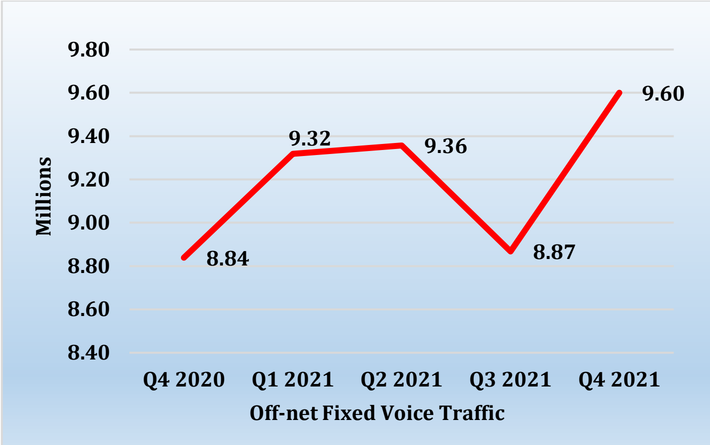


3.2 Fixed Voice Network Traffic

Total fixed voice traffic increased by 8.26% in Q4 2021, from 8.87 million minutes in Q3 2021 to 9.60 million minutes.

Year-on-year total fixed voice traffic increased by 8.62%, from 8.84 million minutes in Q4 2020 to 9.60 million minutes in Q4 2021. (Figure 24) (Appendix, Table 20).

Figure 24: Total Fixed Voice Traffic

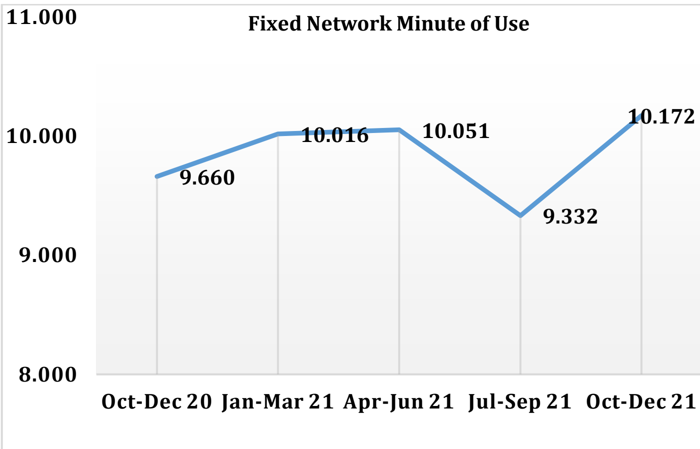


3.3 Fixed Voice Average Minute of Use[8]

Average fixed voice traffic per subscription increased from 9.332 minutes to 10.172 minutes at the end of Q4 2021 (9.00%).

Year-on-year minutes of use per subscription also increased from 9.660 minutes in Q4 2020 to 10.172 minutes at the end of Q4 2021 (5.30%) (Figure 25) (Appendix A, Table 21).

Figure 25: Fixed Network Minute of Use



3.4 Fixed Data Subscriptions and Penetration

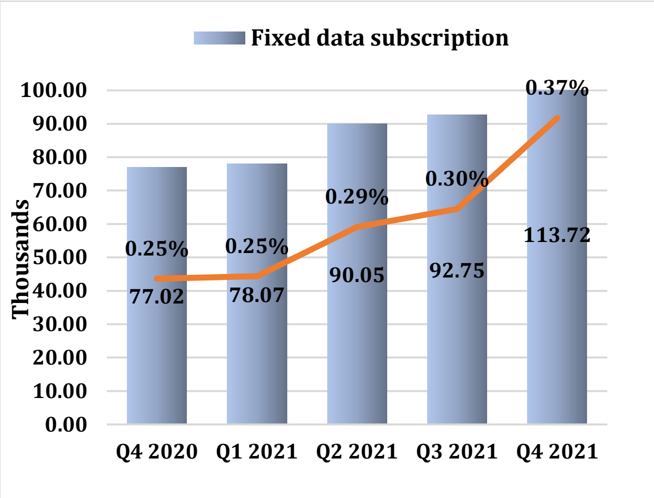
Fixed Data subscriptions went up from 92,748 in the previous quarter to 113,722 in the quarter under review, which represents a growth rate of 22.61%.

At a growth rate of 47.65%, Year-on-year fixed data subscriptions increased from 77,022 in the preceding year to 113,722 at the end of Q4 2021.

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

Fixed data penetration rate increased from 0.30% at the end of Q3 2021 to 0.37% at the end of Q4 2021. (Figure 26) (Appendix, Table 22).

