NATIONAL COMMUNICATIONS AUTHORITY

COMMUNICATIONS INDUSTRY REPORT 2021

Communication For Development

ABOUT THE REPORT

The Communications Industry Report (CIR) highlights key developments in the communications industry of Ghana for the year 2021 and further gives information on a five-year trend analysis from 2017 to 2021.

The scope of this report focuses on Mobile Network Operators (MNOs), Fixed Network Operators, Broadband Wireless Access (BWA) Providers, Tower Infrastructure Companies, Television, Radio Broadcasting and other services regulated by the National Communications Authority (NCA).

The report provides critical statistical data for policy makers, telecom analysts, consumers, academia, investors and other stakeholders to support decision-making. It 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 authorisation and license holders and other relevant stakeholders in the communications industry including ITU.

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.

About NCA

The National Communications Authority, (NCA), was established by an Act of Parliament, Act 524 in December 1996, which was repealed and replaced by the National Communications Authority Act, 2008 (Act 769). The Authority is the statutory body mandated to license and regulate electronic communication activities and services in the country.

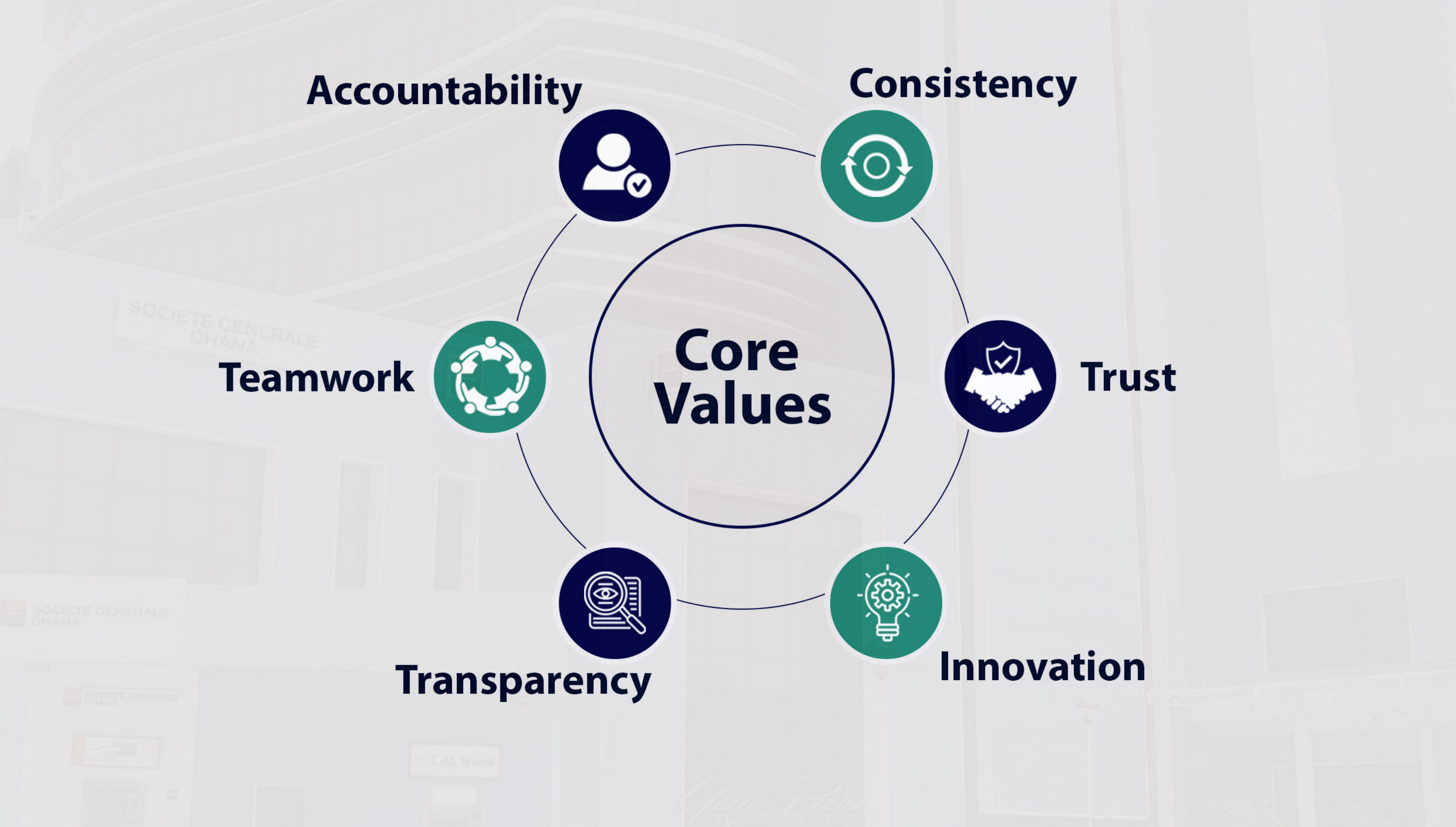
Vision

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.

Tag Line/Slogan – Communications for Development



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The Communications Industry Report (CIR) can be downloaded from the website of the National Communications Authority at www.nca.org.gh

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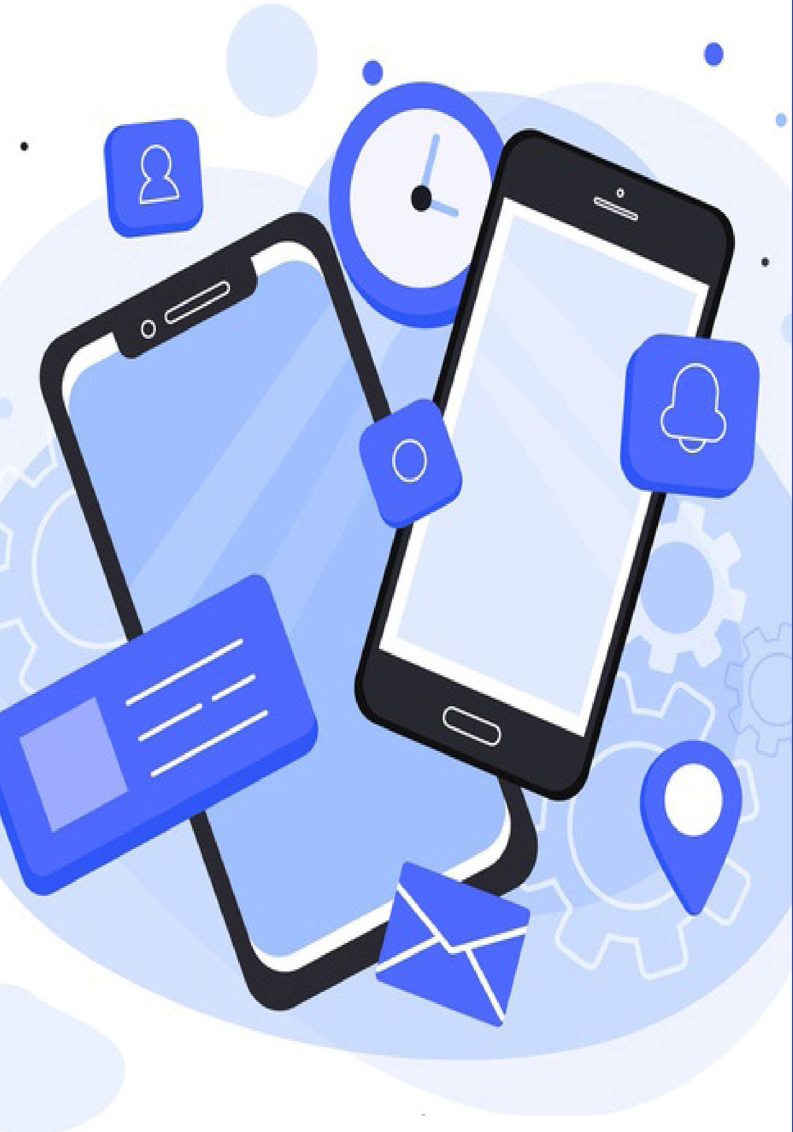


