NATIONAL COMMUNICATIONS AUTHORITY
REPUBLIC OF GHANA

COMMUNICATIONS INDUSTRY REPORT 2019

ABOUT THE REPORT

The Communications Industry Report (CIR) highlights key developments in the communications industry of Ghana between the five year periods from 2015 to 2019. The scope of the report focuses on mobile network operators, fixed networks operators, broadband wireless access providers, infrastructure tower companies, television and radio broadcasting services regulated by the National Communications Authority.

The report provides critical statistical data for policy makers, telecom analysts, consumers, academia, investors and other stakeholders to support decision-making. It is data-centric and combines concise year-on-year analysis of the trends in the industry with substantial use of tables, graphs and figures for easy understanding. The report is the product of data received from the various licensees and other relevant stakeholders in the communications industry.

The publication of the Communications Industry Report (CIR) is consistent with the National Communications Authority's mandate under section 26 (2)(a) of the 2008, Electronic Communications 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".

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CHAPTER 1

MOBILE CELLULAR SERVICES

1.0 Introduction

This chapter gives an overview of the mobile voice and data subscriptions, volume of voice and data traffic for all the mobile network operators in Ghana. There are four mobile network operators in Ghana, namely Vodafone, MTN, AirtelTigo[1] and Glo at the end of 2019.

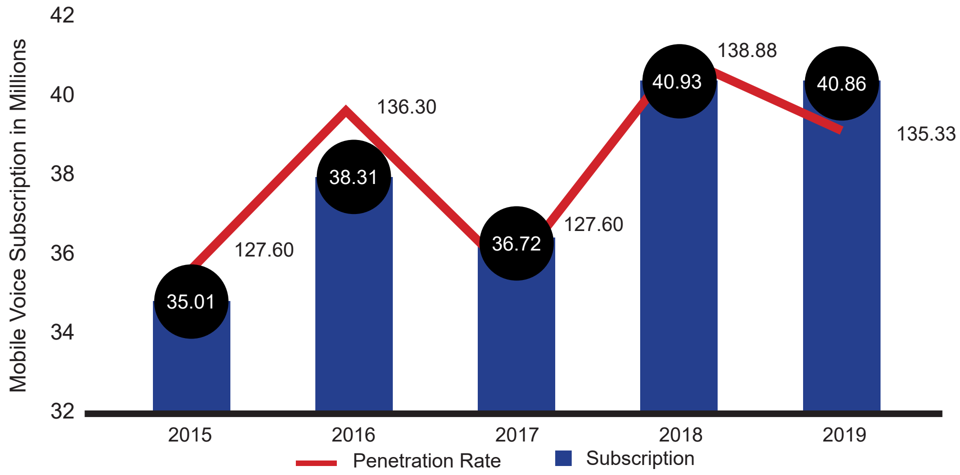
1.1 Mobile Voice

This section emphasizes on voice subscription, share per operator, net additions, post-paid and pre-paid subscriptions and the volume of traffic distributed by on net and off net calls.

1.1.1 Mobile Voice Subscriptions and Penetration Rate

Mobile voice subscriptions has been fluctuating over the period from 2015 to 2019 with a compound average growth rate (CAGR) of 3.14%. At the end of 2019, total mobile voice subscriptions stood at 40.86 million compared to 40.93 million in 2018, representing a decline of 0.19 % (Figure 1.1). Decline in mobile voice subscriptions was accompanied with a decline in the penetration rate from 138.88% in 2018 to 135.33% in 2019.

Figure 1.1: Mobile Voice Subscription and Penetration Rate (%)



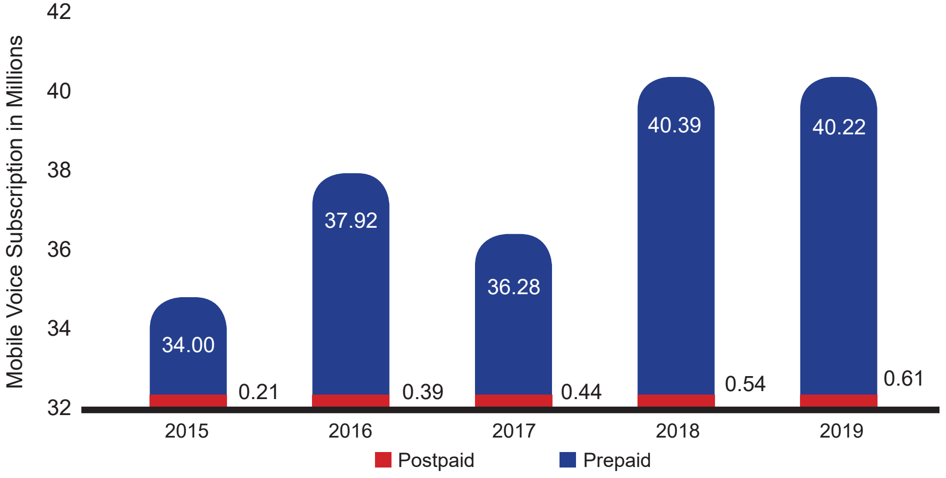
Source: NCA; Mobile Network Operators, 2019

1.1.2 Distribution of Prepaid and Postpaid Subscriptions in millions

In 2019, 98.43% of the total voice subscriptions were prepaid subscriptions while the remaining 1.57% were postpaid. In Figure 1.2, there was an increase in postpaid subscriptions but a reduction with respect to the prepaid subscriptions.

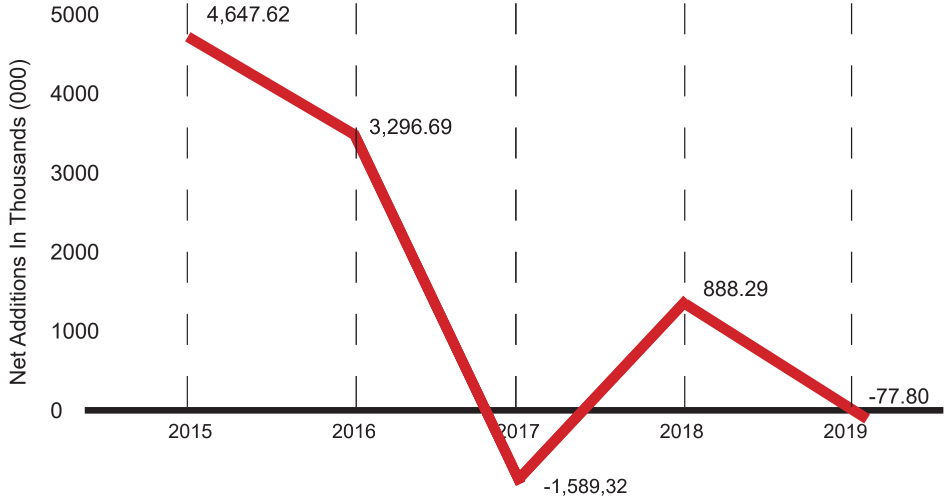
1. Airtel and Tigo merged into a single entity called AirtelTigo in October 2017. This report provides information on Airtel and Tigo separately for 2015 to 2017, but for 2018 and 2019 data is reported on the merged entity AirtelTigo only. Expresso's licence was revoked in March 2018 so data is provided for 2015 to 2017,if the data is available.

Figure 1.2: Distribution of Prepaid and Postpaid Subscriptions



Source: NCA; Mobile Network Operators, 2019

Figure 1.3: Net Additions in thousands



Source: NCA; Mobile Network Operators, 2019

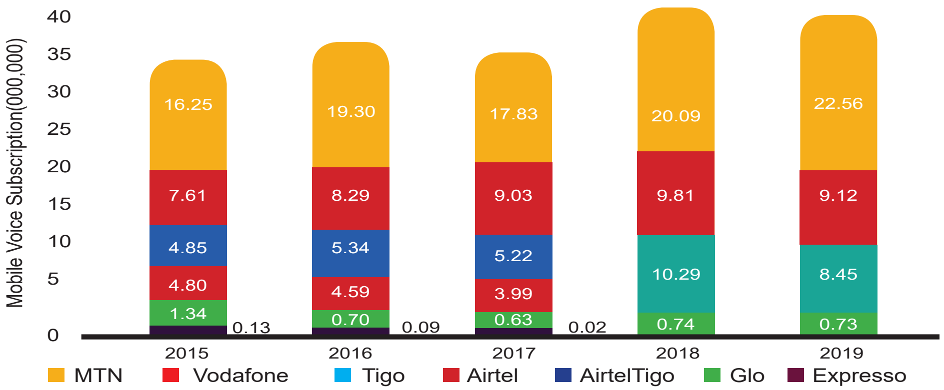
1.1.3 Net Additions

At the end of 2019, there was a reduction of 77,798 mobile voice subscriptions as against a 888,285 net addition in subscriptions in 2018. (Figure 1.3).

1.1.4 Mobile Voice Subscriptions per Operator

MTN registered 22.56 million voice subscriptions to its network at the end of 2019 recording a gain in subscription from 20.09 million in the previous year. Vodafone, the second largest in terms of subscriptions, recorded 9.12 million subscriptions, followed by AirtelTigo with 8.45 million subscriptions of the total voice subscriptions. Glo recorded 0.7 million subscriptions (Figure 1.4)

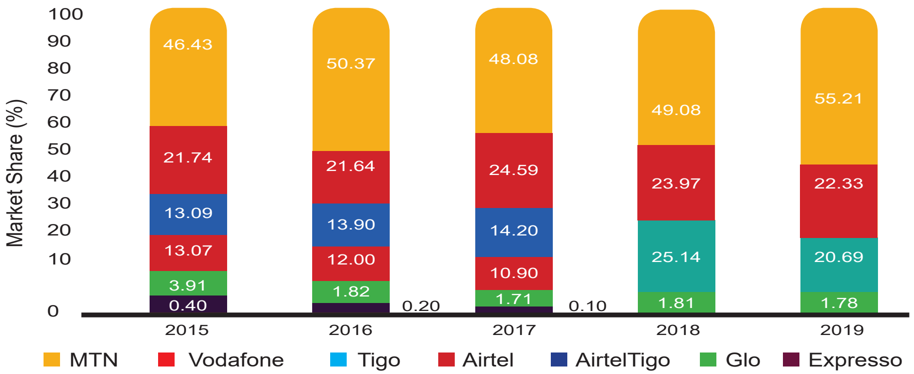
Figure 1.4: Mobile Voice Subscriptions per operator in millions



Source: NCA; Mobile Network Operator, 2019

In Figure 1.5 MTN was the largest mobile network operator in Ghana by subscriptions with a market share of 55.21% of the total subscriptions at the end of 2019. Vodafone was the second largest operator by subscriptions with a market share of 22.33%, followed by Airteltigo with 20.69% market share. Glo has the least subscriptions representing 1.78% of the total market share at end of 2019.

Figure 1.5: Share of Mobile voice subscriptions per operator (%)

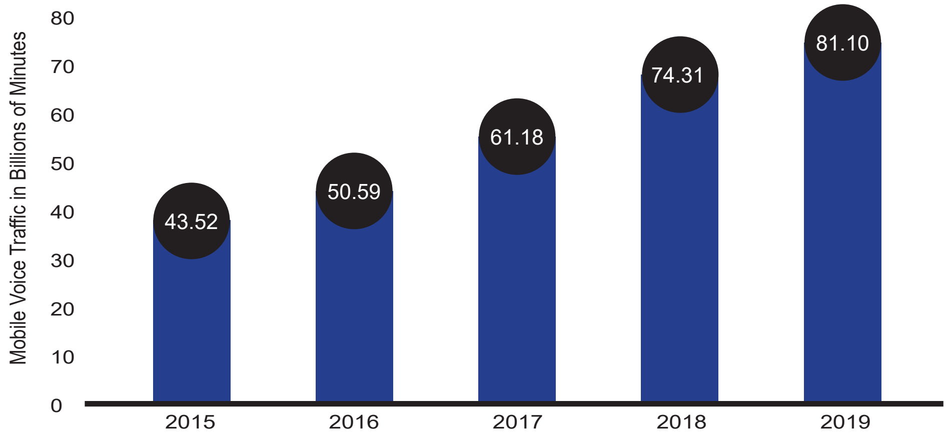


Source: NCA; Mobile Network Operator, 2019

1.1.5 Total Mobile Voice Traffic in Minutes

From 2015 to 2019, mobile voice traffic has grown with a compound average growth rate of 13.26%. In 2019, the total volume of voice call minutes generated was 81.10 billion minutes as compared to 74.31 billion minutes in the previous year 2018. The volume of traffic shows a continuous growth over the five year period as in Figure 1.6.

Figure 1.6: Mobile Voice Traffic in billions of minutes

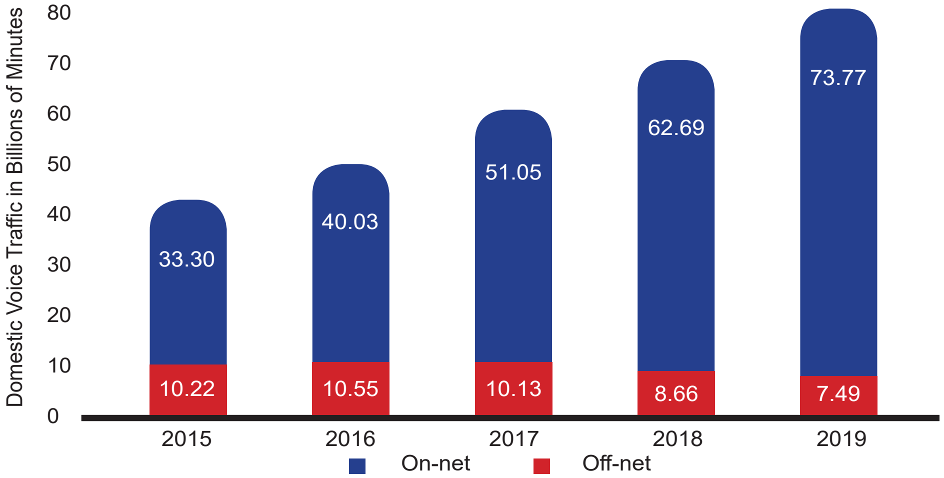


Source: NCA; Mobile Network Operators, 2019

1.1.6 Distribution of Off -net and On-net Traffic (Domestic)

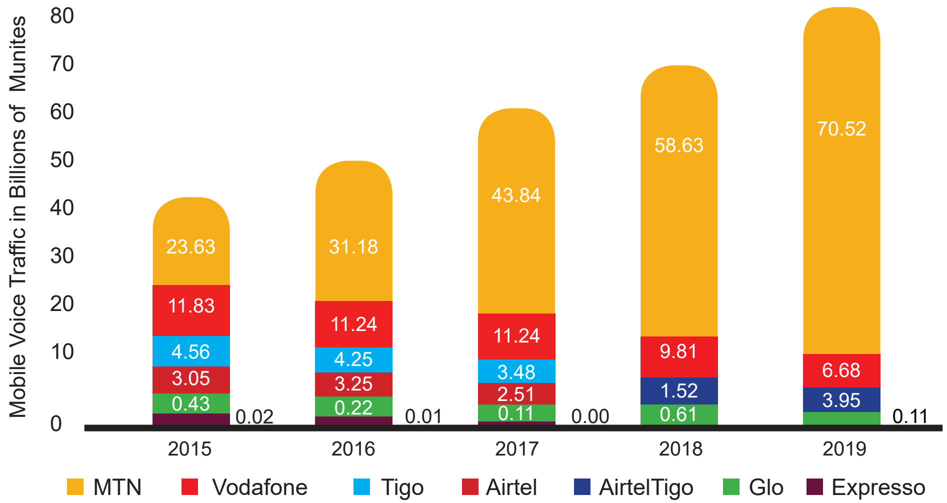
Total off-net domestic voice traffic generated was 7.49 billion minutes representing 9.22% of the total domestic traffic (Figure 1.7). The off-net traffic has been declining since 2017 however, the on-net traffic continues to experience an increase in volume. In Figure 1.7, on-net traffic accounted for 90.78% of the total domestic traffic with 73.77 billion minutes.