Figure 26: Fixed Data Subscriptions and Penetration



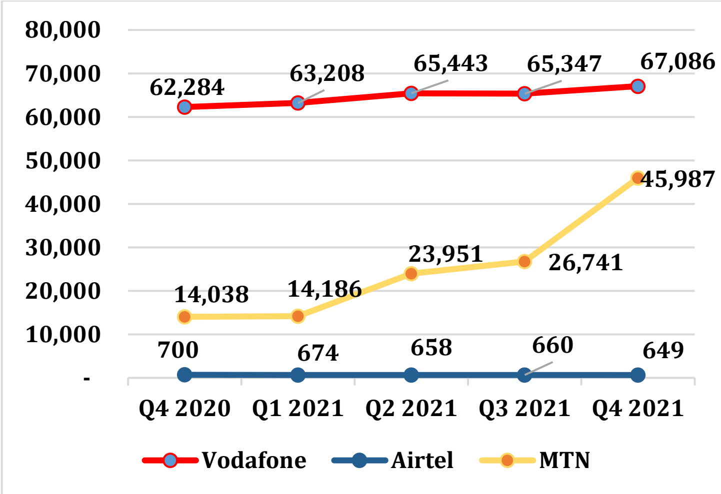
3.5 Fixed Data Subscriptions per Mobile Network Operator

Vodafone's subscriptions at the end of Q4 2021 was 67,086 representing 58.99% of the market share as against 65,347 in Q3 2021.

MTN's subscriptions at the end of Q4 2021 was 45,987 representing 40.44% of the market share.

AirtelTigo recorded 649 subscriptions at the end of Q4 2021 with a market share of 0.57%. (Figure 27) (Appendix, Table 23).

Figure 27: Fixed Data Subscription per Operator



4.0 BROADCASTING

4.1 Authorised Frequency Modulation (FM) Radio Station

The total number of authorised FM stations in Ghana as at the end of Q4 2021 was 684. The total number of FM stations in operation was 489 in the quarter under review.

The Ashanti Region had the highest number of FM stations (99), representing 14.47% of the total number of authorised FM stations in the country. The Savannah Region had the least number of authorised FM Stations (11), representing 1.61% of the total authorised FM Stations in the country. (Figure 28) (Appendix A, Table 25).

Figure 28: Regional distribution of authorised FM stations as at end of Q4 2021

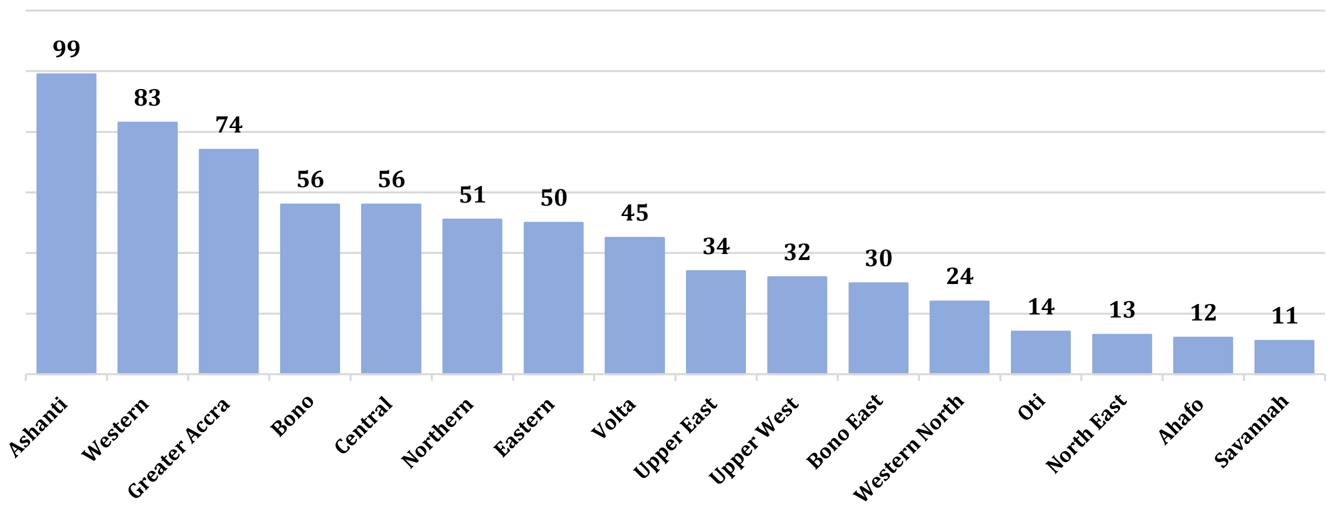


Figure 29: Regional distribution of On-air and Off-air FM stations as at end of Q4 2021