Chapter One

MOBILE CELLULAR SERVICES

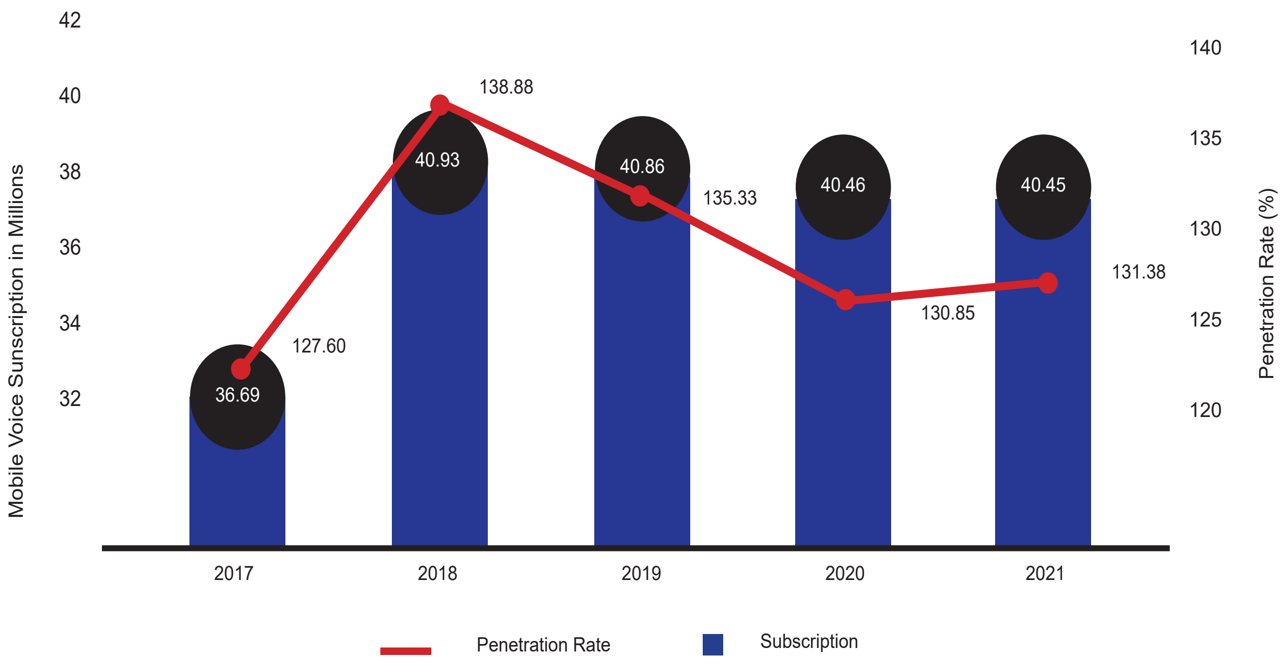
1.0 Introduction

This chapter presents an analysis of the services provided by the Mobile Network Operators. At the end of 2021, there were four (4) network service providers namely; AirtelTigo, Glo, MTN and Vodafone. The Chapter further presents a five-year trend analysis on the subscriptions for mobile voice and data, volume of traffic, and short messaging service (SMS).

1.1 Mobile Voice Subscriptions and Penetration[1]

Mobile voice subscriptions stood at 40.45 million in 2021, a reduction from 40.46 million subscriptions in 2020. This represents a 0.02% decline in subscriptions. Penetration rate increased from 130.85% in 2020 to 131.38% in 2021. Over the five-year period, the Compound Annual Growth Rate (CAGR) for mobile subscriptions was 1.45%.

Figure 1: Mobile Voice Subscriptions and Penetration Rate



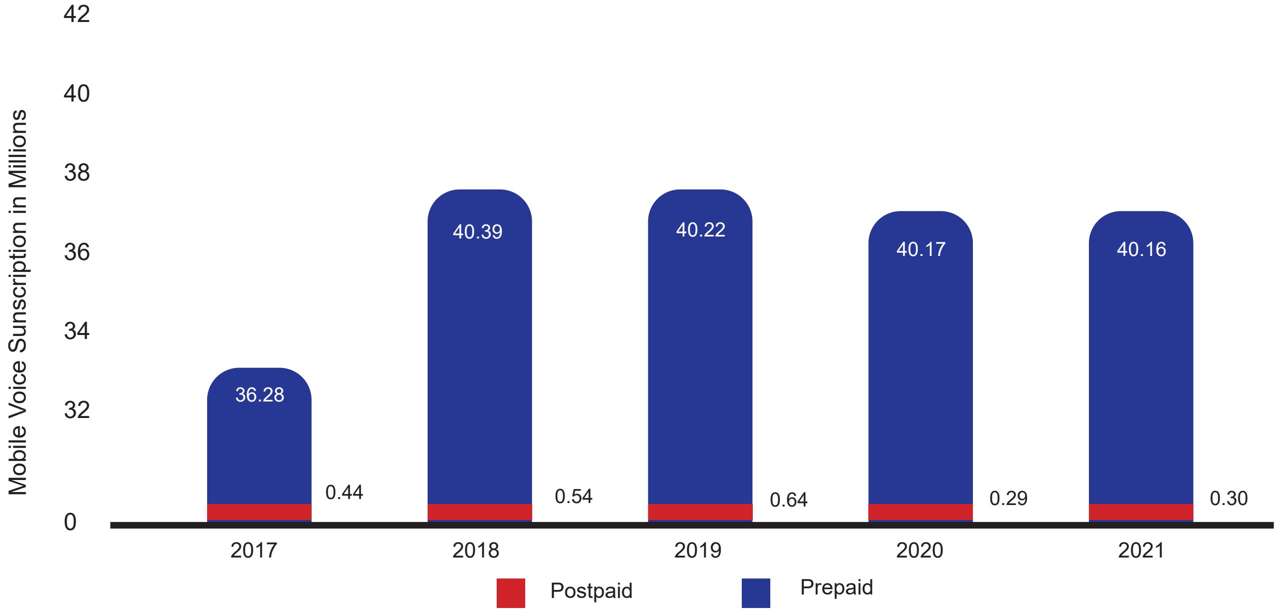
Source: NCA, Mobile Network Operators, 2021

1.2 Prepaid and Postpaid Voice Subscriptions

Mobile voice subscription is dominated by prepaid subscriptions as compared to postpaid subscriptions. In 2021, 40.16 million subscriptions were prepaid representing 99.27% of the total subscriptions while 0.30 million (0.73%) were postpaid subscriptions

1. Population of Ghana was based on the 2021 Population and Housing Census conducted by Ghana Statistical Service (GSS). The Population was 30,792,608. This was used for the calculation of the penetration rate. The increase in penetration rate, even though there was a decline in subscriptions, is due to the estimated population of 2020 (30,922,666) being higher than the population for 2021 as reported by the Ghana Statistical Service in the 2021 Population and Housing Census (30,792,608).

Figure 2: Distribution of Prepaid and Postpaid Subscriptions

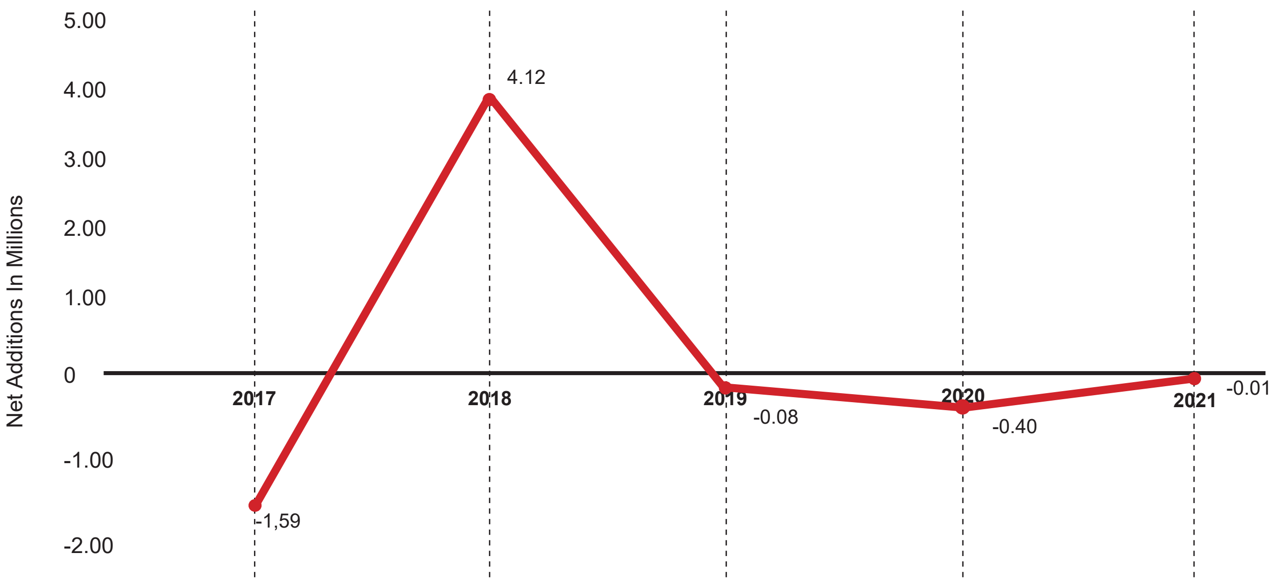


Source: NCA, Mobile Network Operators, 2021

1.3 Net Additions

Mobile voice subscription recorded a net loss of 14,971 from 40,461,609 in 2020 to 40,454,073 in 2021.