Figure 1.7: Distribution of On-net and Off-net Voice Traffic in Billions of Minutes



Source: NCA, Mobile Network Operators, 2019

Figure 1.8: Volume of Voice Traffic per Operator in Billions of Minutes



Source: NCA; Mobile Network Operators, 2019

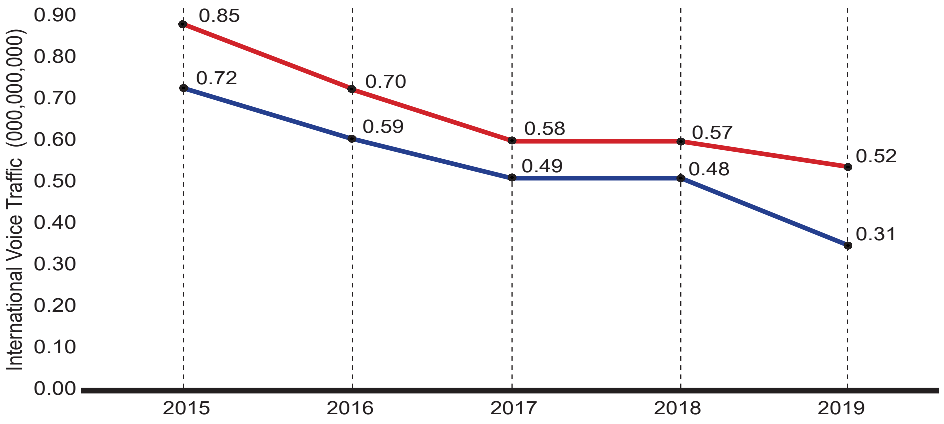
1.1.7 Mobile Voice Traffic per Operator

MTN subscriptions generated 70.52 billion minutes (86.95%) of the total voice traffic in the year 2019 with the remaining 13.05% generated by Vodafone, AirtelTigo and Glo (Figure 1.8). Vodafone subscriptions recorded a 6.68 billion minutes of voice traffic, AirtelTigo also recorded 3.95 billion minutes of voice traffic in 2019. Glo subscriptions generated 0.11 billion minutes of the voice traffic.

1.1.8 Mobile Voice Traffic (International)

Total International calls have been decreasing since 2015. It fell from 1.57 billion minutes in 2015 to 0.83 billion minutes in 2019. In 2019, outgoing international voice traffic decreased to 0.52 billion minutes from the previous year's figure of 0.57 billion minutes. Incoming international voice traffic also recorded a decrease from the previous year's figure of 0.48 billion minutes to 0.31 billion minutes in the year under review (Figure 1.9).

Figure 1.9: Distribution of International Voice Traffic in Billions of Minutes



Source: NCA, Mobile Network Operator

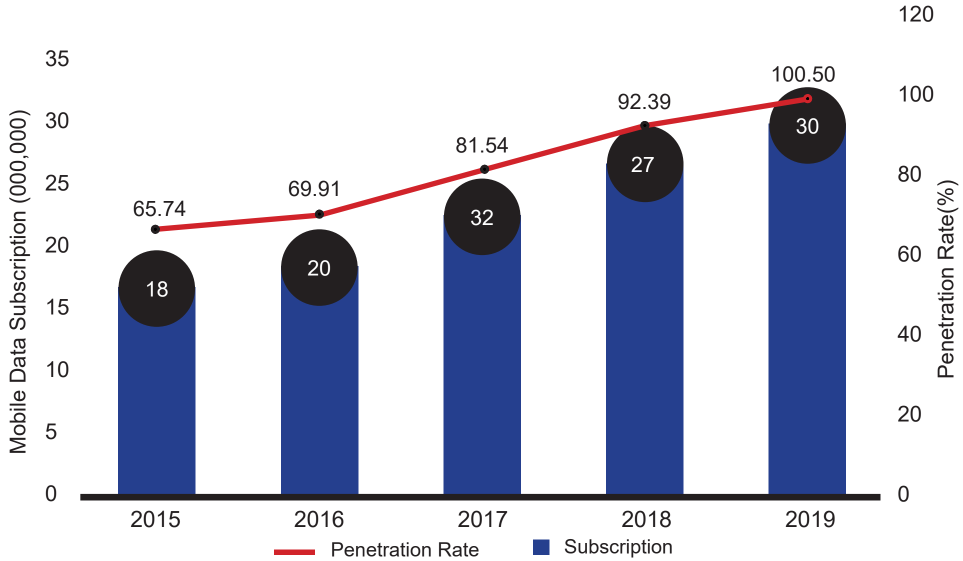
1.2 MOBILE DATA

This includes mobile data subscriptions and penetration rate, mobile data subscriptions per operator and volume of data generated by the operators. The information covers the four mobile network operators namely MTN, Vodafone, AirtelTigo and Glo.

1.2.1 Mobile Data Subscriptions and Penetration rate (%)

Mobile data has seen a continuous increase in subscription since 2015. Mobile data subscription has grown exponentially from 17.92 million in 2015 to 29.96 million in 2019 with a CAGR of 10.83%. In 2019, mobile data subscription grew by 11.42% from 26.93 million in the previous year to 29.96 million (Figure 1.10).

Figure 1.10: Mobile Data Subscriptions and Penetration rate (%)

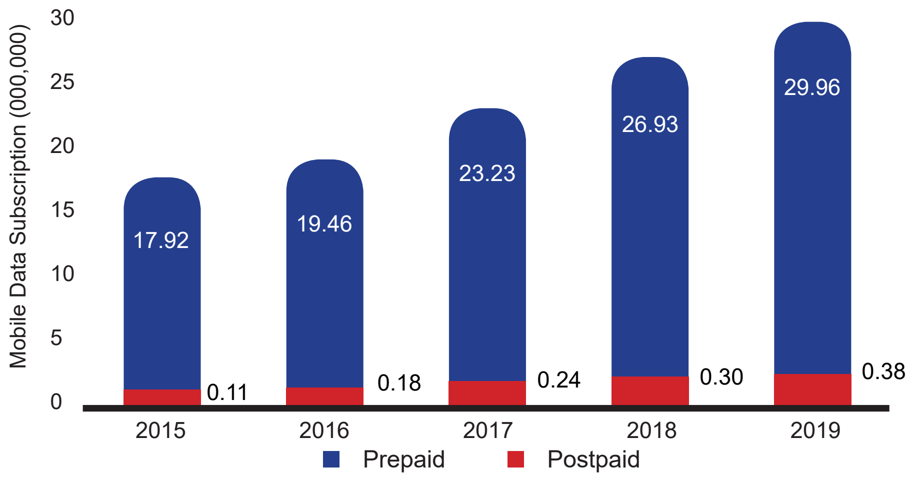


Source: NCA; Mobile Network Operator, 2019

1.2.2 Distribution of Postpaid and Prepaid Data Subscriptions

Mobile data subscriptions is dominated by prepaid subscriptions as compared to postpaid subscriptions (Figure 1.11).

Figure 1.11: Distribution of Postpaid and Prepaid Data Subscriptions

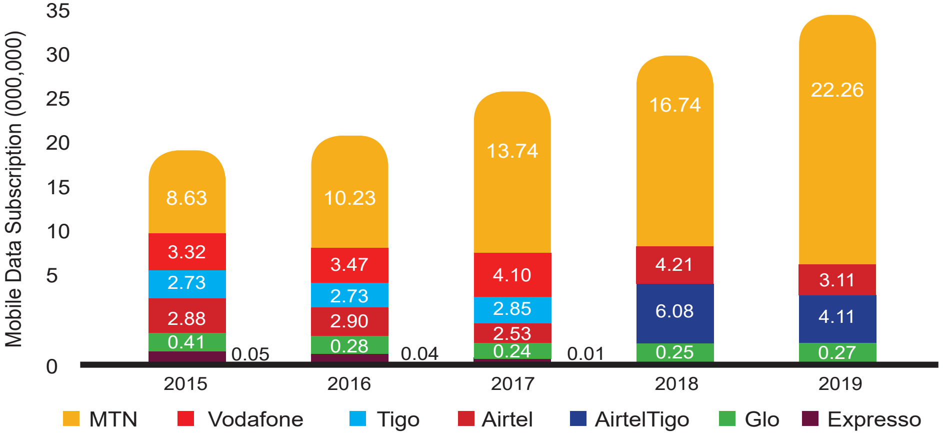


Source: NCA; Mobile Network Operator, 2019

1.2.3 Mobile data subscriptions per operator

MTN, the largest mobile network operator in Ghana by subscription, recorded a total of 22.26 million subscriptions, followed by AirtelTigo, which recorded 4.11 million subscriptions. Vodafone's data subscriptions stood at 3.70 million and Glo recording 269,153 data subscriptions (Figure 1.12).

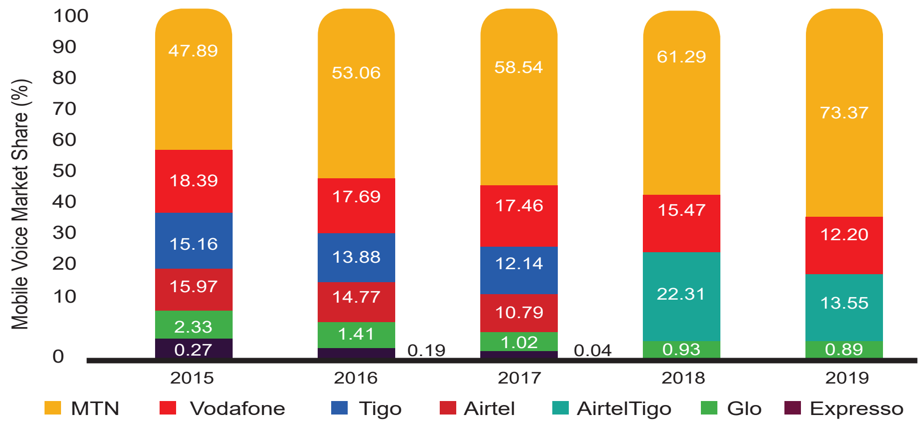
Figure 1.12: Mobile data subscriptions per operator



Source: NCA, Mobile Network Operators, 2019

In terms of market share, MTN is leading with 73.37% of total mobile data subscriptions, followed by Airteltigo with a market share of 13.55% and Vodafone coming in third position with 12.20% market share. Glo completes the list with 0.89% market share. (Figure 1.13).

Figure 1.13: Shares of mobile network operators (%)

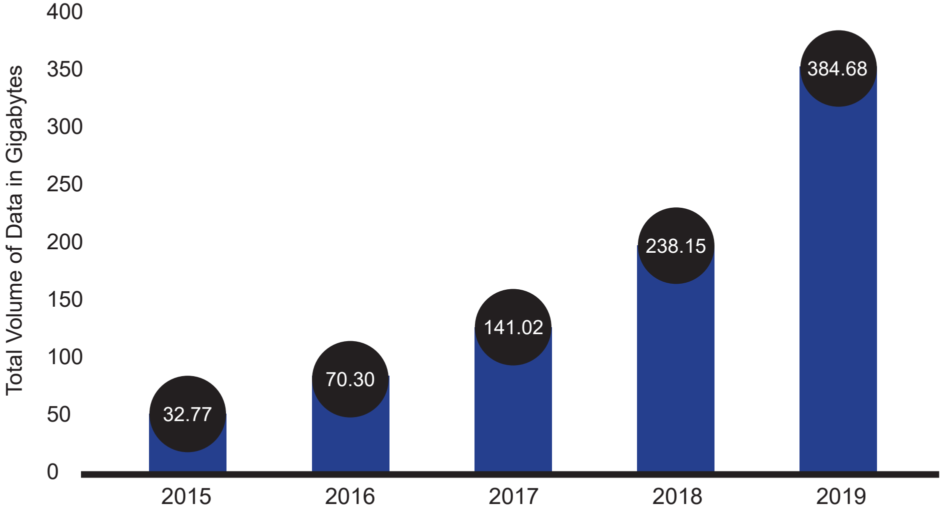


Source: NCA; Mobile Network Operator, 2019

1.2.4 Mobile Data Traffic

Mobile Data Traffic has experienced a continuous increase over the past five years. In 2015, total mobile data traffic generated was 32.77 million gigabytes (GB) as compared to 384.68 million gigabytes in 2019 with a CAGR of 63.65% as in Figure 2.14. Mobile Data Traffic increased from 238.15 million gigabytes in the year under review to 384.68 million gigabytes, representing a growth rate of 61.53%.