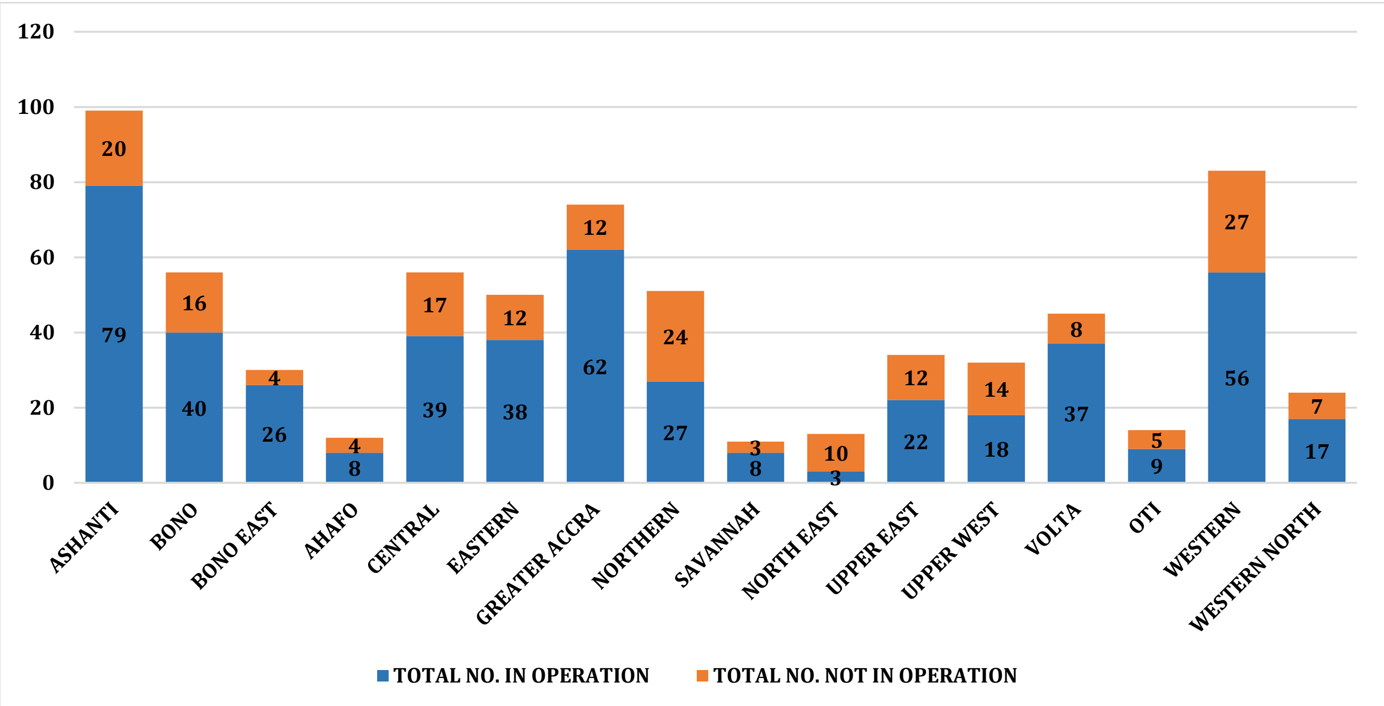
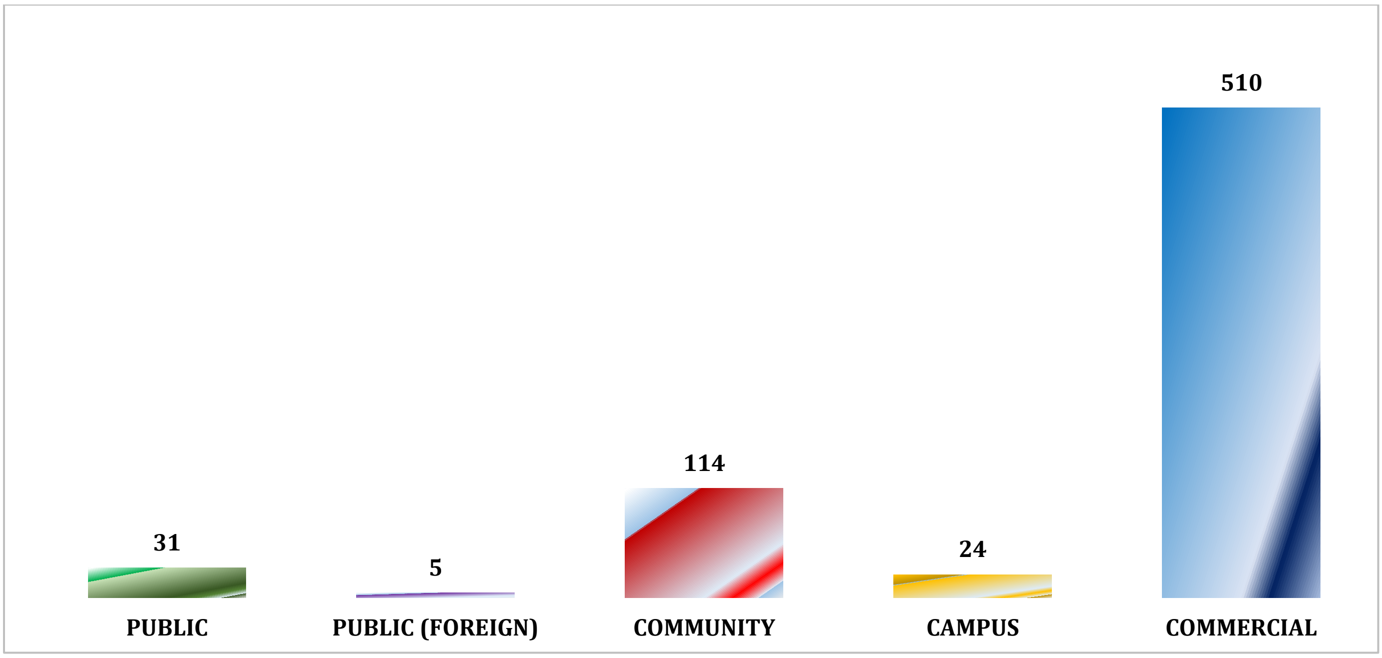