Figure 3: Net Additions on Mobile Voice Subscriptions

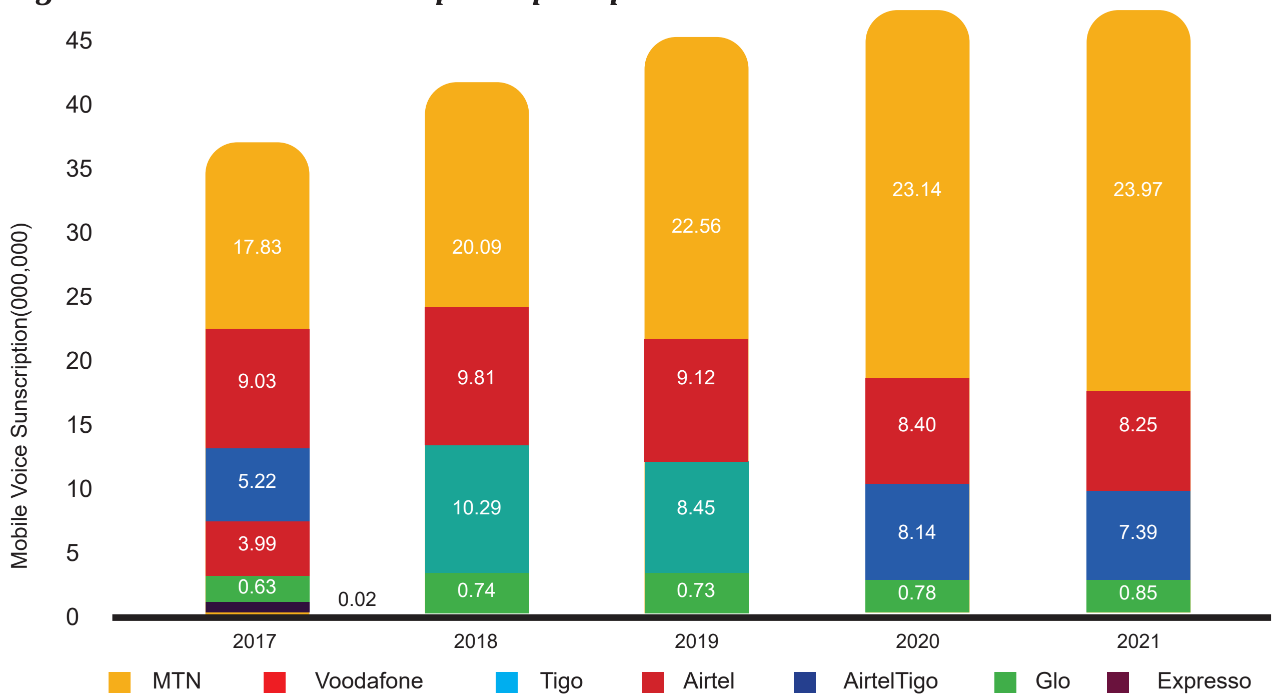


Source: NCA, Mobile Network Operators, 2021

1.4 Mobile Voice Subscriptions per Operator

MTN recorded 23.97 million subscriptions at the end of 2021 representing an increase of 822,000 in the previous year's subscriptions. Vodafone had 8.25 million subscriptions after a decline in subscriptions by 150,129 compared to 8.40 million subscriptions recorded in 2020. AirtelTigo, at the end of 2021 had 7.39 million subscriptions representing a decrease of 745,340 subscriptions. Glo, gained 65,933 subscriptions ending the year with 0.85 million subscriptions.

Figure 4: Mobile Voice Subscriptions per Operator

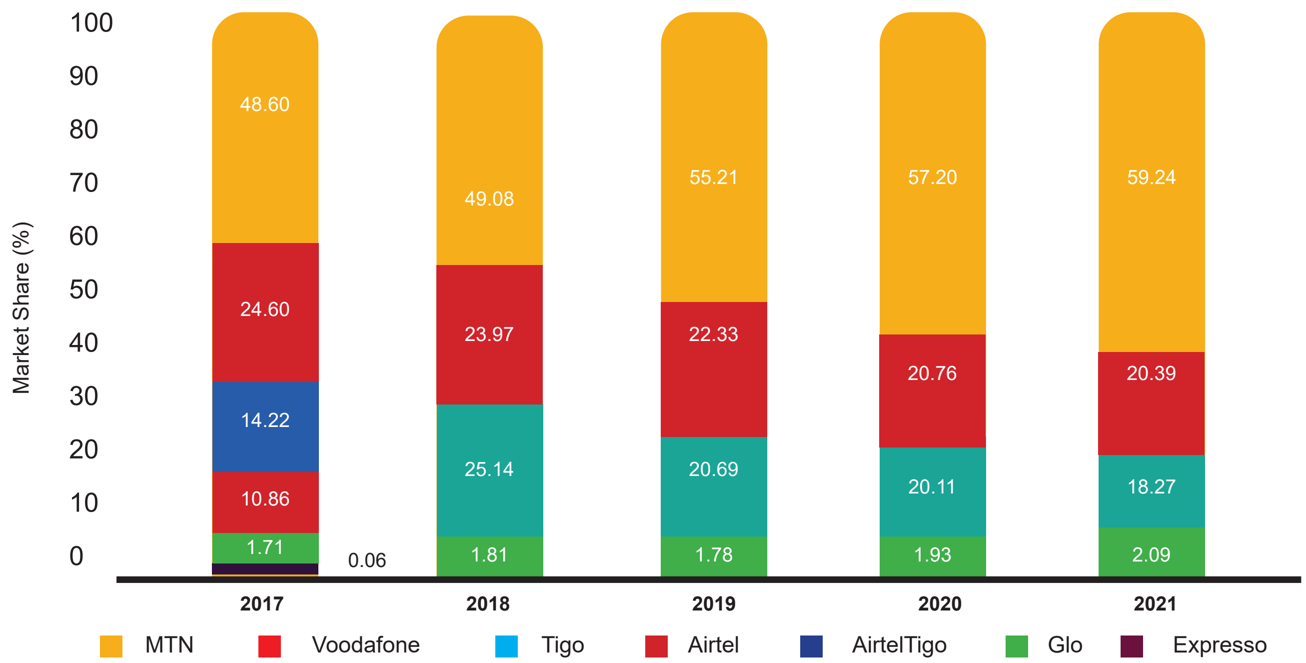


Source: NCA, Mobile Network Operators, 2021

1.5 Market Share (%) per Operator for Mobile Voice Subscriptions

At the end of 2021, MTN subscriptions represented 59.24% of total Mobile Voice Subscriptions. Vodafone subscriptions ended with 20.39% market share. AirtelTigo's market share was 18.27% while GLO ended the year with 2.09% share of the Mobile Voice Subscription market.

Figure 5: Share of Mobile Voice Subscriptions per Operator (%)

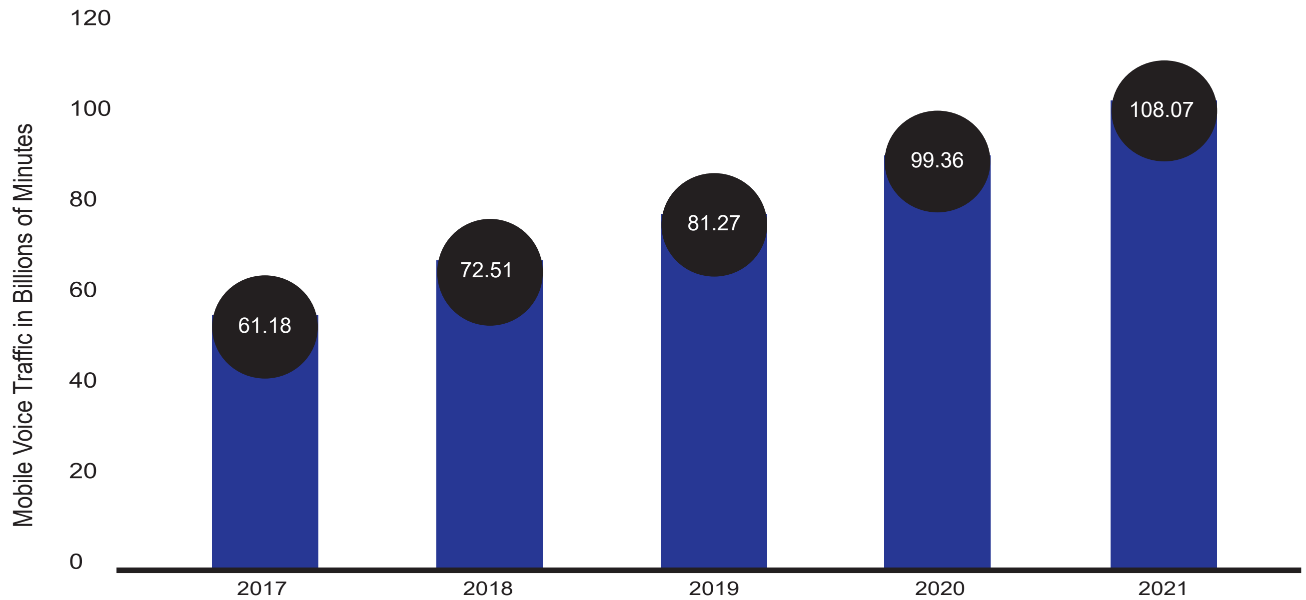


Source: NCA, Mobile Network Operators, 2021

1.6 Total Mobile Voice Traffic

Total Mobile Voice Traffic at the end of 2021 was 108.07 billion minutes, an increase of 8.76% from 99.36 million in the previous year. Mobile voice traffic has experienced a continuous increase in volume over the five-year period with a compound annual growth rate (CAGR) of 15.28%.