Figure 1.14: Mobile Data Traffic in Gigabyte (GB)

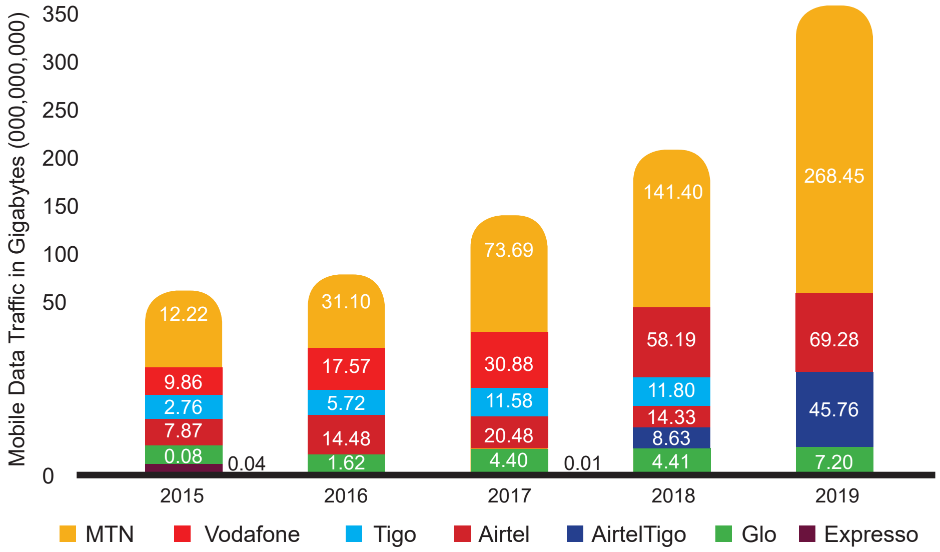


Source: NCA; Mobile Network Operators, 2019

1.2.5 Mobile data traffic in Gigabyte (GB) per operator

MTN generated 68.23% of the total mobile data traffic in 2019 with 262.45 million gigabytes. The second largest contributor, Vodafone, generated 69.28 million gigabytes data which corresponds to 18.01%. AirtelTigo generated 45.76 million gigabytes representing 11.90% whilst Glo generated 7.20 million gigabytes of data accounting for 1.87% of the total data traffic generated in the year under review (Figure 1.15).

Figure 1.15: Mobile data traffic in Gigabyte (GB) per operator



Source: NCA; Mobile Network Operators, 2019

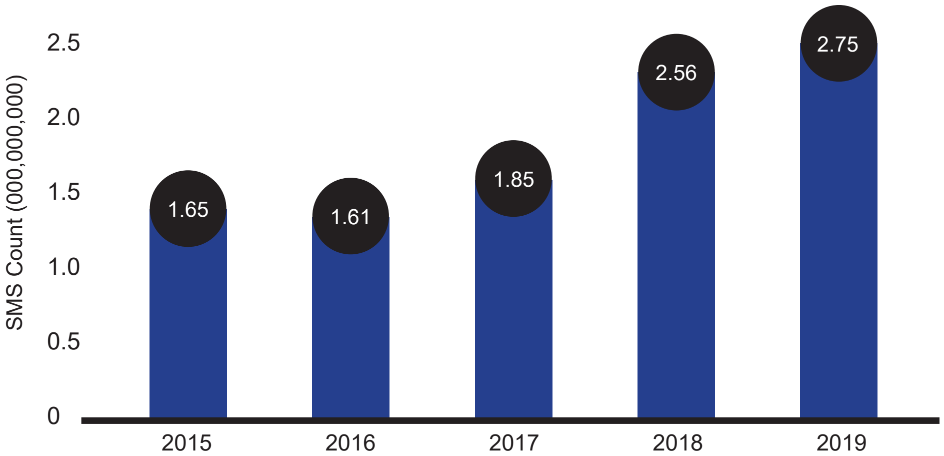
1.3 SHORT MESSAGING SERVICE (SMS)

This part of the report deals with total SMS counts, SMS per operator as well as on-net and off-net SMS. It covers the four mobile network operators MTN, Vodafone, AirtelTigo and Glo.

1.3.1 Distribution of Short Messaging Service (SMS)

In Figure 1.16, the total Short Messaging Service (SMS) counts at the end of 2019 was 2.75 billion, indicating an increase in SMS traffic from 2015 when it recorded 1.65 billion SMS. SMS counts increased by 7.46%, from 2.56 billion in the previous year to 2.75 billion in 2019.

Figure 1.16: Distribution of On-net and Off-net Voice Traffic in Billions of Minutes



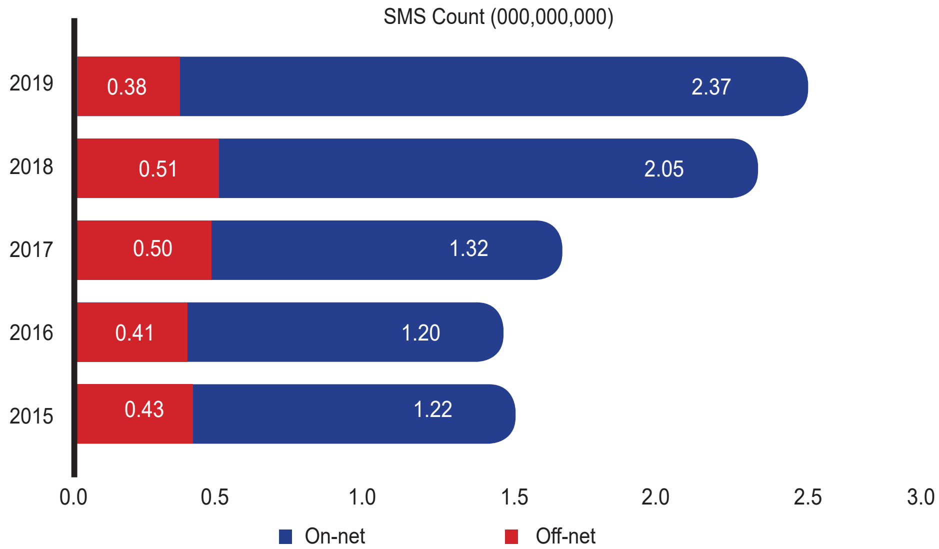
Source: NCA; Mobile Network Operators, 2019

1.3.2 Distribution of On-net and Off-net SMS Counts

On-net SMS counts recorded a rise from 2.05 billion in 2018 to 2.37 billion in the year under review, representing a 15.51% increase. On-net SMS makes up 86.13% of the total domestic SMS generated.

Off-net SMS counts accounted for 13.87% of the generated SMS count in 2019 with 0.38 billion SMS. (Figure 1.17).

Figure 1.17: Distribution of On-net and Off-net SMS Counts

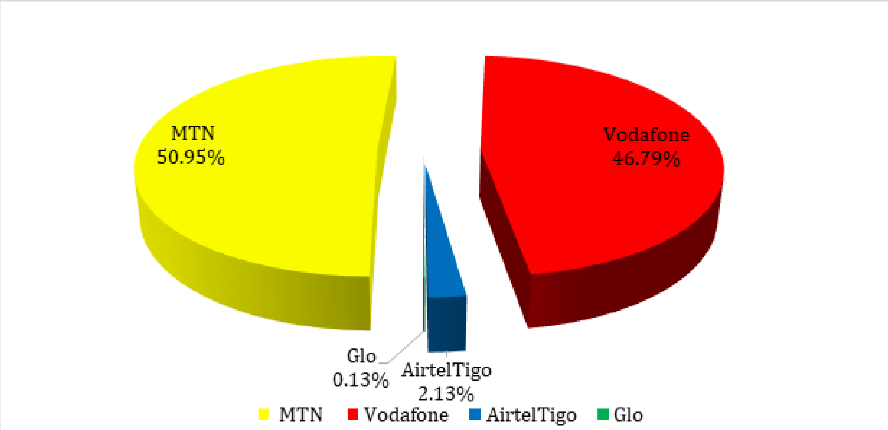


Source: NCA; Mobile Network Operators, 2019

1.3.3 Total SMS Counts per Operator

From Figure 1.18, MTN generated 50.95% (1.40 billion) of the SMS counts in 2019, with Vodafone accounting for 46.79% (1.29 billion). AirtelTigo recorded 2.13% (0.06 million) SMS counts and Glo with 0.13% (0.04 billion) of total SMS counts.

Figure 1.18: Share of SMS Counts per operator



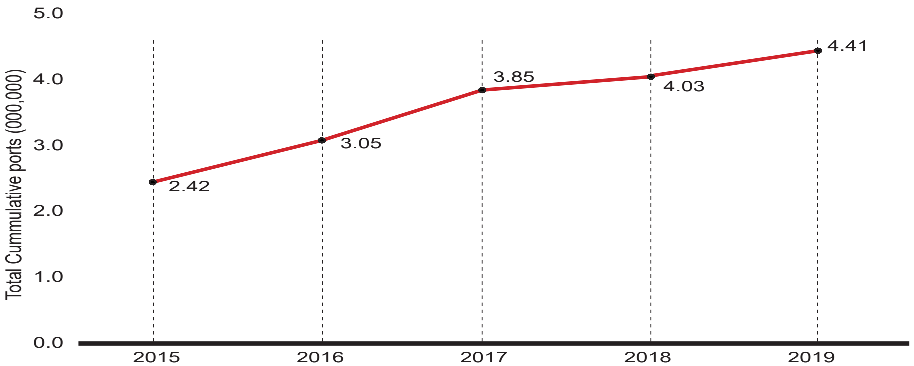
Source: NCA; Mobile Network Operators, 2019

1.4 Mobile Number Portability

Mobile Number Portability (MNP) is a mobile telecom service that allows mobile network subscribers to change mobile network service provider while retaining the same mobile phone number. Mobile Number Portability was introduced in Ghana in July 2011.

At the end of 2019, a total of 4.41 million mobile phone numbers have been ported in Ghana, representing 10.79% of the total mobile subscriptions. In the year 2019 alone, a total of 384,558 numbers were ported from one network to the other. (Figure 1.19).

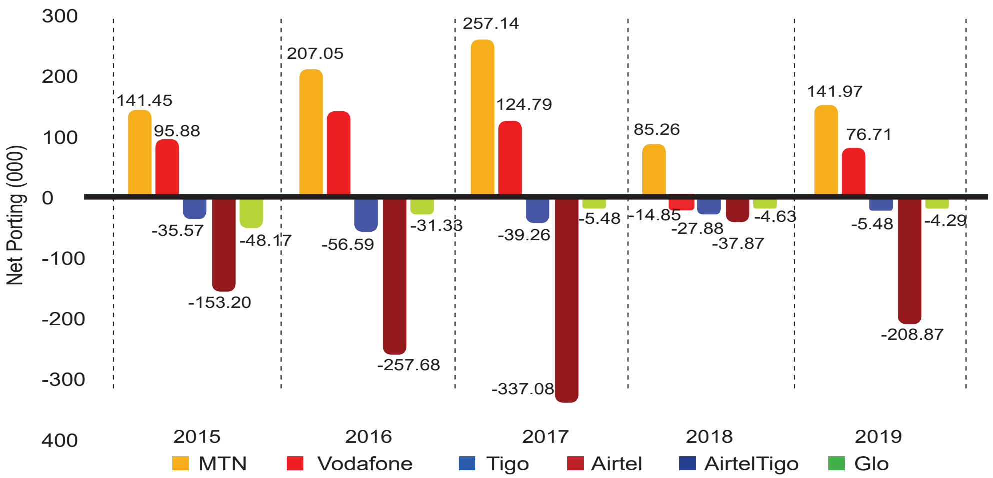
Figure 1.19: Cumulative Number of Ports in Millions



Source: NCA; Porting XS, 2019

From Figure 1.20, comparing the port out and port in for each operator, it is observed that MTN continues to gain from the porting activity on its network. At the end of 2019, MTN gained 141,970 ports with Vodafone gaining 76,710 subscriptions. The rest of the operators lost subscriptions especially Airtel with 208,868 subscriptions in 2019.

Figure 1.20: Net porting per operator in thousands



CHAPTER 2

FIXED NETWORK SERVICES

2.0 Introduction

This Chapter covers the fixed network operations in Ghana. There are three operators licenced to serve the populace with fixed network services namely Vodafone, Airtel (Now AirtelTigo) and MTN. This section however covers Vodafone and AirtelTigo only, based on data availability. MTN did not submit data as requested and the Authority is taking steps to sanction MTN in accordance with the law and the terms and conditions as stated in the license issued.

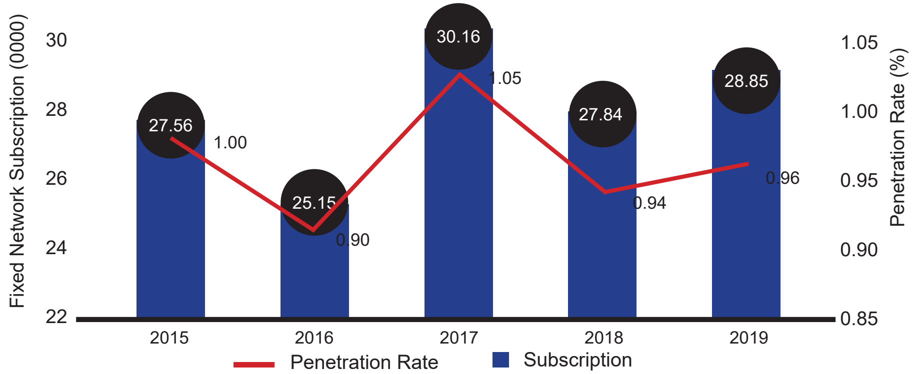
2.1 Fixed Voice

This sub-section looks at the total fixed voice subscriptions, penetration rate (%) and market share per operator as well as the total fixed voice traffic.

2.1.1 Fixed Voice Subscriptions and Penetration Rate (%)

Between the five-year period from 2015 to 2019, fixed voice subscriptions has experienced a fluctuation, recording its highest subscriptions in 2017 with a subscription of 301,551(Figure 2.1). Fixed Voice subscriptions at the end of 2019 was 288,531 indicating an increase (3.65%) from 278,379 in 2018. The penetration rate of fixed voice subscriptions keeps fluctuating between 0.90% and 1.00%. In the year 2019, the penetration rate was 0.96% as represented in Figure 3.1.

Figure 2.1: Fixed Voice Subscriptions and Penetration Rate (%)

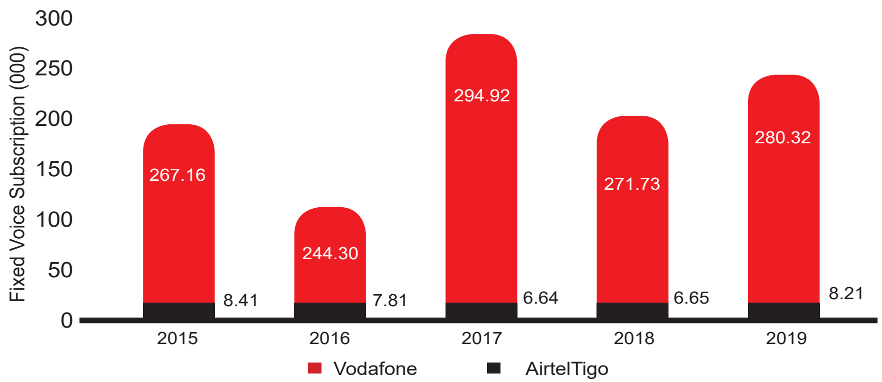


Source: NCA; Fixed Network Operator, 2019

2.1.2 Fixed Voice Subscriptions per Operator

Vodafone subscriptions dominated the market with 280.32 thousand subscriptions. AirtelTigo ended the year with subscriptions of 8.21 thousand. Both Operators recorded an increase in subscriber base as compared to 2018 subscriptions.