Figure 30: Purpose of Authorised Radio Stations as at Q4 2021



4.2 Authorised Television Stations

The total number of authorised TV stations in Ghana at the end of the fourth quarter of 2021 was 142 out of which 112 were operational during the quarter under review, representing 78.87% of the total number of authorised TV stations in the country (Figure 32) (Appendix A, Table 26).

Figure 31: Authorised TV Stations Q4 2021

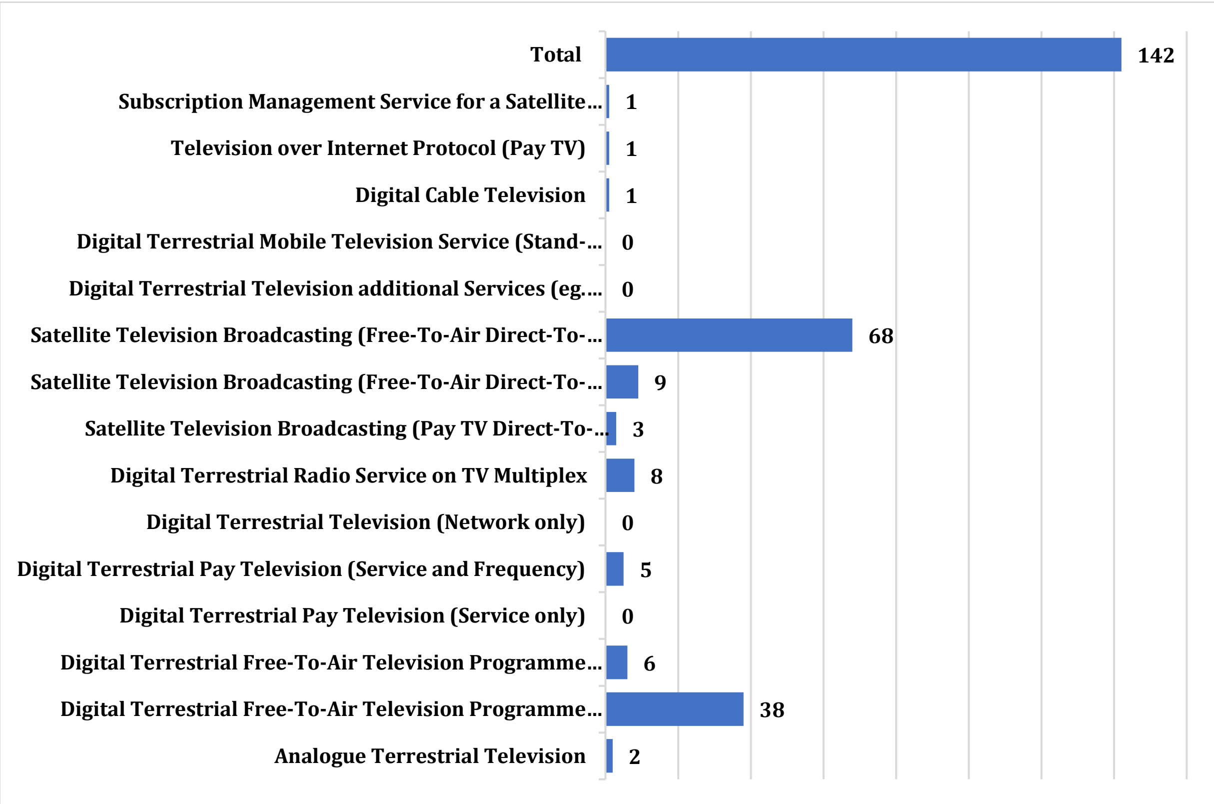
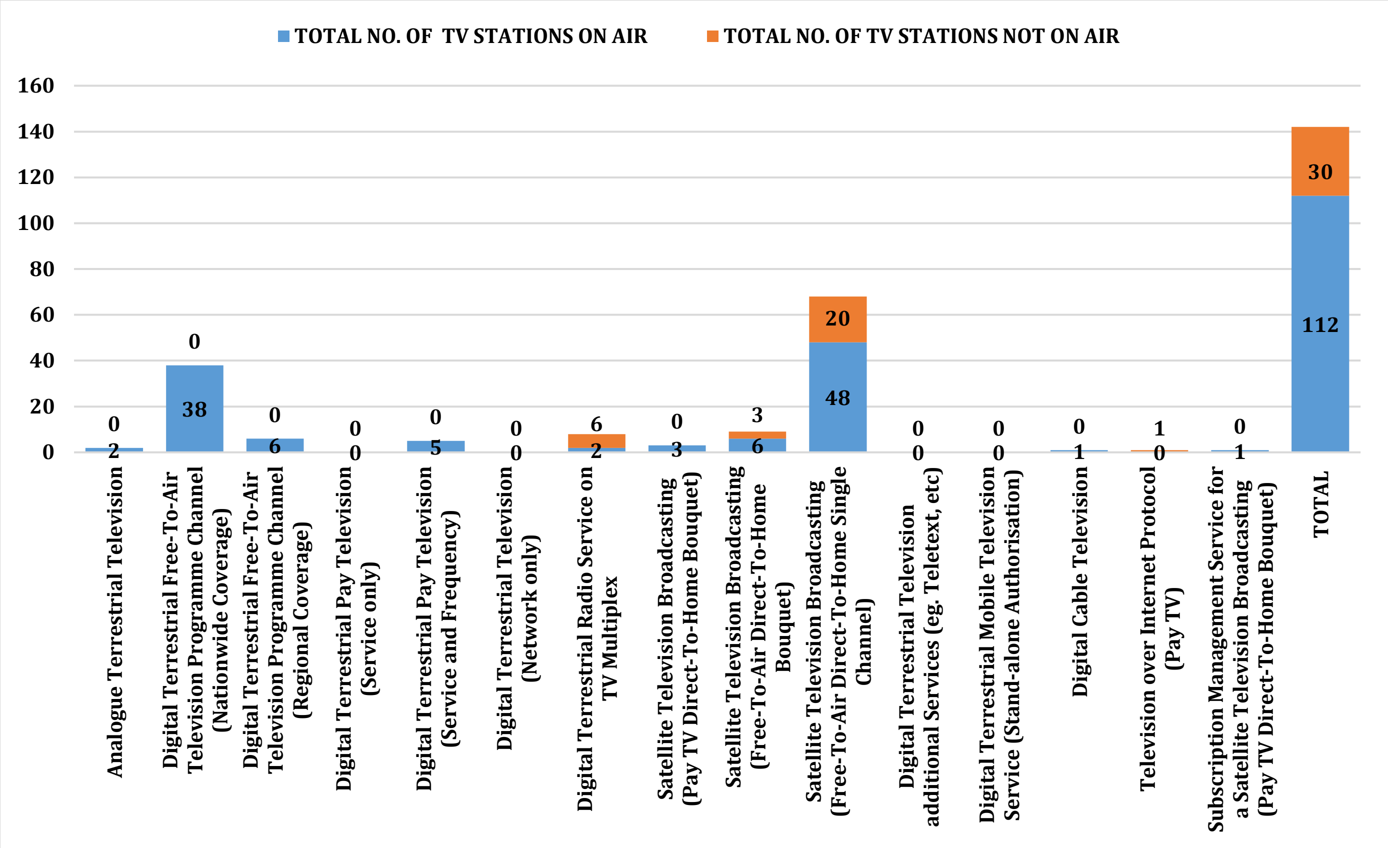