Figure 6: Total Volume of Voice Traffic in minutes

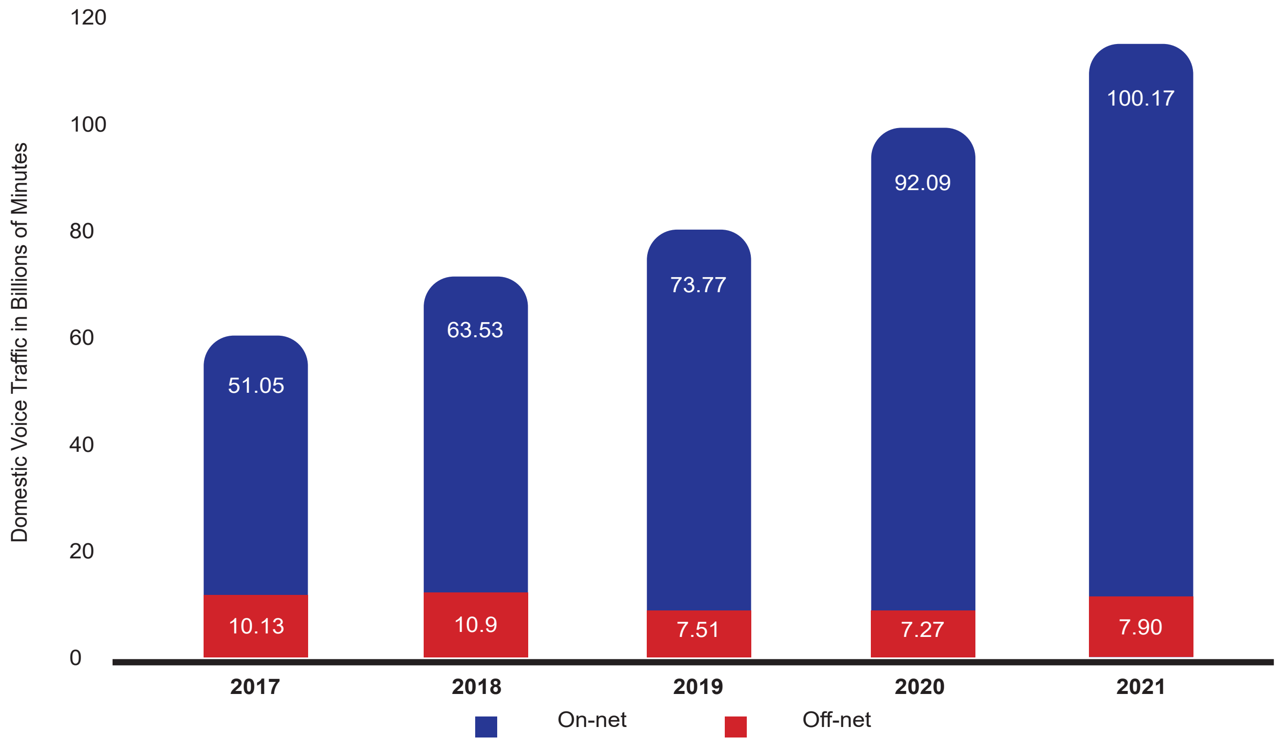


Source: NCA, Mobile Network Operators, 2021

1.7 Off-net and On-net Voice Traffic (Domestic)

During the period under review, off-net calls increased by 8.65% from 7.27 billion minutes to 7.90 billion minutes. This represents 7.31% of the total volume of domestic voice traffic in 2021. On-net traffic increased from 92.09 billion minutes in the previous year to 100.17 billion minutes in 2021, representing 8.77% growth.

Figure 7: On-net and Off-net Domestic Traffic

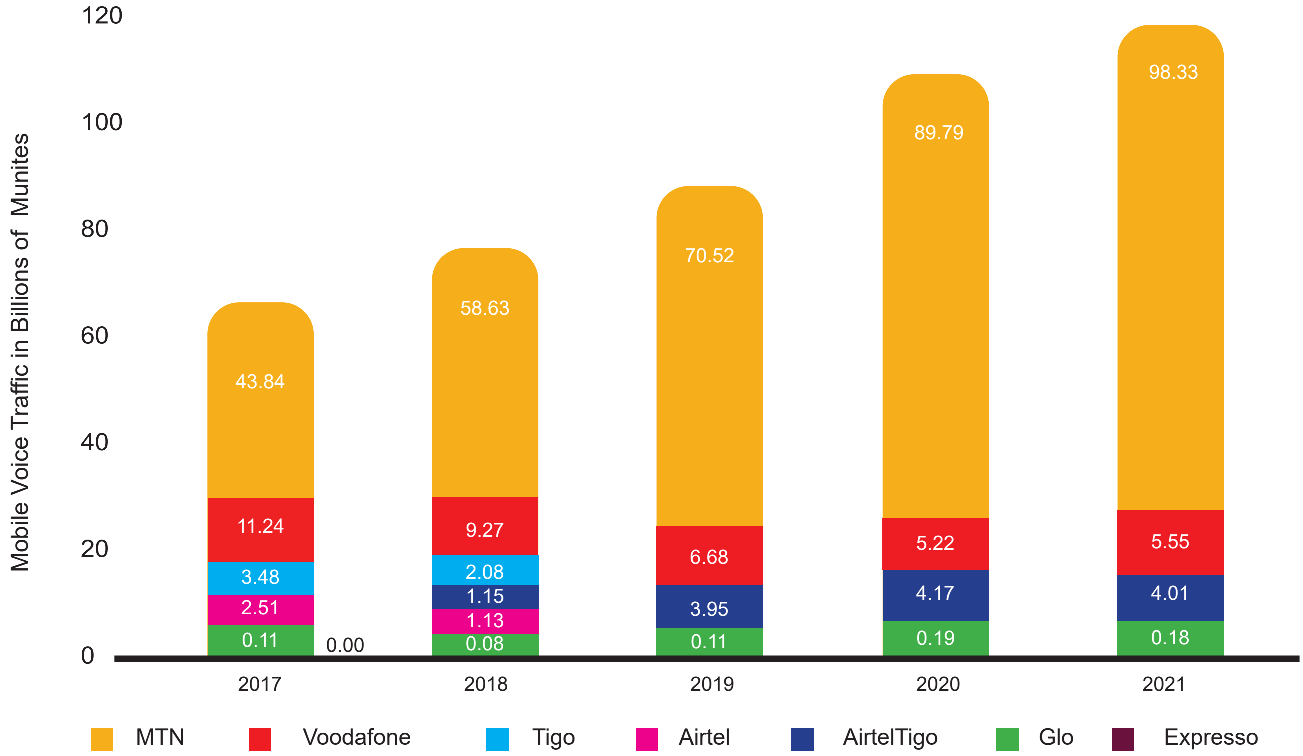


Source: NCA, Mobile Network Operators, 2021

1.8 Mobile Voice Traffic per Operator

MTN subscriptions generated 90.99% of total voice traffic with 98.33 billion minutes. This represents an increase of 8.54 billion minutes as compared to 89.79 billion minutes in 2020. Vodafone generated 5.55 billion minutes which is also an increase from 5.22 billion minutes recorded in 2020, representing 5.13% of the total voice traffic. AirtelTigo also generated 4.01 billion minutes of voice traffic representing 3.71% of total voice traffic. The remaining 0.17% of total voice traffic was generated by Glo subscriptions recording 0.18 billion minutes of traffic.