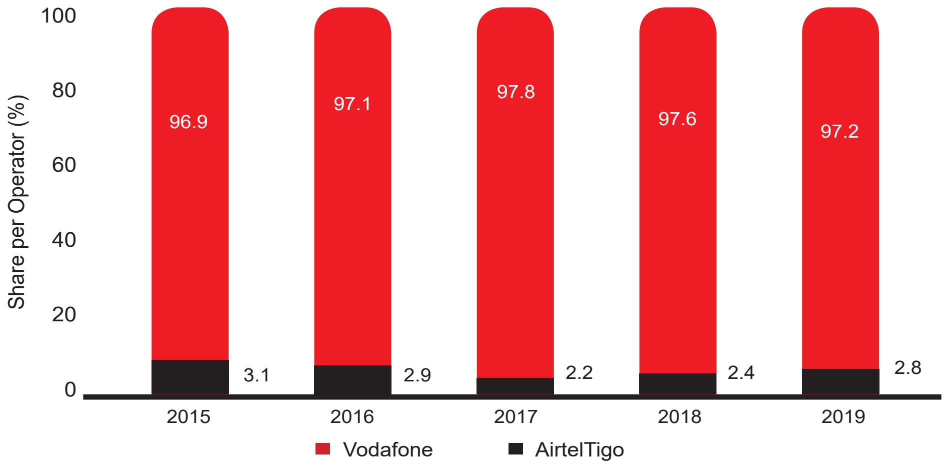
Figure 2.2: Fixed Voice Subscriptions per operator in thousands



Source: NCA; Fixed Network Operator, 2019

Vodafone subscription represented 97.15% of the fixed voice market with AirtelTigo covering 2.85% of the market, this is illustrated in the figure below.

Figure 2.3: Share per operator (%)

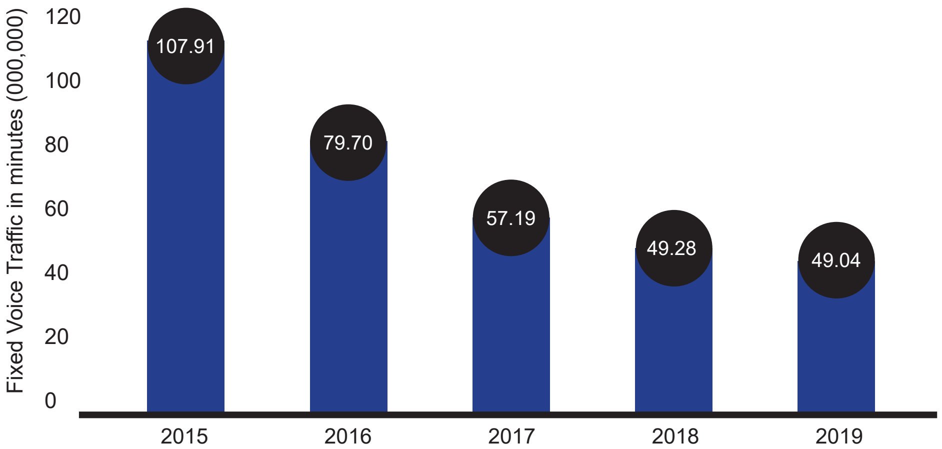


Source: NCA; Fixed Network Operator, 2019

2.1.3 Fixed Voice Traffic in Minutes

Fixed voice traffic has declined from 107.91 million minutes in 2015 to 49.04 million minutes in 2019. Traffic generated from fixed voice subscriptions in 2019 was 49.04 million minutes compared to 49.28 million minutes in the previous year, representing a decline of 0.48% (Figure 2.4).

Figure 2.4: Fixed Voice Traffic in Million Minutes



Source: NCA; Fixed Network Operator, 2019

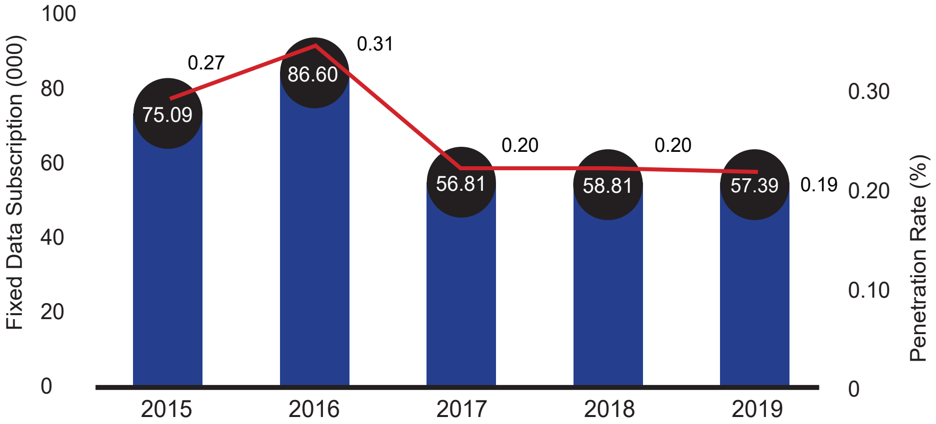
2.2 Fixed Data

This section provides information on subscription to fixed broadband services provided in the country.

2.2.1 Fixed Data Subscriptions and Penetration Rate (%)

Fixed data subscriptions fell from 58.81 thousand in 2018 to 57.39 thousand in 2019 representing a decline rate of 0.02% (Figure 2.5). From 2018 to 2019, there was a reduction of 1,415 subscriptions during that period.

Figure 2.5: Fixed Data Subscription and Penetration Rate (%)

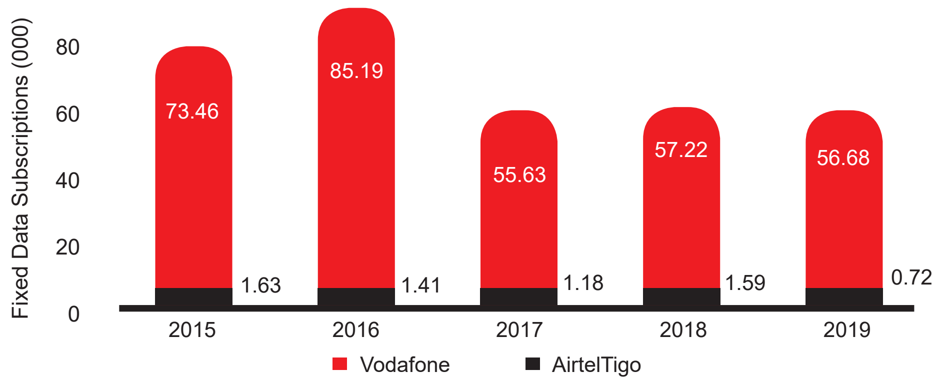


Source: NCA; Fixed Network Operator, 2019

2.2.2 Fixed Data Subscription per operator

Fixed data subscription has been fluctuating over the past five years. At the end of 2019, Vodafone's subscriber base was 56.68 thousand whilst Airtel recorded 0.72 thousand subscriptions.

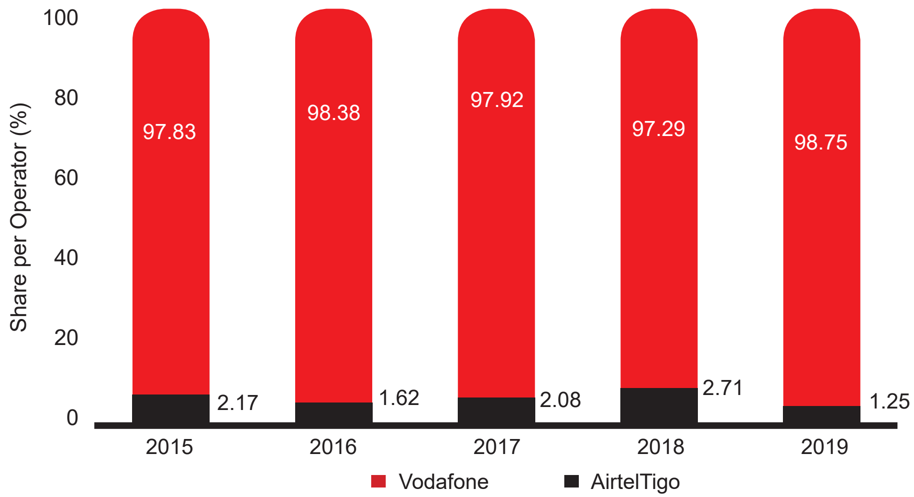
Figure 2.6: Fixed Data Subscriptions per operator in thousands



Source: NCA; Fixed Network Operator, 2019

Over the five-year period (2015 - 2019), Vodafone has dominated the fixed broadband market as compared to AirtelTigo. Vodafone covered 98.75% of the market whilst AirtelTigo presented the remaining 1.25%.

Figure 2.7: Share of fixed data subscription (%)



Source: NCA; Fixed Network Operator, 2019

CHAPTER 3

BROADBAND WIRELESS ACCESS (BWA)

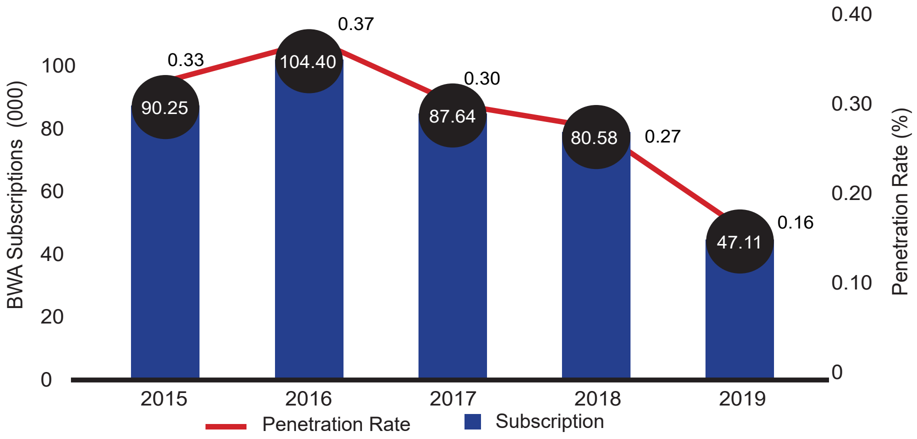
3.0 Introduction

This chapter gives an overview of Broadband Wireless Access (BWA) operators in Ghana. There are five (5) BWA service providers namely; Broadband Home, Blu Communications, Busy Internet, Surfline and Telesol. The chapter further provides data on subscriptions and volume of traffic.

3.1 BWA Subscriptions and Penetration rate (%)

Over the five years period, BWA subscriptions experienced a steady decline from 90.25 thousand in 2015 to 47.11 thousand in 2019 with the exception of 2016 where it recorded an increase in subscription from the previous year's number. This implies a decline of compounded average growth rate of 12.19%. At the end of 2019, the penetration rate was at 0.16% which shows a decline from 0.27% in previous year (Figure 3.1).

Figure 3.1: BWA Subscriptions and Penetration rate (%)

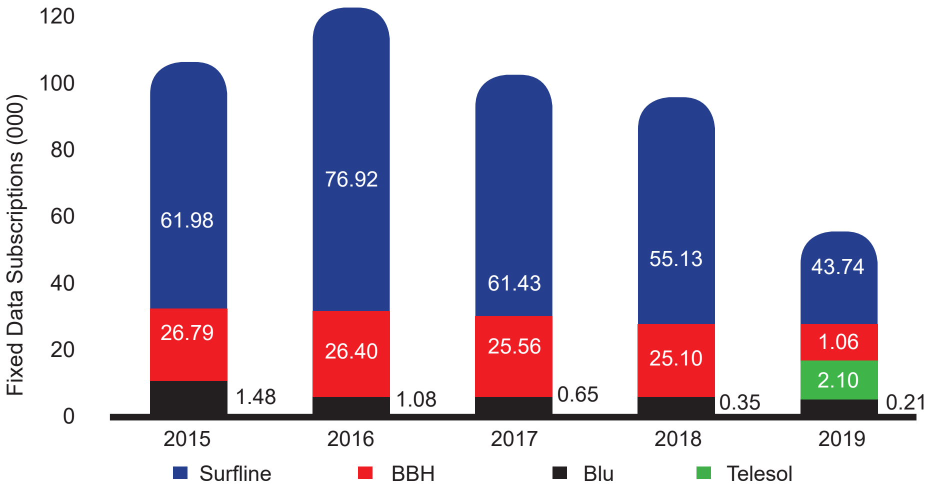


Source: NCA; BWA Operators, 2019

3.2 BWA Subscriptions per operator and Market Share (%)

Surfline is the largest broadband wireless access operator in Ghana by subscription, with a total subscriber base of 43.74 thousand followed by Telesol with 2.10 thousand subscriber base. BBH recorded 1.06 thousand subscription while Blu had a subscriber base of 0.21 thousand (Figure 3.2).

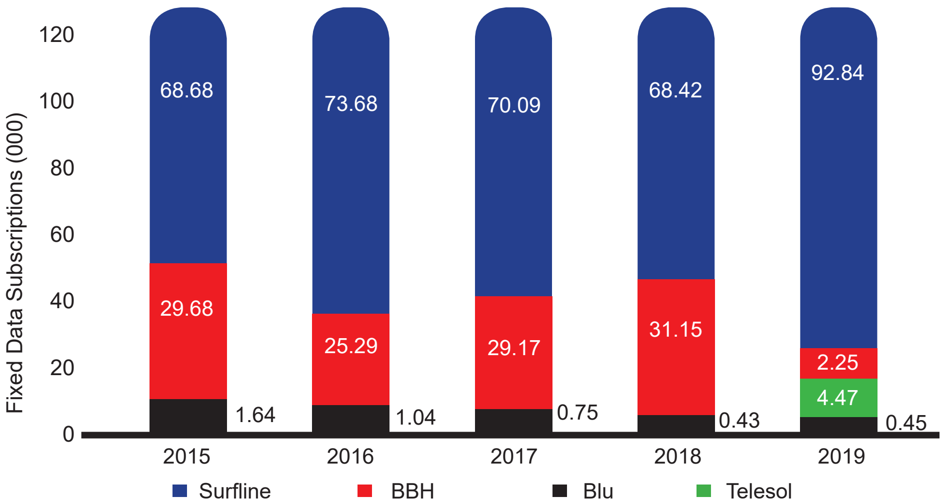
Figure 3.2: BWA Subscriptions per operator



Source: NCA; BWA Operators, 2019

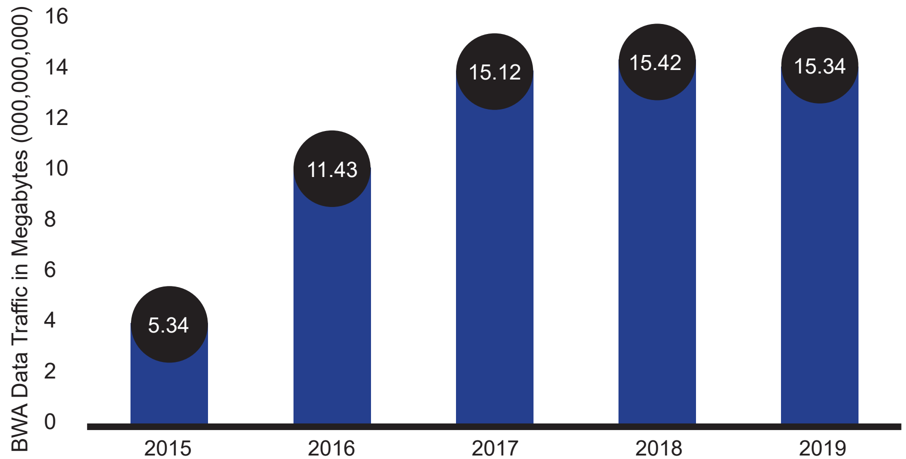
Surfline ended the year with a market share of 92.84% while Telesol the new entrant ended the year with 4.47% of the market share. Broadband Home (BBH) and Blu subscriptions recorded 2.25% and 0.45% of market share respectively (Figure 3.3).