Figure 32: Distribution of Types of TV Services (On-Air and Off-Air TV Stations) as at end of Q4 2021



Appendix A (List of Tables)

Table 1: Mobile Voice Subscriptions and Penetration Rate

Subscription	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Mobile Subscription	40,461,609	41,418,710	41,715,259	41,777,633	40,454,073
Mobile Subscription Growth rate (%)	0.27%	2.37%	0.72%	0.15%	-3.17%
Net additions	108,696.00	957,101.00	296,549.00	62,374.00	1,323,560.00
Net additions Growth Rate (%)	-188%	781%	-69%	-79%	-2222%
Population[9]	30,922,666	31,108,574	31,295,599	30,792,608	30,792,608
Penetration Rate (%)	**130.85%**	**133.14%**	**133.29%**	**135.67%**	**131.38%**

Table 2: Mobile Voice Subscriptions and Market Share per Operator

Mobile Network Operator		Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
MTN	Subscriptions	23,144,302	23,392,300	23,504,397	23,618,300	23,966,302
	Market Share (%)	57.20%	56.48%	56.34%	56.53%	59.24%
Vodafone	Subscriptions	8,400,565	8,917,137	9,412,253	9,554,809	8,250,436
	Market Share (%)	20.76%	21.53%	22.56%	22.87%	20.39%
AirtelTigo	Subscriptions	8,135,618	8,324,512	7,984,134	7,719,165	7,390,278
	Market Share (%)	20.11%	20.10%	19.14%	18.48%	18.27%
Glo	Subscriptions	781,124	784,761	814,475	885,359	847,057
	Market Share (%)	1.93%	1.89%	1.95%	2.12%	2.09%
Total Industry Subscription		**40,461,609**	**41,418,710**	**41,715,259**	**41,777,633**	**40,454,073**

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

Subscription	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Prepaid	40,173,414	41,134,101	41,342,136	41,485,279	40,158,443
Market Share	99.29%	99.31%	99.11%	99.30%	99.27%
Post-paid	288,195	284,609	373,123	292,354	295630
Market Share	0.71%	0.69%	0.89%	0.70%	0.73%
Total mobile subscription	**40,461,609**	**41,418,710**	**41,715,259**	**41,777,633**	**40,454,073**

[9] The Ghana Statistical Service released the results of the 2021 Population and Housing Census in September 2021, which occasioned the change in population figures for Q3 2021.