Figure 8: Mobile Voice Traffic per Operator



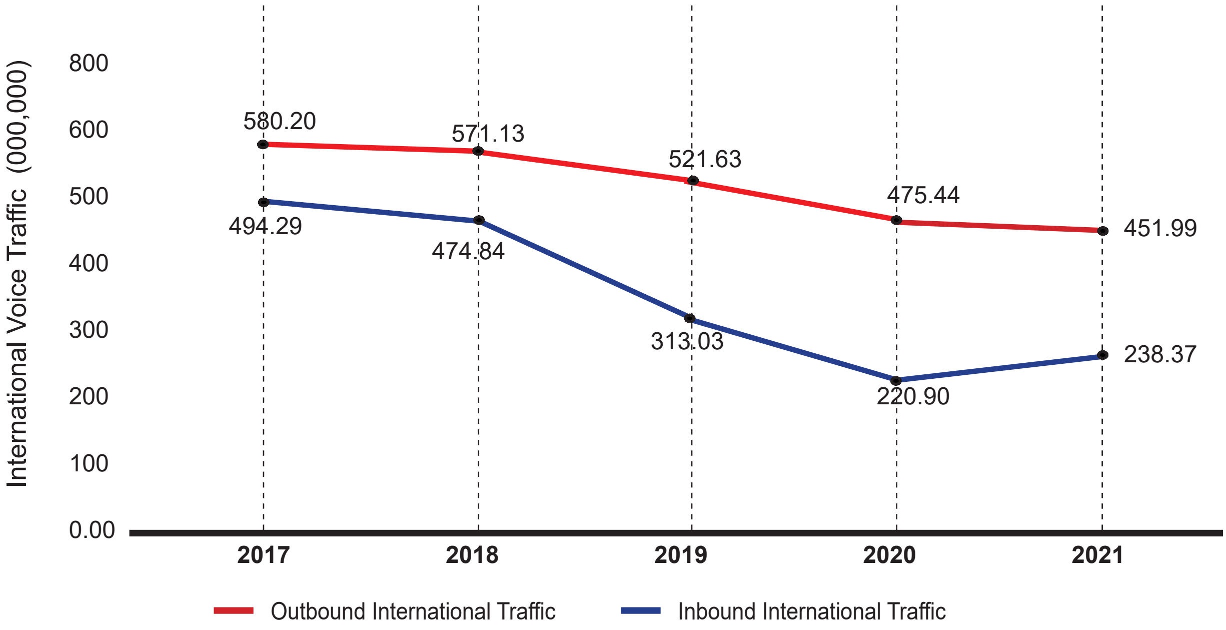
Source: NCA, Mobile Network Operators, 2021

1.9 Mobile Voice Traffic (International)

Outgoing International Voice traffic for the year 2021 was 451.99 million minutes. This is consistent with the continuous decrease in outgoing international voice traffic over the past five years. It reduced from 475.44 million in 2020 to 451.99 million minutes in 2021. Outbound International continually declined from 475.44 to 451.99 million minutes in 2021.

Inbound International traffic experienced a decline from 494.29 million minutes in 2017 to 220.90 million minutes in 2020. However, it increased from 220.90million minutes in 2020 to 238.37 million minutes in 2021 representing a 7.91% annual growth.

Figure 9: Distribution of International Voice Traffic

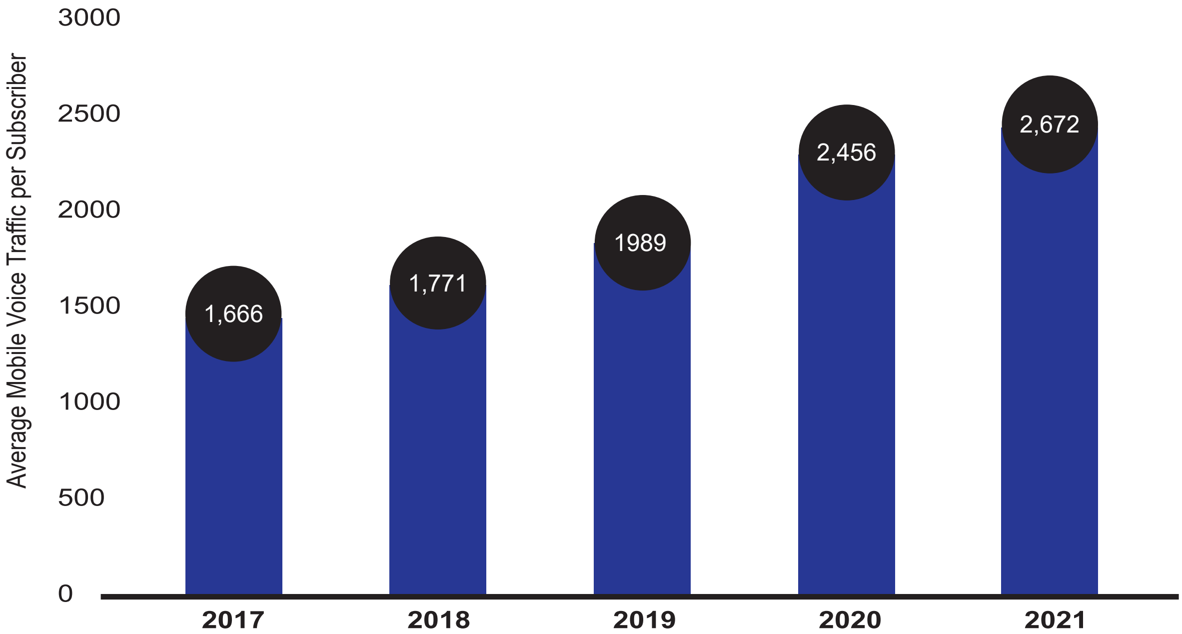


Source: NCA, Mobile Network Operators, 2021

1.10 Average Traffic per Subscription

The average volume of voice traffic generated per subscription continually increased from 1,666 in 2017 to 2,672 in 2021 recording a compound annual growth rate of 12.5% across the five-year period.

Figure 10: Average Voice Traffic per Subscription

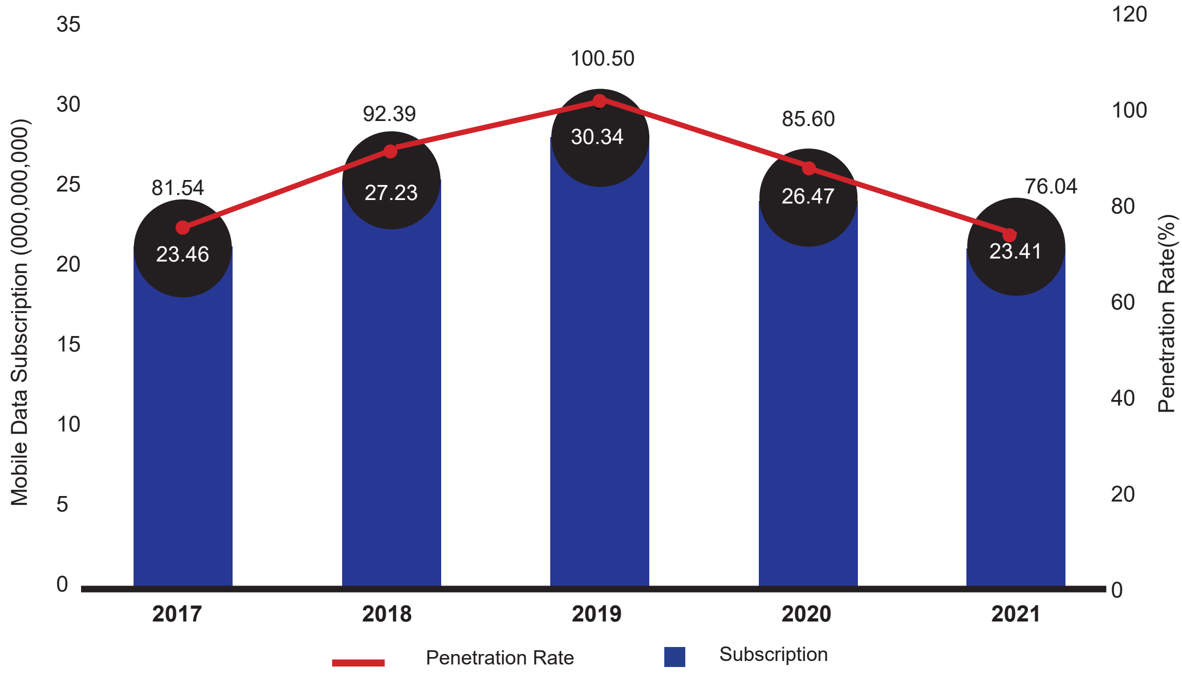


Source: NCA, Mobile Network Operators, 2021

1.11 Mobile Data Subscriptions and Penetration Rate (%)

Mobile data subscriptions has recorded a continuous decline since 2019. Mobile data subscriptions fell by 11.54 % from 26.47 million in 2020 to 23.41million in 2021. CAGR for the five-year period was -0.05%, from 23.46million in 2017 to 23.41 million in 2021. Mobile data penetration rate also fell from 85.60% in 2020 to 76.04% in 2021 as a result of the decline in mobile data subscriptions.