Figure 3.3: Share of subscriptions (%)



Source: NCA; Broadband Wireless Access, 2019

Figure 3.4: BWA Traffic in Megabytes



Source: NCA; Broadband Wireless Access, 2019

3.3 BWA Data Traffic in Gigabyte (GB)

Total data traffic generated by the BWA's at the end of 2019 was 15.34 billion megabytes from 15.42 billion megabytes in the previous year. Over the past five years, data generated by the BWA's has risen from 5.34 billion megabytes in 2015 to 15.34 billion megabytes in 2019. However, within the five year period, it was at its peak in 2018 with 15.42 billion megabytes as illustrated in Figure 3.4.

CHAPTER 4

BROADCASTING

4.0 Introduction

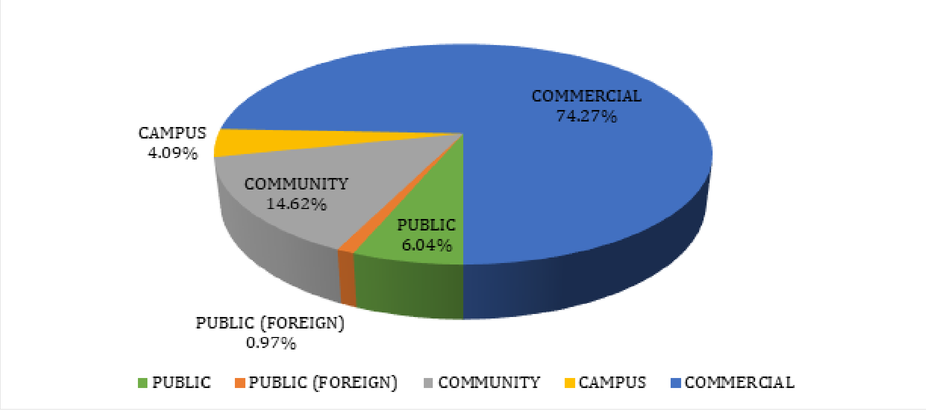
This Chapter reports on the Frequency Modulation (FM) and Television (TV) broadcasting in Ghana. It covers authorization, operational and non-operational stations in the broadcasting space.

4.1 Frequency Modulation (FM)

4.1.1 Authorised FM Radio Stations in Ghana

At the end of 2019, the total number of authorized FM stations in Ghana was 513 as compared to 487 in 2018. Most authorised FM Stations (381 out of 513) are Commercial FM Stations representing 74.27% of the total authorized FM Stations while the Public (foreign) FM Stations are the least with 5 stations representing 0.97% (Figure 4.1)

Figure 4.1: Distribution of Authorised FM Stations by categories in Ghana as at the end of 2019

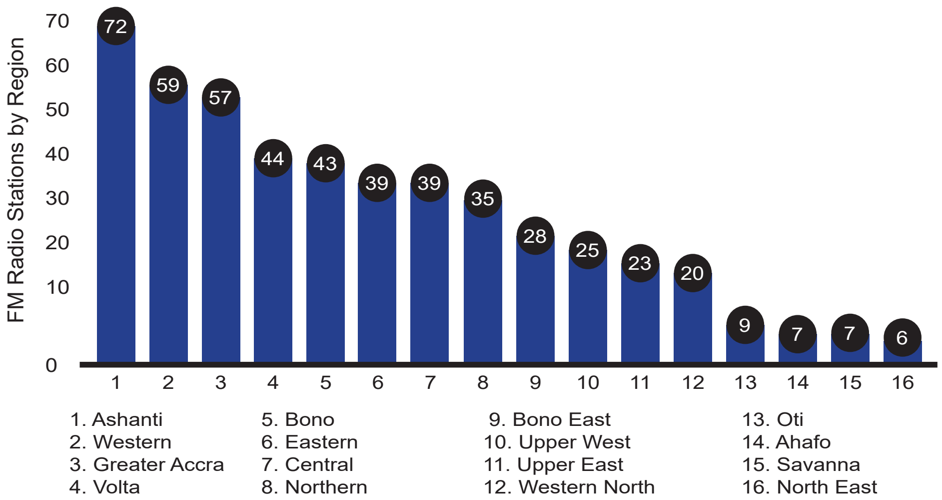


Source: NCA, 2019

4.1.2 Regional Breakdown of FM Authorisation

With the creation of six new regions, the Ashanti region (72) now has the highest number of authorized FM Stations with North East (6) having the least number of FM Stations in Ghana (Figure 4.2).

Figure 4.2: Regional Breakdown of Authorised FM Station

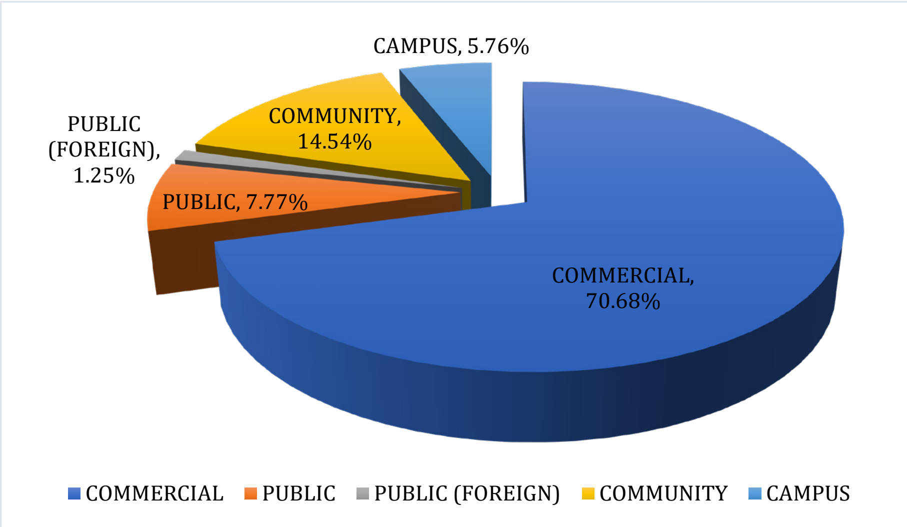


Source: NCA, 2019

4.1.3 Operational FM Stations

There were 399 operational FM Stations in Ghana at the end of 2019, with 70.68% of them being Commercial Radio stations. Fifty-eight of them are Community Radio stations (14.54%), 7.77% are Public Radio Stations, Campus Radio stations make up 5.76% (23 Stations) of the operational FM stations and 1.25% (5 Stations) were Public (Foreign) Radio Stations (Figure 4.3).

Figure 4.3: Distribution of Types of Operational FM Stations in Ghana



Source: NCA, 2019

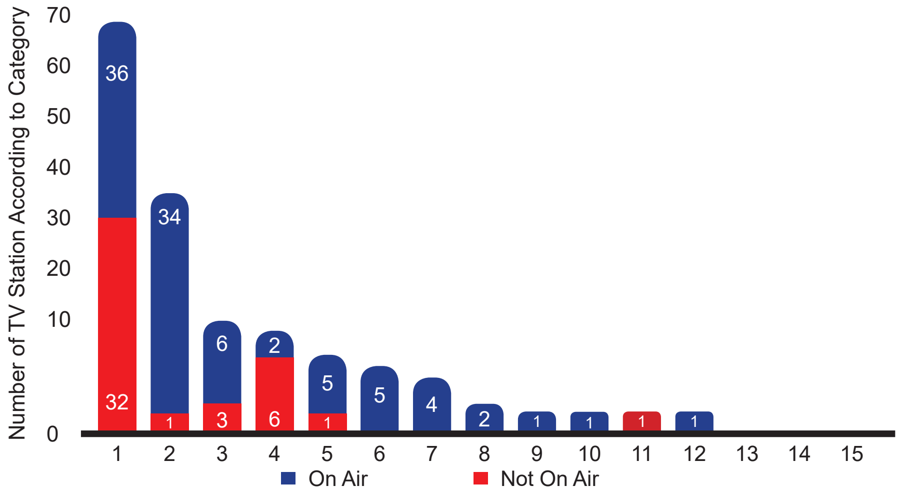
4.2 Television (TV) Broadcasting

4.2.1 Types of Operating and Non-Operating TV Stations

At the end of 2019, a total of 141 television (TV) stations had been authorised to operate in the country. Out of the 141 authorised television stations, 97 were operational, and the remaining 44 stations were yet to commence operations. The authorised TV stations are grouped into fifteen (15) categories as presented in (Figure 4.4).

7. Terrestrial television is a type of television broadcasting in which the television signal is transmitted by radio waves from the terrestrial (earth-based) transmitter of a television station to a receiver having an antenna.
8. Satellite television is a type of television programming to viewers by relaying it from a communication satellite orbiting the Earth directly to the viewer's location.
9. Internet Protocol television (IPTV) is the delivery of television content over Internet Protocol (IP) networks and requires payment of subscription fees.
10. Cable TV Broadcasting is the system of delivering television programming to consumers via radio frequency (RF) signals transmitted through coaxial cables, or in more recent systems, light pulses through fibre-optic cables and requires the payment of subscription fees.

Figure 4.4: Types of Operating and Non-Operating TV Stations

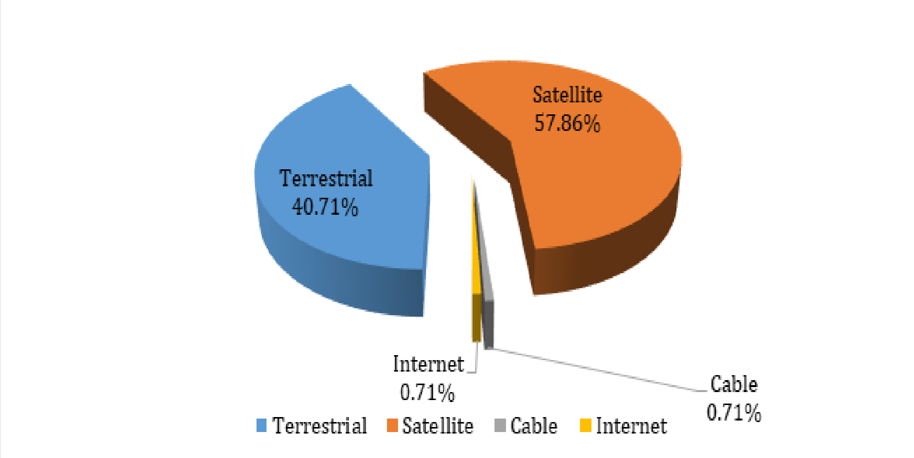


1. Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel)
2. Digital Terrestrial Free-To-Air Television Programme Channel (Nationwide Coverage)
3. Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet)
4. Digital Terrestrial Radio Service on TV Multiplex
5. Digital Terrestrial Free-To-Air Television Programme Channel (Regional Coverage)
6. Digital Terrestrial Pay Television (Service and Frequency
7. Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)
8. Analogue Terrestrial Television
9. Digital Terrestrial Pay Television (Service only)
10. Digital Cable Television
11. Television over Internet Protocol (Pay TV)
12. Subscription Management Service for a Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)
13. Digital Terrestrial Television (Network only)
14. Digital Terrestrial Mobile Television Service (Stand-alone Authorisation)
15. Digital Terrestrial Television additional Services (eg. Teletext, etc)

Source: NCA, 2019

4.2.2 Platforms for TV Transmission

Television Broadcasting is delivered through four (4) mediums in Ghana that is the Terrestrial , Satellite , Internet and Cable. Most authorized TV Stations are licensed to transmit via Satellite (57.45%) followed by Terrestrial (39.01%). Cable and Internet transmissions are 0.71% each. As at the end of 2019, two (2) TV Stations were using only analogue technology to transmit (Figure 4.5). Thirty-five TV stations had migrated to the use of digital technology for broadcasting transmission, although 15 of these 35 stations simulcast (in analogue and digital).

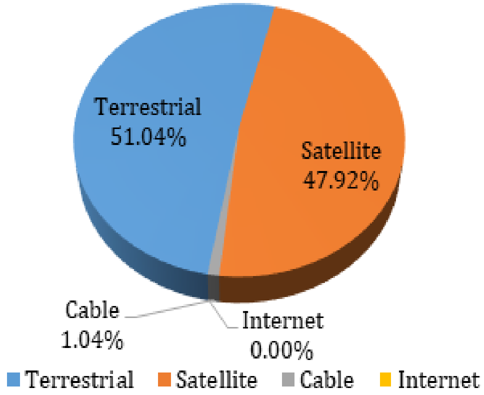


Source: NCA 2019

4.2.3 TV Stations in operation

Ninety-seven (97) out of the 141 TV Stations were operational as at the end of 2019. Forty-nine (50.52%) of the 97 operational TV Stations are broadcasting via the terrestrial mode whilst 47 of them broadcast via Satellite (48.45%). There was one (1) Cable Television operator but none for the internet mode of transmission (Figure 4.6).

Figure 4.6: TV Stations in operation by mode of Transmission



Source: NCA 2019

4.2.4 Pay TV Services

As at the end of 2019, 290,746 subscribers were served with the pay TV services. Out of this number, 290,180 subscribers are residential subscribers and the remaining 566 are business subscribers. Multichoice Ghana Ltd has the highest number of subscriptions as compared to the other service providers.