Table 4: Mobile Off-net Traffic Distribution between Mobile and Fixed Network

Breakdown of Off-net Traffic	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Traffic (Mobile to Mobile)	1,919,526,571	1,916,850,431	1,885,009,496	1,912,874,245	2,134,948,003
Share (%)	99.37	99.38%	99.37%	99.36%	99.38%
Growth (%)	2.84%	-0.14%	-1.66%	1.48%	11.61%
Traffic (Mobile to Fixed)	12,239,493	11,879,043	11,913,424	12,247,440	13,274,791
Share (%)	0.63%	0.62%	0.63%	0.64%	0.62%
Growth (%)	11.66%	-2.94%	0.29%	2.80%	8.39%
Total Off-net Traffic	**1,931,766,009**	**1,928,729,474**	**1,896,922,920**	**1,925,121,685**	**2,148,222,794**

Table 5: Total Domestic Mobile Voice Traffic in Billions of Minutes

Traffic	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Traffic (Off-net)	1,931,766,009	1,928,729,474	1,896,922,920	1,925,121,685	2,148,222,794
Share (%)	7.25%	7.07%	7.10%	6.98%	8.11%
Growth (%)	2.89%	-0.16%	-1.65%	1.49%	11.59%
Traffic (On-net)	24,696,111,020	25,354,235,060	24,838,177,542	25,644,671,167	24,337,097,120
Share (%)	92.75%	92.93%	92.90%	93.02%	91.89
Growth (%)	5.74%	2.66%	-2.04%	3.25%	-5.10
Total traffic	**26,627,877,029**	**27,282,964,534**	**26,735,100,463**	**27,569,792,852**	**26,485,319,914**

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

Traffic	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Total mobile voice traffic (Average)	8,875,959,010	9,094,321,511	8,911,700,154	9,189,930,951	8,828,439,971
Mobile voice subscription (Average)	40,120,522	41,198,050	41,795,710	41,485,243	41,003,757
Minutes of Use (MoU) per Subscription	221.23	220.75	213.22	221.52	215.31
MoU growth rate (%)	6.46%	-0.22%	-3.41%	3.89%	-2.81

Table 7: International Traffic

Traffic	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Incoming International Traffic	56,058,034	64,828,793	60,270,936	55,163,669	58,828,681
Growth (%)	3.22%	15.65%	-7.03%	-8.47%	6.64%
Outgoing International Traffic	119,070,166	120,507,233	119,521,985	113,046,604	100,076,292
Growth (%)	2.43%	1.21%	-0.82%	-5.42%	-11.47

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

Mobile Operators	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Off-net					
MTN	40,197,534	49,379,750	55,278,726	62,742,323	62,104,351
Vodafone	100,306,049	81,174,285	92,190,382	73,772,560	86,602,956
AirtelTigo	1,553,674	1,664,913	1,761,762	2,097,966	2,157,596
Glo	1,357,237	1,599,201	1,814,990	1,419,660	1,650,792
Total	**143,414,494**	**133,818,149**	**151,045,860**	**140,032,509**	**152,515,695**
On- net					
MTN	253,965,866	256,833,104	239,764,050	253,028,977	289,367,097
Vodafone	154,547,726	94,284,185	156,798,754	151,516,314	148,434,883
AirtelTigo	2,811,206	2,479,842	2,234,062	2,589,368	2,270,195
Glo	207,205	255,839	274,538	259,395	321,341
Total	**411,532,003**	**353,852,969**	**399,071,404**	**407,394,054**	**440,393,516**
Total					
MTN	294,163,400	306,212,854	295,042,776	315,771,300	322,781,615
Vodafone	254,853,775	175,458,470	248,989,136	225,288,874	226,048,540
AirtelTigo	4,364,880	4,144,755	3,995,824	4,687,334	4,667,142
Glo	1,564,442	1,855,040	2,089,528	1,679,055	1,669,271
Total	**554,946,497**	**487,671,118**	**550,117,264**	**547,426,563**	**592,909,211**

Table 9: Average SMS per Subscription

	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Total SMS (Average)	184,982,166	162,557,039	183,372,421	182,475,521	197,636,404
Mobile Subscription (Average)	40,120,522	41,198,050	41,795,710	41,485,243	41,003,757
Average SMS per Subscription	4.6	3.9	4.4	4.4	4.8

Table 10: Mobile Data Subscriptions (Prepaid/Postpaid)