Figure 11: Mobile Data Subscriptions and Penetration Rate

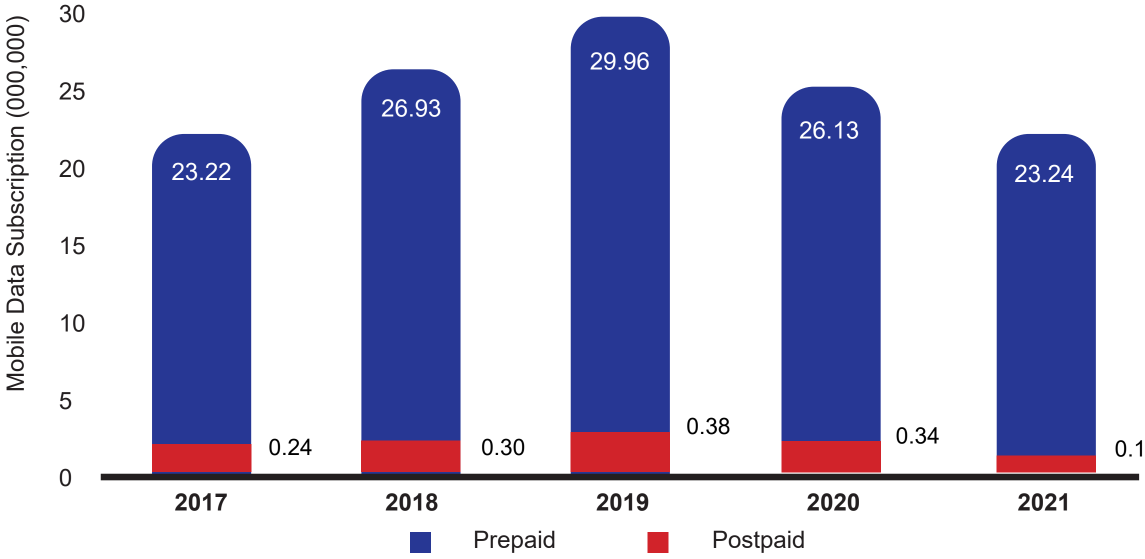


Source: NCA, Mobile Network Operators, 2021

1.12 Postpaid and Prepaid Data Subscriptions

Prepaid subscriptions of 23,237,338 made up 99.24% of total data subscriptions at the end of 2021. Postpaid subscriptions also stood at 177,189 representing 0.76% of the total data subscriptions.

Figure 12: Distribution of Postpaid and Prepaid Subscriptions

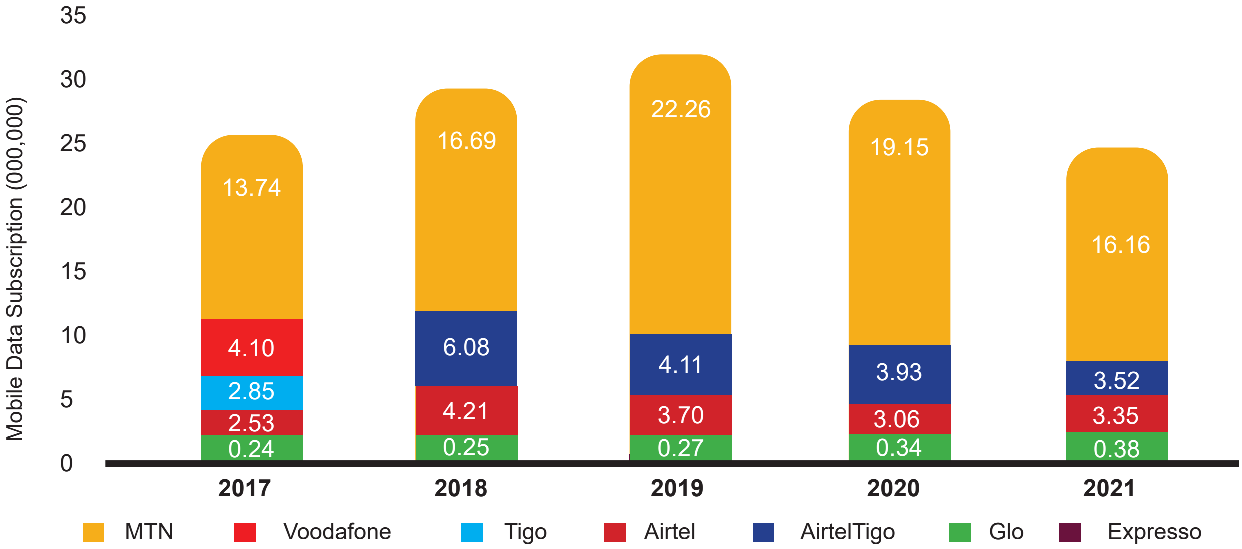


Source: NCA, Mobile Network Operators, 2021

1.13 Mobile Data Subscriptions per Operator

MTN recorded 16.16 million subscriptions at the end of 2021 which represents a 2.98 million decline in subscriptions compared to the previous year. Vodafone followed with 3.35 million subscriptions representing an increase in subscriptions by 290,694 as compared to 3.06 million in 2021. AirtelTigo at the end of 2021 had 3.52 million subscriptions, a decline of 402,108. Glo, gained 42,939 subscriptions to end the year with 0.38 million subscriptions.

Figure 13: Mobile Data Subscriptions per Operator

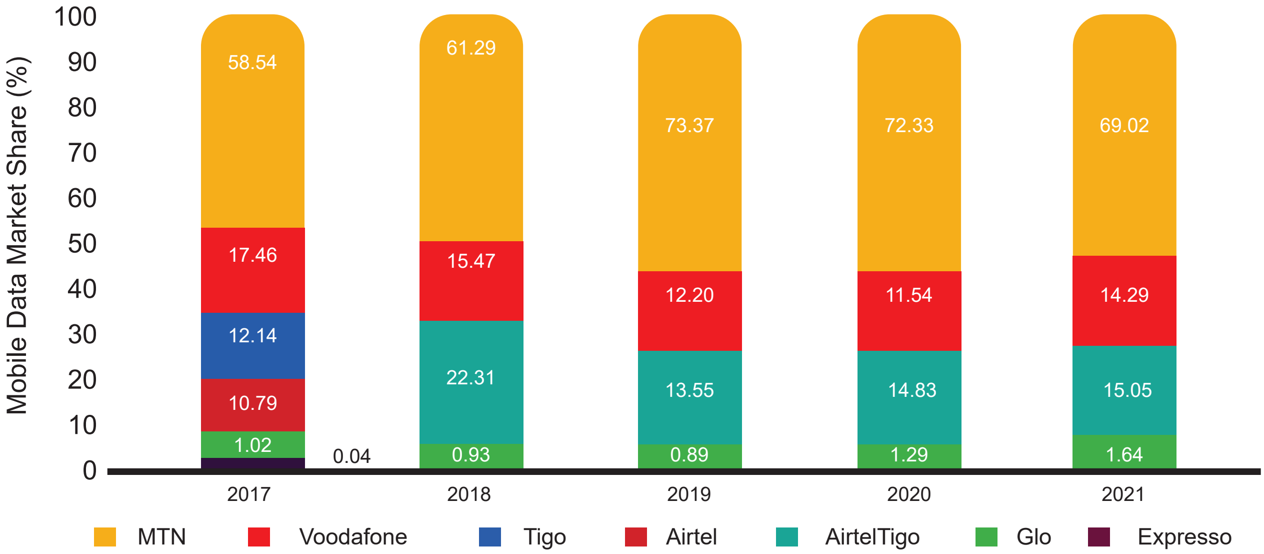


Source: NCA, Mobile Network Operators, 2021

1.14 Market Share (%) per Operator for Mobile Data Subscriptions

At the end of 2021, MTN subscriptions represented 69.02% of total Mobile Data Subscriptions. AirtelTigo subscriptions also made up 15.05% of the market for data subscriptions. Vodafone's market share was 14.29%. Glo ended the year with 1.64% of total Mobile Data Subscriptions.

Figure 14: Market Share per Operator

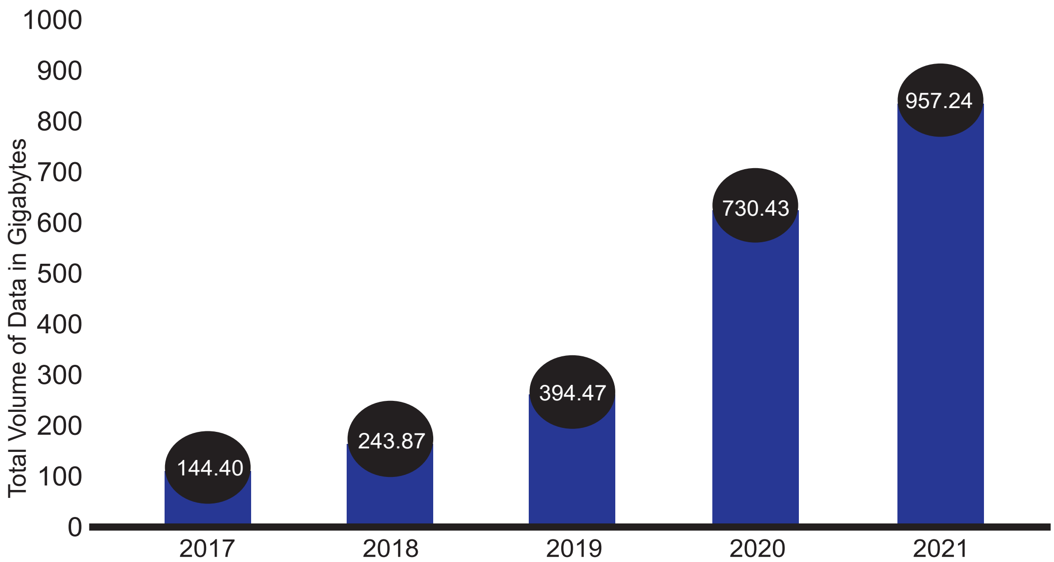


Source: NCA, Mobile Network Operators, 2021

1.15 Mobile Data Traffic

Total Mobile Data Traffic at the end of 2021 was 957.24 million gigabytes. This is an increase of 31.05% from 730.43 million gigabytes in the previous year. In 2020, the volume of data grew by 89.61% growth from 385.23 million gigabytes in 2019 to 730.43 million gigabytes in 2020. Volume of data grew at a Compound Annual Growth Rate of 15.28% from 2017 to 2021.