11. Simulcast is a simultaneous transmission of the same programme in analogue and digital mode.

12. Television Broadcasting Service comprising of a bouquet of services provided over a satellite transponder and which requires television viewers to pay a subscription fee to watch the television service.

CHAPTER 5

TOWER INFRASTRUCTURE

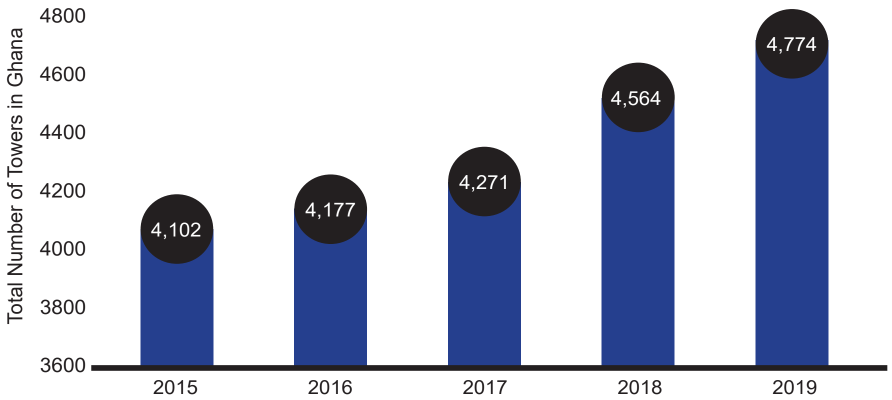
5.0 Introduction

This chapter provides an overview of the tower infrastructure companies in Ghana. Helios Tower Ghana Managed Services Limited (HTG) Eaton Tower Ghana Limited and, American Tower Company (ATC) were the three tower companies operating in Ghana as at the end of 2019. However, the report covers Helios Tower Ghana (HTG) and American Tower Company (ATC).

5.1 Total Number of Towers in Ghana

Total number of towers managed by the three tower companies in Ghana as at the end of 2019 was 4,774

Figure 5.1: Total Number of Towers in Ghana (2015 to 2019)



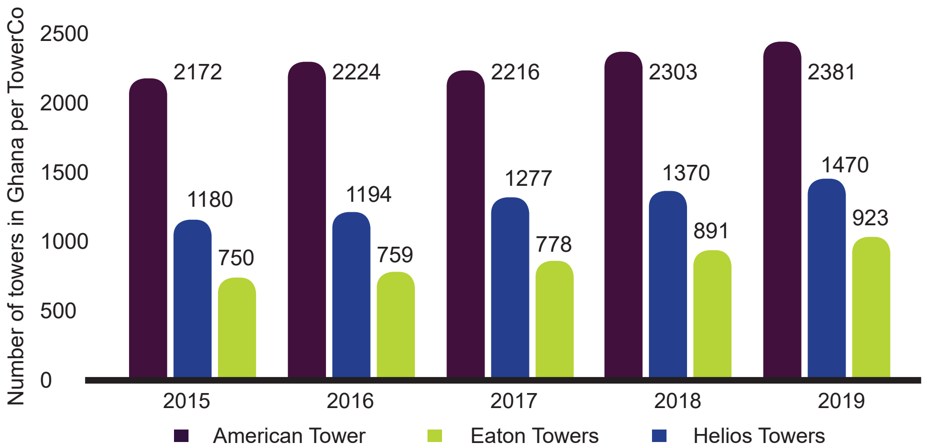
Source: NCA; Tower Companies, 2019. [1]

13. The infrastructure tower companies are communications entities that have been given the authorisation by NCA to build, erect, construct or otherwise acquire and own communication towers that are open to sharing by licensed network providers.

5.2 Total number of towers per Tower Company

American Tower Company is the largest tower company managing a total of 2,381 towers whilst Eaton towers had 1,470 towers under its purview. Helios towers manages 923 towers.

Figure 5.2: Number of towers per TowerCo

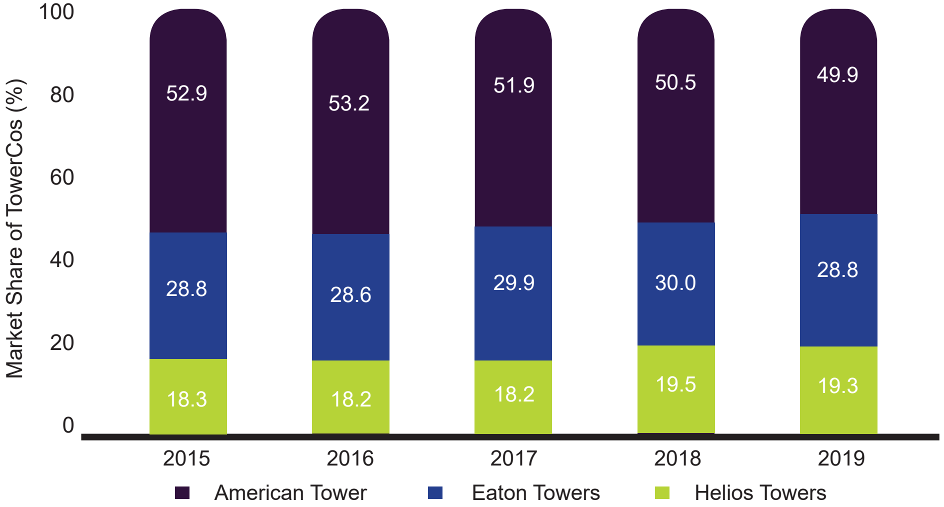


Source: NCA; Tower Companies, 2019

5.3 Market Share of Tower Companies

American Towers accounts for 49.9% of towers in Ghana managed by the Tower companies. Eaton and Helios towers manage 28.8% and 19.3% of towers respectively in Ghana.

Figure 5.3 Market Share of Tower Companies

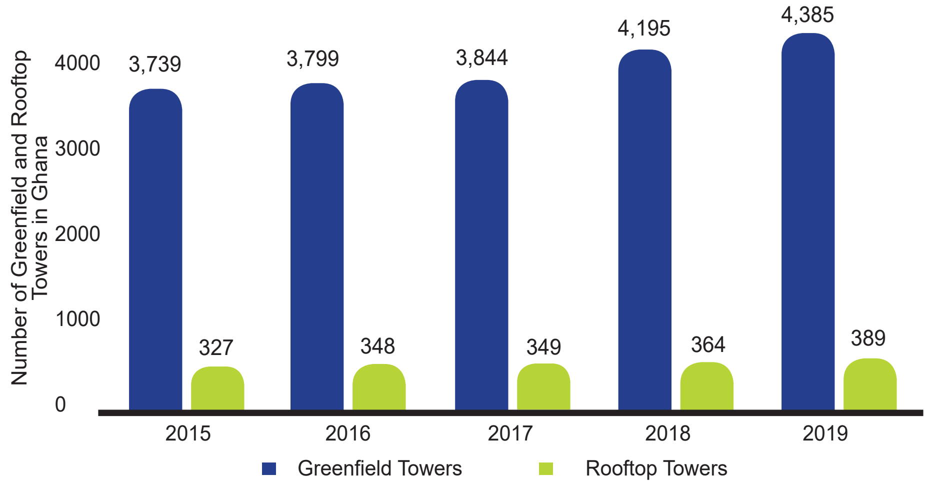


Source: NCA; Tower Companies, 2019

5.4 Greenfield and Rooftop Tower Distribution

Most of the towers in Ghana are Greenfield rather than Rooftop, and this is because of limited high rise buildings to accommodate these towers. As at the end of 2019, 91.85 percent of towers deployed were Greenfields (Figure 5.3).

Figure 5.3: Number of Greenfield and Rooftop Towers in Ghana



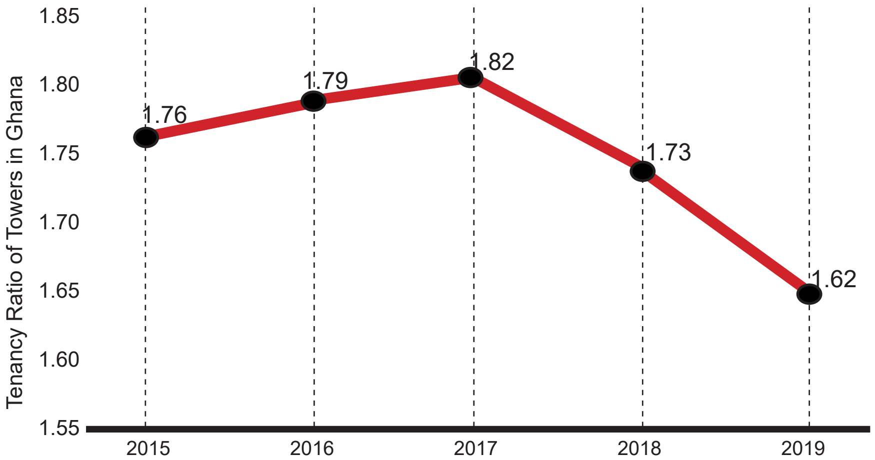
Source: NCA; Tower Companies, 2019

5.5 Tenancy Ratio on Towers in Ghana

Tenancy ratio refers to the number of tenants, or operators, who have put up their antennae and other active infrastructure on the towers. Tower sharing has a huge potential to boost tenancy ratio i.e. the total number of tenants or occupants of a tower. Prior to the entrance of tower companies, the situation was one tower occupied by one tenant, and several towers clustered in one area creating aesthetic mess. The tenancy ratio of the telecom tower has since decreased from 1.76 in 2014 to 1.62 in 2019 (Figure 5.4).

14. Greenfield towers are erected on the ground whereas rooftop are placed on high rise buildings.
15. An indoor DAS incorporates components that are meant only for indoor usage. These systems are designed to provide coverage to parts of a building that outdoor macro cells can't reach.
16. A cellular network is a network of handheld mobile phones (cell phones) in which each phone communicates with the telephone network by radio waves through a local antenna at a cellular base station (cell site).

Figure 5.4: Tenancy Ratio of Towers in Ghana



Source: NCA; Tower Companies, 2019

CHAPTER 6

GLOBAL OVERVIEW OF THE COMMUNICATIONS INDUSTRY

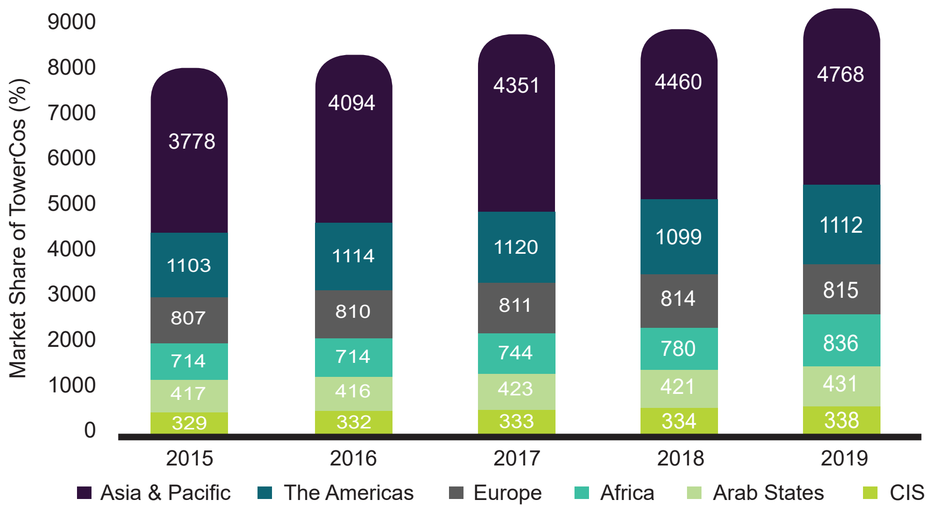
6.0 Global Overview of the Communications Industry

The telecommunications sector, all over the world has seen great transformation in recent times. The year 2019 was no exception as impressive figures of growth were recorded in almost all aspect of the industry, based on data available from the International Telecommunications Union (ITU).

6.1 Mobile Voice Subscriptions

Mobile cellular subscriptions globally recorded a growth rate of almost 5%. Subscriptions increased to 8.30 billion at the end of the year from 7.91 billion in the previous year of 2018.

Figure 6.1: World Mobile voice subscriptions in millions

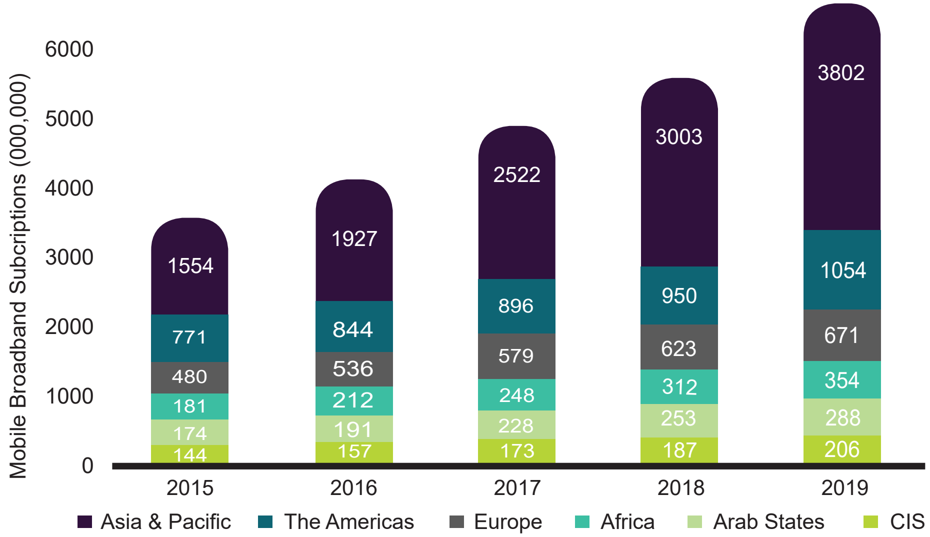


Source: ITU-D ICT Statistics

6.2 Mobile Broadband Subscriptions

Active Mobile broadband subscriptions globally has recorded rapid growth in recent times especially with the introduction of 4G or LTE technology. Subscriptions increased from 5.33 billion in 2018 to 6.38 billion in 2019 representing a year on year growth rate of almost 20%.