Mobile Data Subscriptions		Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Prepaid	Subscriptions	26,130,249	22,711,711	22,608,751	23,041,438	23,237,338
	Market Share %)	98.72%	99.00%	98.93%	98.95%	99.24%
Post-paid	Subscriptions	339,714	229,029	243,664	243,738	177,189
	Market Share %)	1.28	1.00%	1.07%	1.05%	0.76%
Total mobile data subscriptions		**26,469,963**	**22,940,740**	**22,852,415**	**23,285,176**	**23,414,527**

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

Mobile Operator	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Mobile data usage (MB)	175,611,369,727	205,383,959,042	229,082,453,700	249,013,730,795	296,738,560,185

Table 12: Mobile Internet Usage per Subscription (MB)

Mobile Operator	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Average Mobile data usage (MB)	62,634,127,708	68,461,319,681	76,360,817,900	83,004,576,932	98,912,853,395
Average Total Subscription	26,209,072	24,013,079	22,826,343	23,209,722	23,204,483
Average Data Usage per Subscription (MB)	2389.8	2851.0	3345.3	3576.3	4262.7

Table 13: Mobile Data Traffic (MB) per Operator

Mobile Operator	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
MTN	137,170,247,517	139,889,378,482	156,551,111,192	172,790,095,331	222,647,497,298
	78.11%	68.11%	68.34%	69.39%	75.03%
Vodafone	14,720,575,836	41,765,769,242	47,425,832,605	50,148,377,173	48,721,266,699
	8.38%	20.34%	20.70%	20.14%	16.42%
AirtelTigo	17,745,451,865	17,545,739,422	18,534,563,652	18,872,129,145	17,630,556,987
	10.10%	8.54%	8.09%	7.58%	5.94%
Glo	5,975,094,509	6,183,071,896	6,570,946,251	7,203,129,146	7,739,239,202
	3.40%	3.01%	2.87%	2.89%	2.61%
Total Industry Traffic (MB)	**175,611,369,727**	**205,383,959,042**	**229,082,453,700**	**249,013,730,795**	**296,738,560,185**

Table 14: Average Mobile Tariff per Service (GHp)

Tariff	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Average on-net mobile tariff	0.12	0.12	0.12	0.12	0.12
Average off-net mobile tariff	0.13	0.12	0.13	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	0.08	0.08	0.08	0.08	0.08

Table 15: BWA Data Subscriptions and Penetration

BWA Operator	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Subscription	42,192	53,101	53,263	53,043	50,714
Growth rate (%)	-3.36%	25.86%	0.31%	-0.41%	-4.39%
Net Additions	-1,465	10909	162	-220	-2329
Population	30,922,666	31,108,574	31,108,574	30,792,608	30,792,608
Penetration Rate (%)	0.14%	0.17%	0.17%	0.17%	0.16%

Table 16: Subscriptions per Broadband Wireless Access (BWA) Operator

BWA Operator	Subscription and Market Share	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Surfline	Subscription	40,462	43,511	43,462	42,848	41,123
	Market share (%)	95.90%	81.94%	81.60%	80.78%	81.09%
Busy			6,693	6,310	6,094	5,489
			12.60%	11.85%	11.49%	10.82%
Telesol	Subscription	1,730	1,725	2,435	3,045	3,106
	Market share (%)	4.10%	3.25%	4.57%	5.74%	6.12%
BBH	Subscription	-	1,056	1,056	1,056	996
	Market share (%)	-	1.99%	1.98%	1.99%	1.96%
BLU	Subscription	-	116			
	Market share (%)	-	0.22%			
Industry Total		**42,192**	**53,101**	**53,263**	**53,043**	**50,714**

Table 17: Data Traffic (MB) per Broadband Wireless Access (BWA) Operator

BWA Operator		Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Surfline	Data usage (MB)	4,539,650,270	4,875,666,810	5,182,843,180	5,643,384,650	5,031,694,350
	Market share (%)	73.47%	71.13%	74.33%	76.68%	76.08%
Busy	Data usage (MB)		1,297,511,257	1,237,829,479	1,165,766,895	1,045,337,772
	Market share (%)		19.15%	17.75%	15.84%	15.81%
BBH	Data usage (MB)	160,073,400	156,318,030	157,627,020	150,607,300	143,258,920
	Market share (%)	2.59%	2.28%	2.26%	2.05%	2.17%
BLU	Data usage (MB)	82,193,014	121,838,581			
	Market share (%)	1.33%	1.78%			
Telesol	Data usage (MB)	383,119,904	403,392,124	394,015,521	399,911,382	393,595,726
	Market share (%)	6.20%	5.88%	5.65%	5.43%	5.95%
Industry Total (MB)		**6,178,537,375**	**6,854,726,802**	**6,972,315,200**	**7,359,670,228**	**6,613,886,768**

Table 18: Internet Usage per BWA Subscriptions (MB)

BWA Operator	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Volume of Data Traffic (Average)	2,059,512,832	2,258,868,421	2,324,105,067	2,453,223,409	2,204,628,923
Subscription (Average)	41,873	54,968	53,313	52,843	51,526
Data Usage per Subscription (MB)	49,184.75	41,094.49	43,593.86	46,424.76	42,786.73