Figure 15: Volume of Mobile Data Traffic



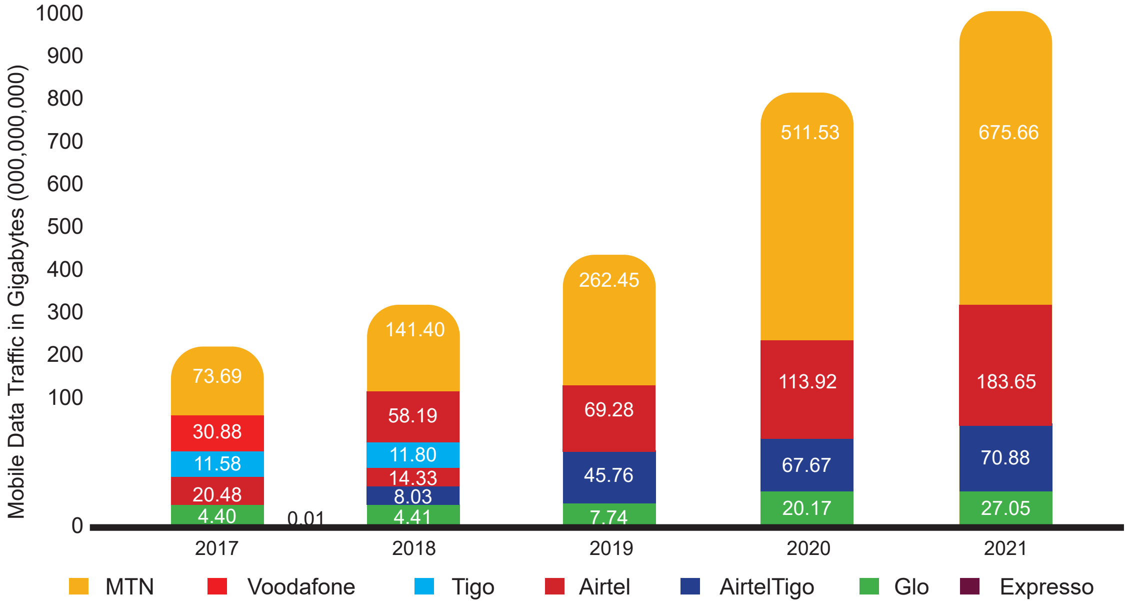
Source: NCA, Mobile Network Operators, 2021

1.16 Mobile Data Traffic per Operator

MTN generated 675.66 million gigabytes, representing a growth rate of 32.08% when compared to 511.53 million gigabytes in 2020. Vodafone followed with 183.65 million gigabytes, an increase of 61.20% as compared to 113.92 million gigabytes generated in 2020. AirtelTigo also generated 70.88 million gigabytes of data traffic. Total data traffic generated by Glo was 27.05 million gigabytes.

In terms of market share, MTN's data traffic represents 70.58% of the total data traffic. Vodafone's data traffic represents 19.19% of the total data traffic while AirtelTigo contributed 7.40% to total data traffic. Glo accounted for 2.38% of the data traffic market.

Figure 16: Mobile Data Traffic per Operator

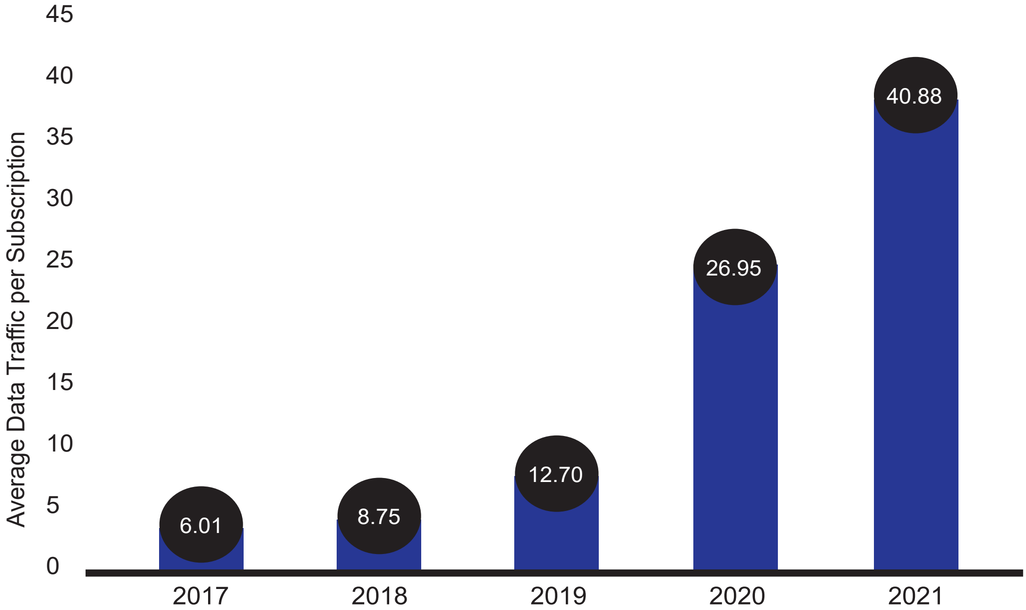


Source: NCA, Mobile Network Operators, 2021

1.17 Average Data Traffic per Subscription

Average data traffic per subscription has experienced a consistent rise over the five year period. In the year 2017 average data traffic per subscription stood at 6.01 gigabytes, this then grew at a rate of 580% to 40.88 gigabytes in 2021.

Figure 17: Average Data Traffic per Subscription

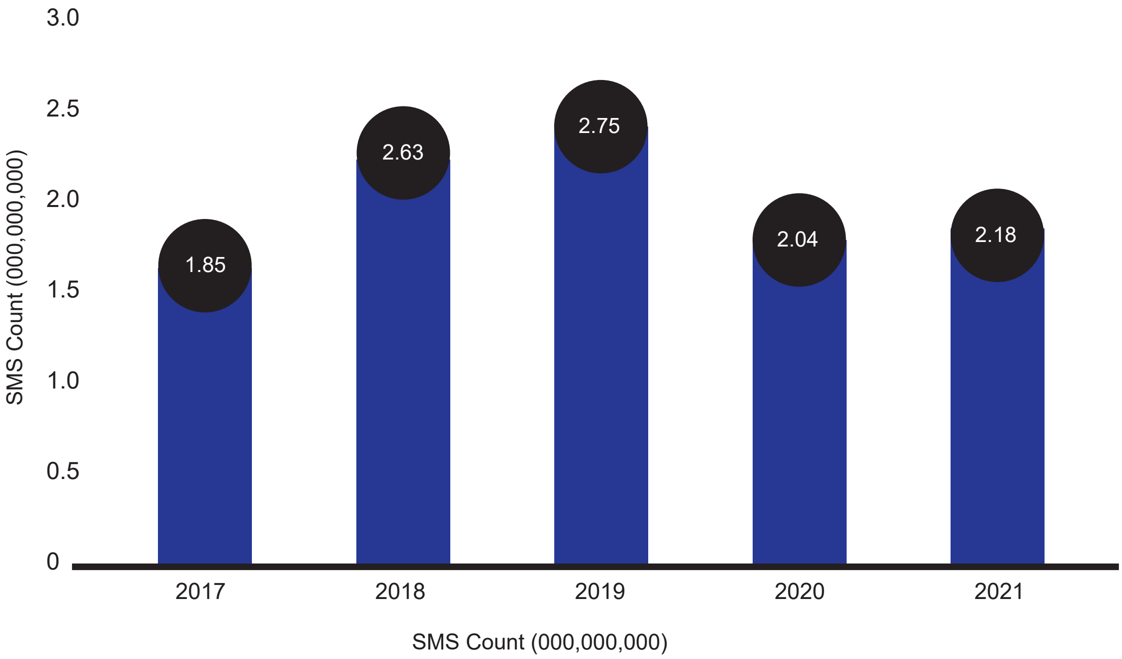


Source: NCA, Mobile Network Operators, 2021

1.18 Total Short Messaging Service (SMS)

Total Short Messaging Service (SMS) counts increased by 1.21% from 2.04 billion counts in 2020 to 2.07 billion counts in the year 2021. Over the five-year period, the total SMS counts has been fluctuating with an annual compound growth rate of 2.99% from 1.85 billion counts in 2017 to 2.07 billion counts in 2021.