Figure 6.2: World Mobile broadband subscriptions in millions



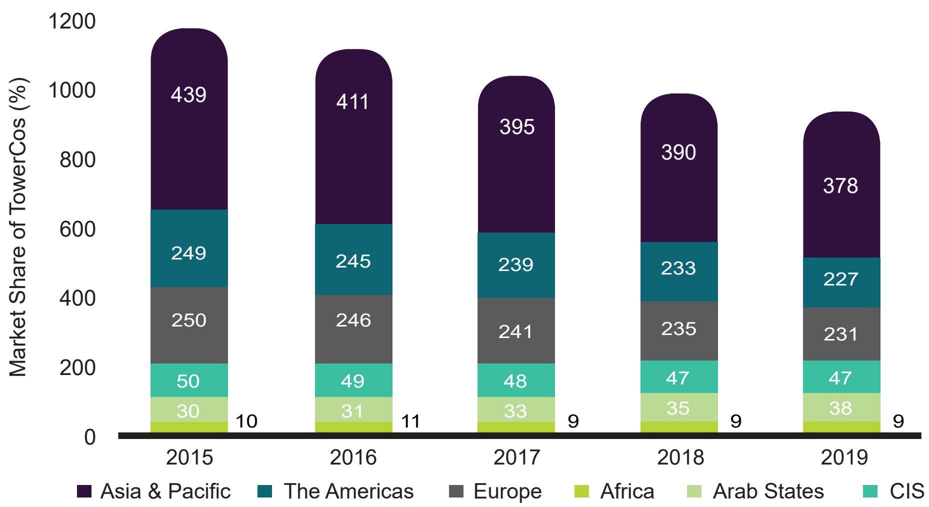
Source: ITU-D ICT Statistics

6.3 Fixed Voice Subscriptions

In 2019, the subscriptions figure stood at 931 million a decrease of

2% from the previous year's figure of 950 million in 2018. Fixed telephone subscription has recorded a consistent decline globally since 2009 when it last recorded an increase in subscription from the previous years.

Figure 6.3: World Fixed Cellular Subscriptions in millions

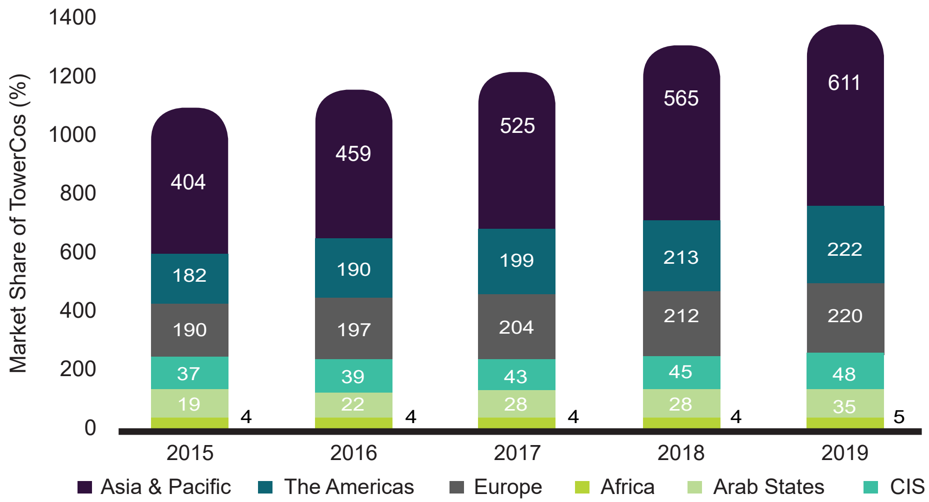


Source: ITU-D ICT Statistics

6.4 Fixed Broadband Subscriptions

Fixed broadband subscription is experiencing a steady increase year on year globally. Subscription has grown by an average growth of 7.01% over the past five years. In 2019 the subscriptions grew from 1.07 billion in 2018 to 1.14 billion in 2019 recording a growth rate of 6.54%.

Figure 6.4: World Fixed broadband subscriptions in millions



Source: ITU-D ICT Statistics

6.5 Broadcasting

The Traditional radio and TV broadcasting landscape is encountering stiff competition from digital content providers who are providing streaming services that people find more convenient and accessible than traditional broadcasting contents.

In the United State for instance, Pay TV subscription and Penetration keep declining year on year. Pay TV penetration a decade ago stood at an all-time high of 87.8% which has since experienced steady decline to 65.3% at the end of year 2019.

6.6 Tower Infrastructure

In the year 2019, both Vodafone PLC and Orange S.A. separately announced the establishment of dedicated tower companies separate from the bigger entities.

During the latter part of the year, American Tower announced the acquisition of Eaton Towers which has over 5,500 sites in five African countries (Burkina Faso, Niger, Ghana, Uganda and Kenya).

The deal, even though considered as huge, still keeps American Tower in second position when it comes to the African tower market with a little over 14,000 towers. IHS Towers leads the market in Africa with over 23,000 towers while Helios towers with a little over 6,500 towers complete the list of top three Tower companies in African.

6.7 Type Approval

Type Approval is a certificate granted to a product that meets minimum set of regulatory, technical standards and safety requirements applicable in a country. There are different procedures and variance of type approval regimes in different jurisdiction.

Most European Union (EU) countries practice the “Self-Declaration” regime where manufacturers access the conformity of their products themselves.

The classical type approval regime is the most widely used procedure in the world where manufacturers have to get their products tested in a certified laboratory before being issued with a certificate. Unregulated markets such as the North Korea, Turkmenistan and some Central African countries also have different set of rules in accepting such equipment into their markets.

APPENDIX

APPENDIX

Table 1: Mobile Voice Subscriptions and Penetration Rate (%)

	2015	2016	2017	2018	2019
Prepaid	34,797,888	37,918,623	36,275,284	40,391,558	40,216,604
Postpaid	210,499	386,455	440,477	543,317	640,473
Mobile Voice Subscriptions	**35,008,387**	**38,305,078**	**36,715,761**	**40,934,875**	**40,857,077**
Growth rate (%)	*15.30*	*9.42*	*-4.15*	*11.49*	*-0.19*
Net Additions	4,647,616	3,296,691	-1,589,317	888,285	- 77,798
Population	27,429,232	28,094,823	28,776,565	29,474,851	30,190,081
Penetration rate (%)	*127.60*	*136.30*	*127.60*	*138.88*	*135.33*

Source: NCA; Mobile Network Operators, 2019

Table 2: Mobile Voice Subscriptions per operator

Mobile Network Operator		2015	2016	2017	2018	2019
MTN	Subscriptions	16,254,984	19,296,157	17,832,546	20,092,798	22,555,848
	Market Share (%)	*46.43*	*50.37*	*48.57*	*49.08*	*55.21*
Vodafone	Subscriptions	7,612,059	8,289,913	9,028,161	9,813,234	9,122,403
	Market Share (%)	*21.74*	*21.64*	*24.59*	*23.97*	*22.33*
Tigo	Subscriptions	4,850,034	5,339,052	5,217,875	n/a	n/a
	Market Share (%)	*13.85*	*13.94*	*14.21*	n/a	n/a
Airtel	Subscriptions	4,796,645	4,591,051	3,986,163	n/a	n/a
	Market Share (%)	*13.70*	*11.99*	*10.86*	n/a	n/a
AirtelTigo	Subscriptions	n/a	n/a	n/a	10,289,491	8,453,053
	Market Share (%)	n/a	n/a	n/a	*25.14*	*20.69*
Glo	Subscriptions	1,369,402	695,306	627,752	739,352	725,773
	Market Share (%)	*3.91*	*1.82*	*1.71*	*1.81*	*1.78*
Expresso	Subscriptions	125,263	93,599	23,264	n/a	n/a
	Market Share (%)	*0.36*	*0.24*	*0.06*	n/a	n/a
Industry Total		**35,008,387**	**38,305,078**	**36,715,761**	**40,934,875**	**40,857,077**

Source: NCA; Mobile Network Operators, 2019

Table 3: Distribution of Off net and On net Traffic (Domestic)

	2015	2016	2017	2018	2019
On-net					
Traffic	33,296,762,169	40,034,168,879	51,054,275,008	62,689,764,854	73,774,794,534
Share (%)	*76.51*	*79.14*	*83.44*	*87.86*	*90.78*
Growth (%)	*23.21*	*20.23*	*27.53*	*22.79*	*17.68*
Off-net					
Traffic	10,222,172,401	10,552,629,100	10,130,498,869	8,658,439,247	7,491,790,375
Share (%)	*23.49*	*20.86*	*16.56*	*12.14*	*9.22*
Growth (%)	*-1.08*	*3.23*	*-4*	*-14.53*	*-13.47*
Total	**43,518,934,570**	**50,586,797,979**	**61,184,773,877**	**71,348,204,101**	**81,266,584,909**

Source: NCA; Mobile Network Operators, 2019

Table 4: Distribution of Domestic Traffic per Operator

Mobile Operator		2015	2016	2017	2018	2019
MTN	Traffic	23,634,976,840	31,184,751,056	43,842,841,382	58,625,073,109	70,521,752,504
	Share (%)	*54.31*	*61.65*	*71.66*	*78.89*	*86.78*
Vodafone	Traffic	11,829,125,976	11,679,786,800	11,236,871,661	9,268,358,493	6,682,666,929
	Share (%)	*27.18*	*23.09*	*18.37*	*12.47*	*8.22*
Tigo	Traffic	4,558,278,719	4,245,289,115	3,483,638,837	n/a	n/a
	Share (%)	*10.47*	*8.39*	*5.69*	n/a	n/a
Airtel	Traffic	3,052,735,231	3,247,652,993	2,507,664,075	n/a	n/a
	Share (%)	n/a	n/a	*n/a*	n/a	n/a
AirtelTigo	Traffic	n/a	n/a	*n/a*	1,518,674,252	3,953,752,066
	Share (%)	n/a	n/a	*n/a*	*2.04*	*4.87*
Glo	Traffic	425,471,141	224,026,298	113,183,248	605,635,378	108,413,410
	Share (%)	*0.98*	*0.44*	*0.18*	*0.81*	*0.13*
Expresso	Traffic	18,346,665	5,291,716	574,674	n/a	n/a
	Share (%)	*0.04*	*0.01*	*0.00*	n/a	n/a
Total Voice Traffic		**43,518,934,571**	**50,586,797,979**	**61,184,773,877**	**74,311,343,259**	**81,102,214,055**

Source: NCA; Mobile Network Operators, 2019

Table 5: Distribution of International Voice Traffic

	2015	2016	2017	2018	2019
	Inbound International				
Traffic	719,702,636	594,721,824	494,209,745	475,344,044	313,030,354
Share	*45.88*	*45.85*	*46.00*	*45.42*	*37.50*
Growth	-38.70	*-17.37*	*-16.90*	*-3.82*	*-34.15*
	Outbound International				
Traffic	849,053,748	702,405,599	580,197,745	571,224,850	521,630,329
Share	*54.12*	*54.15*	*54.00*	*54.58*	*62.50*
Growth	*-40.69*	*-17.27*	*-17.40*	*-1.55*	*-8.68*
Total	**1,568,756,383**	**1,297,127,423**	**1,074,407,490**	**1,046,568,894**	**834,660,682**

Source: NCA; Mobile Network Operators, 2019

Table 6: Mobile Data Subscriptions and Penetration rate (%)

Subscriptions	2015	2016	2017	2018	2019
Prepaid	17,920,995	19,463,829	23,225,101	26,930,768	29,960,572
Postpaid	110,193	178,323	239,049	301,384	380,721
Mobile Data	**18,031,188**	**19,642,152**	**23,464,150**	**27,232,152**	**30,341,293**
Growth rate (%)	*14.08*	*8.93*	*19.46*	*16.06*	*11.42*
Net Additions	2,225,263	1,610,963	3,821,998	3,768,002	3,109,141
Population	27,429,232	28,094,823	28,776,565	29,474,851	30,190,081
Penetration rate (%)	*65.74*	*69.91*	*81.54*	*92.39*	*100.50*

Source: NCA; Mobile Network Operators, 2019

Table 7: Mobile Data Subscriptions per Operator

Mobile Network Operator		2015	2016	2017	2018	2019
MTN	Subscriptions	8,634,914	10,226,520	13,736,988	16,689,717	22,260,198
	Market Share (%)	*47.89*	*52.06*	*58.54*	*61.29*	*73.37*
Vodafone	Subscriptions	3,316,343	3,474,090	4,097,805	4,213,054	3,700,970
	Market Share (%)	*18.39*	*17.69*	*17.46*	*15.47*	*12.20*
Tigo	Subscriptions	2,732,863	2,725,489	2,848,021		
	Market Share (%)	*15.16*	*13.88*	*12.14*		
Airtel	Subscriptions	2,879,431	2,902,009	2,532,873		
	Market Share (%)	*15.97*	*14.77*	*10.79*		
AirtelTigo	Subscriptions				6,076,649	4,110,972
	Market Share (%)				*22.31*	*13.55*
Glo	Subscriptions	419,459	277,372	238,312	252,732	269,153
	Market Share (%)	*2.33*	*1.41*	*1.02*	*0.93*	*0.89*
Expresso	Subscriptions	48,178	36,672	10,151		
	Market Share (%)	*0.27*	*0.19*	*0.04*		
Total		**18,031,188**	**19,642,152**	**23,464,150**	**27,232,152**	**30,341,293**

Source: NCA; Mobile Network Operator

Table 8: Total Volume of internet data traffic in megabyte (MB) per operator

Mobile Network Operator		2015	2016	2017	2018	2019
MTN	Data Traffic (MB)	12,516,113,284	31,846,288,192	75,455,990,513	144,790,281,033	268,750,810,534
	Market Share (%)	*37.3*	*44.2*	*52.3*	*59.37*	*68.23*
Vodafone	Data Traffic (MB)	10,095,526,716	17,791,093,515	31,619,137,935	59,588,642,450	70,938,659,586
	Market Share (%)	*30.1*	*24.7*	*21.9*	*24.44*	*18.01*
Tigo	Data Traffic (MB)	2,828,858,446	5,855,058,096	11,859,039,560	12,078,877,825	
	Market Share (%)	*8.4*	*8.1*	*8.2*	*4.95*	
Airtel	Data Traffic (MB)	7,995,667,000	14,831,407,635	20,967,265,424	14,673,177,178	
	Market Share (%)	*23.8*	*20.6*	*14.5*	*6.02*	
AirtelTigo	*Data Traffic (MB)*				8,221,194,104	46,857,385,803
	Market Share (%)				*3.90*	*11.90*
Glo	Data Traffic (MB)	82,975,022	1,659,745,592	4,500,688,049	4,513,372,375	7,370,002,242
	Market Share (%)	*0.2*	*2.3*	*3.1*	*2.2*	*1.87*
Expresso	Data Traffic (MB)	41,578,980	-	-	-	
	Market Share (%)	*0.1*	-	-	-	
Total		**33,560,719,448**	**71,983,593,031**	**144,402,121,481**	**243,865,544,965**	**393,916,858,165**