Table 19: Fixed Network Voice Subscriptions and penetration

Fixed Operator	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Vodafone	299,802	303,749	307,585	309,461	307,278
	97.44%	97.98%	97.59%	97.57%	97.46%
AirtelTigo	6,389	3,565	3,489	3,415	3,634
	2.08%	1.15%	1.11%	1.08%	1.15%
MTN	1,477	2,687	4,093	4,296	4,359
	0.48%	0.87%	1.30%	1.35%	1.38%
Total industry subscription	307,668	310,001	315,167	317,172	315,271
Population	30,922,666	31,108,574	31,295,599	30,792,608	30,792,608
Fixed Network Penetration Rate (%)	0.99%	1.00%	1.01%	1.03%	1.02%

Table 20: Fixed Network Volume of Traffic in Minutes

Traffic	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
On-net Fixed voice traffic	-	-	-	-	-
Off-net fixed voice traffic	8,838,739	9,318,844	9,357,301	8,868,159	9,600,469
Total Fixed Voice Traffic	8,838,739	9,318,844	9,357,301	8,868,159	9,602,502

Table 21: Fixed Network Minute of Use per Subscriptions

Traffic (Average)	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Total Fixed Voice Traffic	2,946,246	3,106,281	3,119,100	2,956,053	3,200,156
Subscription (Average)	304,998	310,119	310,312	316,775	314,614
Minutes of Use per Subscription (MoU)	9.7	10.0	10.1	9.3	10.2
Growth Rate	-3.88%	3.69%	0.35%	-7.15%	9.00%

Table 22: Fixed Broadband Data Subscriptions and Penetration

Fixed network operator	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
Vodafone	62,284	63,208	65,443	65,347	67,086
	80.87%	80.97%	72.67%	70.46%	58.99%
Airtel	700	674	658	660	649
	0.91%	0.86%	0.73%	0.71%	0.57%
MTN	14,038	14,186	23,951	26,741	45,987
	18.23%	18.17%	26.60%	28.83%	40.44%
Total fixed data subscription	77,022	78,068	90,052	92,748	113,722
Population	30,922,666	31,108,574	31,295,599	30,792,608	30,792,608
Fixed Data Penetration Rate (%)	0.25%	0.25%	0.29%	0.30%	0.37%

Table 23: Regional Distribution of FM Stations by Purpose as at the end of Q4 2021

Name of Regions	Public	Public (Foreign)	Community	Campus	Commercial
Ashanti	2	1	14	4	78
Bono	1	-	6	2	47
Bono East	2	-	4	-	24
Ahafo	-	-	1	-	11
Central	2	-	13	3	38
Eastern	2	-	13	1	34
Greater Accra	2	3	10	4	55
Northern	3	-	9	2	37
Savannah	3	-	4	-	4
North East	1	-	5	-	7
Upper East	2	-	9	3	20
Upper West	2	-	11	2	17
Volta	3	-	4	1	37
Oti	1	-	3	-	10
Western	2	1	8	2	70
Western North	3	-	-	-	21
Total	**31**	**5**	**114**	**24**	**510**

Table 24: Regional Distribution of FM Stations as at the end of Q4 2021

Name Of Regions	Authorized FM Stations	FM Stations In Operation
Ashanti	99	79
Bono	56	40
Bono East	30	26
Ahafo	12	8
Central	56	39
Eastern	50	38
Greater Accra	74	62
Northern	51	27
Savannah	11	8
North East	13	3
Upper East	34	22
Upper West	32	18
Volta	45	37
Oti	14	9
Western	83	56
Western North	24	17
Total	**684**	**489**

Table 25: Authorised TV Stations as at the end of Q4 2021

Type of Television Service	Authorised TV Stations		No. of TV Stations in Operation (Q4 2021)	No. of TV Stations not in Operation (Q4 2021)
	End of Q3 2021	End of Q4 2021		
Analogue Terrestrial Television	2	2	2	0
Digital Terrestrial Free-To-Air Television Programme Channel (Nationwide Coverage)	38	38	38	0
Digital Terrestrial Free-To-Air Television Programme Channel (Regional Coverage)	6	6	6	0
Digital Terrestrial Pay Television (Service only)	0	0	0	0
Digital Terrestrial Pay Television (Service and Frequency)	5	5	5	0
Digital Terrestrial Television (Network only)	0	0	0	0
Digital Terrestrial Radio Service on TV Multiplex	8	8	2	6
Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	3	3	3	0

Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet)	9	9	6	3
Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel)	63	68	48	20
Digital Terrestrial Television Additional Services (e.g. Teletext, etc.)	0	0	0	0
Digital Terrestrial Mobile Television Service (Stand-alone Authorisation)	0	0	0	0
Digital Cable Television	1	1	1	0
Television over Internet Protocol (Pay TV)	1	1	0	1
Subscription Management Service for a Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	1	1	1	0
Total	**137**	**142**	**112**	**30**

Source: NCA, 2021