Source: NCA; Mobile Network Operators, 2019

Table 9: Distribution of Off-net and On-net SMS count

	2015	2016	2017	2018	2019
ON-NET SMS					
Traffic	1,220,459,806	1,198,236,550	1,322,354,207	2,049,813,306	2,367,716,985
Growth (%)	*30.00*	*-1.82*	*10.36*	*55.01*	*15.51*
OFF-NET SMS					
Traffic	432,211,970	409,734,902	503,750,129	508,191,684	381,146,115
Growth (%)	*0.23*	*-5.20*	*22.95*	*0.88*	*-25.00*
Total	**1,652,671,776**	**1,607,971,452**	**1,826,104,336**	**2,558,004,990**	**2,748,863,100**

Source: NCA; Mobile Network Operator, 2019

Table 10: SMS Counts per Operator

Mobile Network Operator	2015	2016	2017	2018	2019
MTN	714,341,358	616,931,266	814,318,300	1,168,699,244	1,400,664,864
Vodafone	373,481,360	430,280,952	463,475,522	1,028,761,679	1,286,085,070
Tigo	403,649,719	417,188,292	468,091,327	309,040,192	n/a
Airtel	144,187,510	134,859,264	99,565,628	36,789,186	n/a
AirtelTigo	n/a	n/a	n/a	7,084,605	58,597,086
Glo	16,674,261	8,703,617	7,653,559	7,630,084	3,516,080
Expresso	337,568	8,062	n/a	n/a	n/a
Total	**1,652,671,776**	**1,607,971,453**	**1,853,104,336**	**2,558,004,990**	**2,748,863,100**

Source: NCA; Mobile Network Operator, 2019

Table 11: Fixed Voice Subscriptions and Penetration Rate (%)

Subscriptions	**2015**	**2016**	**2017**	**2018**	**2019**
Fixed Voice	275,570	251,490	301,551	278,379	288,531
Growth Rate (%)	*5.82*	*-8.74*	*19.90*	*-7.68*	*3.65*
Net Additions	15,163	-24,080	50,061	-23,172	10,152
Country Population	27,429,232	28,094,823	28,776,565	29,474,851	30,190,081
Penetration Rate (%)	*1.00*	*0.90*	*1.05*	*0.94*	*0.96*

Source: NCA; Mobile Network Operator, 2019

Table 12: Fixed Voice Subscriptions per operator

Fixed Network Operators		**2015**	**2016**	**2017**	**2018**	**2019**
Vodafone	Subscriptions	267,161	244,299	294,915	271,732	280,321
	Share (%)	*96.90*	*97.10*	*97.80*	*97.61*	*97.15*
Airtel	Subscriptions	8,409	7,191	6,636	6,647	8,210
	Share (%)	*3.10*	*2.90*	*2.20*	*2.39*	*2.85*
Total Industry Subscriptions		**275,570**	**251,490**	**301,551**	**278,379**	**288,531**

Source: NCA; Mobile Network Operators, 2019

Table 13 : Fixed Voice Traffic in minutes

Mobile Network Operator		2015	2016	2017	2018	2019
Vodafone	Traffic	100,840,926	69,400,892	50,020,696	45,226,383	49,042,238
	Shares (%)	*93.40*	*87.10*	*87.50*	*91.80*	*100.00*
Airtel	Traffic	7,072,077	10,297,471	7,172,581	4,052,821	27
	Shares (%)	*6.60*	*12.90*	*12.50*	*8.20*	*0.00*
Total Traffic (Minutes)		**107,913,003**	**79,698,363**	**57,193,277**	**49,279,204**	**49,042,265**

Source: NCA; Fixed Network Operators, 2019

Table 14: Fixed Data Subscriptions and Penetration Rate (%)

Subscriptions	2015	2016	2017	2018	2019
Fixed Data	75,092	86,596	56,810	58,808	57,393
Growth Rate (%)	*0.21*	*0.15*	*-0.34*	*0.04*	*-0.02*
Net Additions	13,230	11,504	-29,786	1,998	-1,415
Country Population	27,429,232	28,094,823	28,776,565	29,474,851	30,190,081
Penetration Rate (%)	*0.27*	*0.31*	*0.20*	*0.20*	*0.19*

Source: NCA; Fixed Network Operator, 2019

Table 15: Fixed Data Subscriptions per operator

Mobile Network Operator		2015	2016	2017	2018	2019
Vodafone	Subscriptions	73,464	85,190	55,627	57,216	56,677
	Shares (%)	*97.83*	*98.38*	*97.92*	*97.29*	*98.75*
Airtel	Subscriptions	1,628	1,406	1,183	1,592	716
	Shares (%)	*2.17*	*1.62*	*2.08*	*2.71*	*1.25*
Total Industry Subscriptions		**75,092**	**86,596**	**56,810**	**58,808**	**57,393**

Source: NCA; Fixed Network Operator, 2019

Table 16: BWA Subscriptions and Penetration rate (%)

Subscriptions	2015	2016	2017	2018	2019
BWA	90,246	104,402	87,639	80,581	47,108
Growth rate (%)	-	*15.69*	*-16.06*	*-8.05*	*-41.54*
Net Additions	-	14,156	-16,763	-7,058	-33,473
Population	27,429,232	28,094,823	28,776,565	29,474,851	30,190,081
Penetration rate (%)	0.33	0.37	0.30	0.27	0.16

Source: NCA; BWA Network Operator, 2019

Table 17: BWA Subscriptions per operator

Broadband Wireless Access Operator		2015	2016	2017	2018	2019
Surfline	Subscriptions	61,980	76,919	61,426	55,134	43,735
	Growth rate (%)	n/a	*24.10*	*-20.14*	*-10.24*	*-20.68*
	Market Share (%)	*68.68*	*73.68*	*70.09*	*68.42*	*92.84*
BBH	Subscriptions	26,786	26,402	25,560	25,100	1,058
	Growth rate (%)	n/a	*-1.43*	*-3.19*	*-1.80*	*-95.78*
	Market Share (%)	*29.68*	*25.29*	*29.17*	*31.15*	*2.25*
Blu	Subscriptions	1,480	1,081	653	347	211
	Growth rate (%)	n/a	*-26.96*	*-39.59*	*-46.86*	*-39.19*
	Market Share (%)	*1.64*	*1.04*	*0.75*	*0.43*	*0.45*
Telesol	Subscriptions	n/a	n/a	n/a	n/a	2,104
	Growth rate (%)	n/a	n/a	n/a	n/a	n/a
	Market Share (%)	n/a	n/a	n/a	n/a	*4.47*
Total		**90,246**	**104,402**	**87,639**	**80,581**	**47,108**

Source: NCA; BWA Network Operators

Table 18: BWA Data Traffic in Megabytes

	2015	2016	2017	2018	2019
Surfline	4,553,985,700	9,801,704,172	13,579,324,195	14,228,311,888	13,468,971,378
BBH	469,406,448	1,179,106,855	1,151,104,960	925,082,737	1,059,547,144
Blu	314,182,333	453,000,187	391,082,907	271,321,838	353,730,049
Telesol	n/a	n/a	n/a	n/a	455,870,770
Total	**5,337,574,482**	**11,433,811,214**	**15,121,512,062**	**15,424,716,464**	**15,338,119,341**

Source: NCA; BWA Network Operators

Table 19: Regional Distribution of Authorised FM Radio Stations in Ghana as at the end of 2019

NO	NAME OF REGIONS	TOTAL NO. AUTHORISED	PUBLIC	PUBLIC (FOREIGN)	COMMUNITY	CAMPUS	COMMERCIAL	TOTAL NO. IN OPERATION	TOTAL NO. NOT IN OPERATION
1	ASHANTI	**72**	2	1	8	3	58	57	15
2	BONO	**43**	1	-	3	2	37	34	9
3	BONO EAST	**28**	2	-	3	-	23	25	3
4	AHAFO	**7**	-	-	1	-	6	6	1
5	CENTRAL	**39**	2	-	9	3	25	32	7
6	EASTERN	**39**	2	-	7	1	29	32	7
7	GREATER ACCRA	**57**	2	3	3	4	45	51	6
8	NORTHERN	**35**	3	-	8	2	22	23	12
9	SAVANNAH	**7**	3	-	3	-	1	7	0
10	NORTH EAST	**6**	1	-	4	-	1	2	4
11	UPPER EAST	**23**	2	-	8	1	12	18	5
12	UPPER WEST	**25**	2	-	7	2	14	18	7
13	VOLTA	**44**	3	-	5	1	35	28	16
14	OTI	**9**	1	-	2	-	6	7	2
15	WESTERN	**59**	2	1	4	2	50	42	17
16	WESTERN NORTH	**20**	3	-	-	-	17	17	3
TOTAL		**513**	**31**	**5**	**75**	**21**	**381**	**399**	**144**

Source: NCA; (2019)

Table 20: Regional Distribution of Operational FM Radio Stations in Ghana as at the end of 2019

NAME OF REGIONS	PUBLIC	PUBLIC (FOREIGN)	COMMUNITY	CAMPUS	COMMERCIAL	TOTAL IN OPERATION
ASHANTI	2	1	5	3	46	**57**
BONO	1	0	2	2	29	**34**
BONO EAST	2	0	3	0	20	**25**
AHAFO	0	0	1	0	5	**6**
CENTRAL	2	0	9	3	18	**32**
EASTERN	2	0	4	1	25	**32**
GREATER ACCRA	2	3	3	4	39	**51**
NORTHERN	3	0	7	1	12	**23**
SAVANNAH	3	0	0	3	1	**7**
NORTH EAST	1	0	0	0	1	**2**
UPPER EAST	2	0	8	1	7	**18**
UPPER WEST	2	0	7	2	7	**18**
VOLTA	3	0	4	1	20	**28**
OTI	1	0	2	0	4	**7**
WESTERN	2	1	3	2	34	**42**
WESTERN NORTH	3	0	0	0	14	**17**
TOTAL	**31**	**5**	**58**	**23**	**282**	**399**

Source: NCA; (2019)

Table 21: Types of Operating and Non-Operating TV Stations as at the end of 2019

NO.	TYPE OF TELEVISION SERVICE	TOTAL NO. OF AUTHORISED STATIONS	TOTAL NO. OF STATIONS ON AIR	TOTAL NO. OF STATIONS NOT ON AIR
1.	Analogue Terrestrial Television	2	2	0
2.	Digital Terrestrial Free-To-Air Television Programme Channel (Nationwide Coverage)	35	34	1
3.	Digital Terrestrial Free-To-Air Television Programme Channel (Regional Coverage)	6	5	1
4.	Digital Terrestrial Pay Television (Service only)	1	1	0
5.	Digital Terrestrial Pay Television (Service and Frequency)	5	5	0
6.	Digital Terrestrial Television (Network only)	0	0	0
7.	Digital Terrestrial Radio Service on TV Multiplex	9	2	6
8.	Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	4	4	0
9.	Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet)	8	6	2
10.	Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel)	68	36	32
11.	Digital Terrestrial Television additional Services (eg. Teletext, etc)	0	0	0
12.	Digital Terrestrial Mobile Television Service (Stand-alone Authorisation)	0	0	0

13.	Digital Cable Television	1	1	0
14.	Television over Internet Protocol (Pay TV)	1	0	1
15.	Subscription Management Service for a Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	1	1	0
TOTAL		**141**	**97**	**44**

Source: NCA; (2019)

Table 22: PayTV Subscriptions for 2019

	COMPANY	Residential	Business
1	Crystal Premium Television Ltd.	180	-
2	Mobile Zone Ltd.	22,185	16
3	GOTV Ghana Ltd.	99,444	-
4	Multichoice Ghana Ltd.	168,200	550
5	Crystal Radiovision Network Ltd.	171	-
	Total	**290,180**	**566**

Source: NCA; (2019)

Table 23: Number of Towers and Market Distribution per TowerCo

Tower Company		2015	2016	2017	2018	2019
Eaton Towers	Number of Towers	1,180	1,194	1,277	1,370	1,470
	Market Share (%)	*28.8*	*28.6*	*29.9*	*30*	*30.79*
American Towers	Number of Towers	2,172	2,224	2,216	2,303	2,381
	Market Share (%)	*52.9*	*53.2*	*51.9*	*50.5*	*49.9*
Helios Towers	Number of Towers	750	759	778	891	923
	Market Share (%)	*18.3*	*18.2*	*18.2*	*19.5*	*19.3*
Industry Total		**4,102**	**4,177**	**4,271**	**4,564**	**4,774**

Source: NCA; Tower companies (2019)

Table 24: Types of Towers

TOWER	2015	2016	2017	2018	2019
Greenfield	3,775	3,799	3,844	4,195	4,385
Rooftop	327	348	349	364	389
Total Number of Towers	**4,102**	**4,147**	**4,193**	**4,559**	**4,774**

Source: NCA; Tower companies (2019)

Table 25: Tenancy ratio (2015 – 2019)

	2015	2016	2017	2018	2019
Total Number of Towers	4,102	4,177	4,271	4,564	4,774
Total Number of Tenants	7,212	7,467	7,765	7,837	7,753
Tenancy Ratio	**1.76**	**1.79**	**1.82**	**1.72**	**1.62**

Source: ITU-D ICT Statistics

Table 26: Mobile Cellular Subscription in millions

	2015	2016	2017	2018	2019
Africa	714	714	744	780	836
Arab States	417	416	423	421	431
Asia & Pacific	3,778	4,094	4,351	4,460	4,768
CIS	329	332	333	334	338
Europe	807	810	811	814	815
The Americas	1,103	1,114	1,120	1,099	1,112
World	**7,181**	**7,511**	**7,814**	**7,911**	**8,304**

Source: ITU-D ICT Statistics

Table 27: Fixed Telephone Subscription in millions

	2015	2016	2017	2018	2019
Africa	10	11	9	9	9
Arab States	30	31	33	35	38
Asia & Pacific	439	411	395	390	378
CIS	52	49	48	47	47
Europe	250	246	241	235	231
The Americas	249	245	239	233	227
World	**1,046**	**1,007**	**979**	**950**	**931**

Source: ITU-D ICT Statistics

Table 28: Active Mobile Broadband Subscription in millions

	2015	2016	2017	2018	2019
Africa	181	212	248	312	354
Arab States	174	191	228	253	288
Asia & Pacific	1,554	1,927	2,522	3,003	3,802
CIS	144	157	173	187	206
Europe	480	536	579	623	671
The Americas	771	844	896	950	1,054
World	**3,324**	**3,890**	**4,672**	**5,331**	**6,380**

Source: ITU-D ICT Statistics

Table 29: Fixed Broadband Subscription in millions

	2015	2016	2017	2018	2019
Africa	4	4	4	4	5
Arab States	19	22	28	31	35
Asia & Pacific	404	459	525	565	614
CIS	37	39	43	45	48
Europe	190	197	204	212	220
The Americas	182	190	199	213	222
World	**839**	**916**	**1,005**	**1,070**	**1,145**

Source: ITU-D ICT Statistics