Figure 18: Total SMS Count in Billions

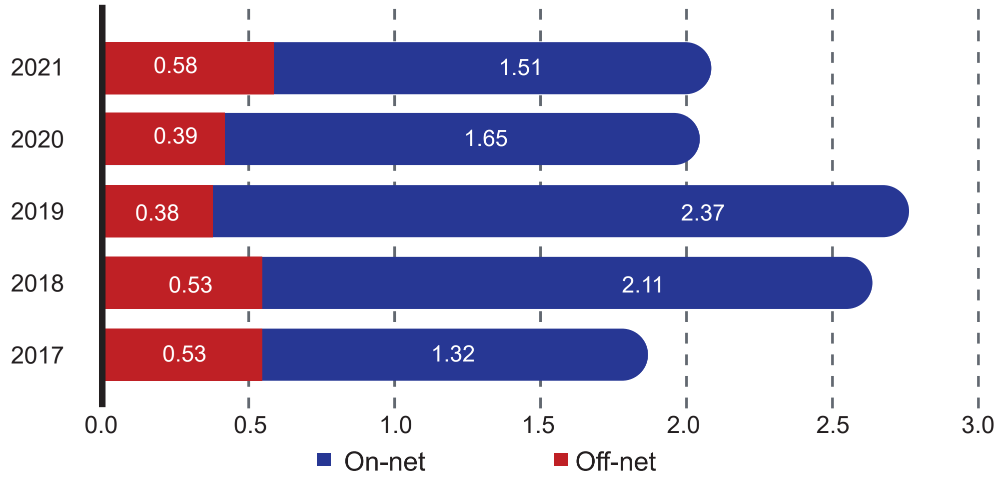


Source: NCA, Mobile Network Operators, 2021

1.19 On-net and Off-net SMS Counts

On-net SMS counts recorded a decline from 1.65 billion in 2020 to 1.51 billion in the year under review, representing 8.57% decrease in growth. On-net SMS makes up 72.30% of the total domestic SMS generated. Off-net SMS counts accounted for 27.70% of the total SMS count in 2021 with 0.58 billion SMS.

Figure 19: On-net and Off-net SMS Counts

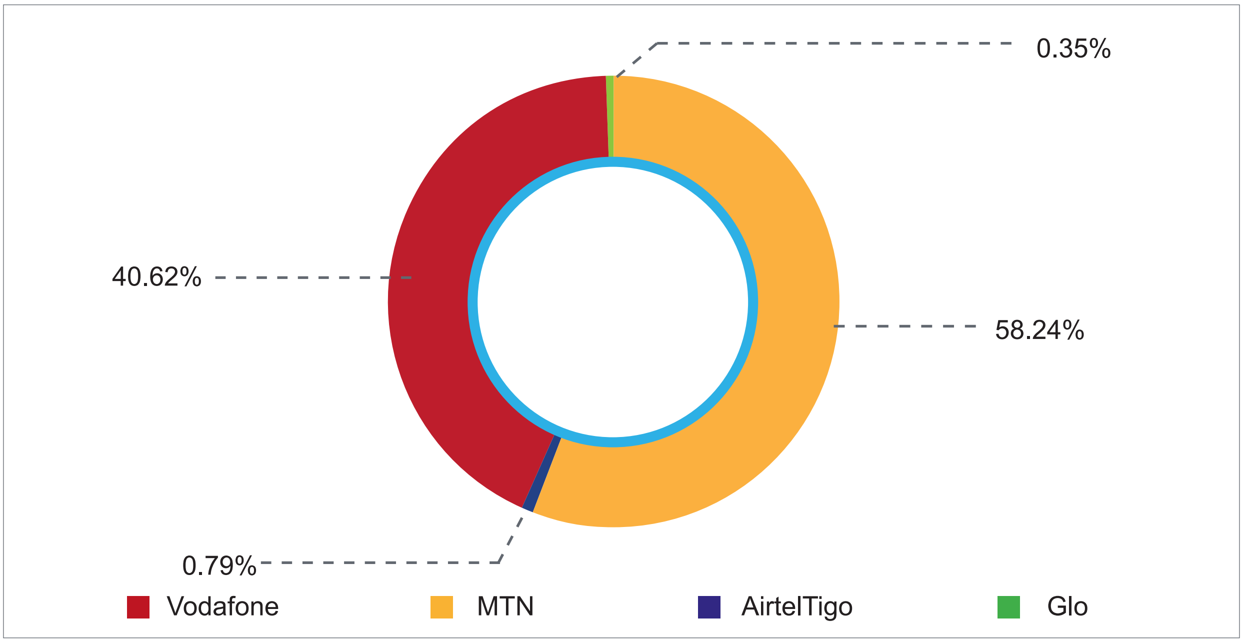


Source: NCA, Mobile Network Operators, 2021

1. 20 Total SMS Count per Operator

MTN generated 58.24% (1.27 billion) of SMS counts in 2021, with Vodafone accounting for 40.62% (0.88 billion). AirtelTigo recorded 0.79% (0.02 billion) of SMS counts and Glo generated 0.35% (0.008 billion) of total SMS counts.

Figure 20: Market Share of SMS Counts per operator

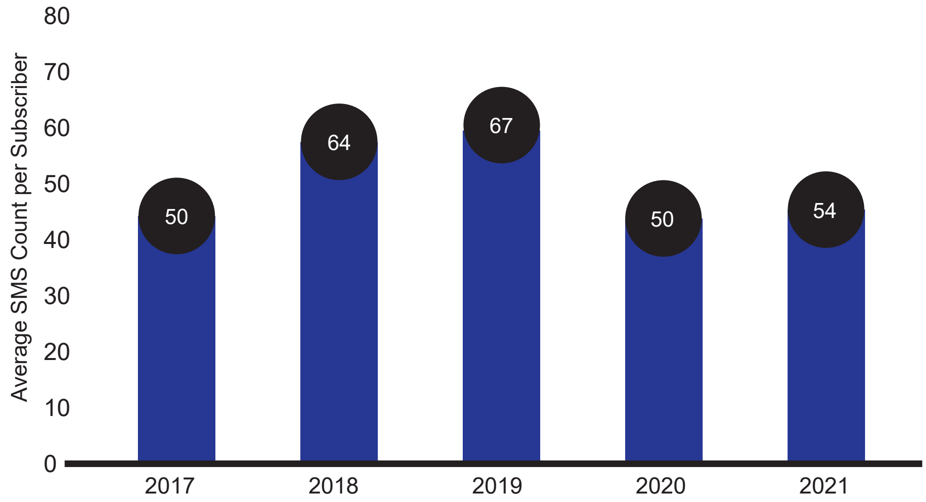


Source: NCA, Mobile Network Operators, 2021

1.21 Average SMS Count per Subscription

Average SMS Count per Subscription rose from 50 in 2017 to 64 in 2018, then reached a peak of 67 in the year 2019. It then dropped to 50 in the year 2020 but experienced a slight increase of 1, ending the year 2021with 51.

Figure 21: Average SMS Count per Subscription



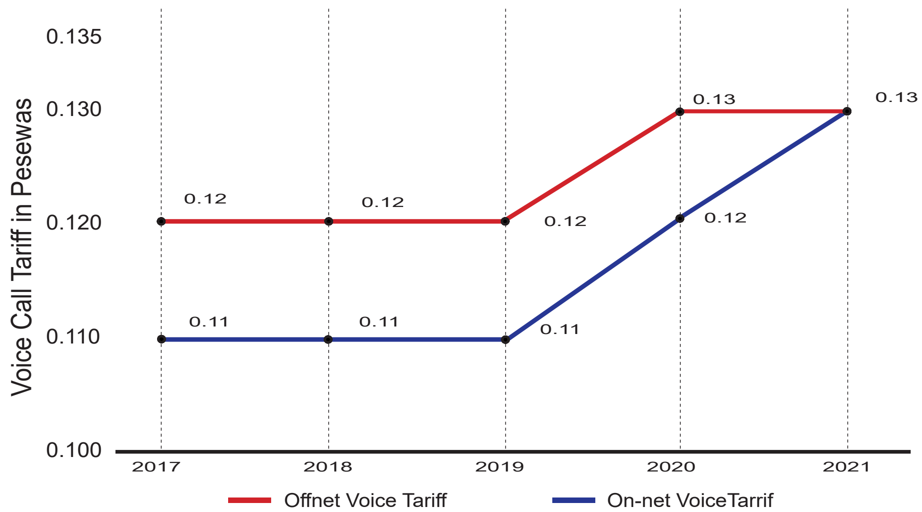
Source: NCA, Mobile Network Operators, 2021

1.22 Default Tariffs on Mobile Services

Both On-net and off-net voice tariffs were GH 0.13 at the end of 2021. This represents an increase of GH 0.01 in on-net tariffs from the previous year's tariff of GH 0.12 while off net remained unchanged for the same period.

From 2017 to 2019, On-net and off net traffics were stable at GH 0.11p and 0.12p respectively until 2020 when there was an increase of GH 0.01 for both on net and off net tariffs.

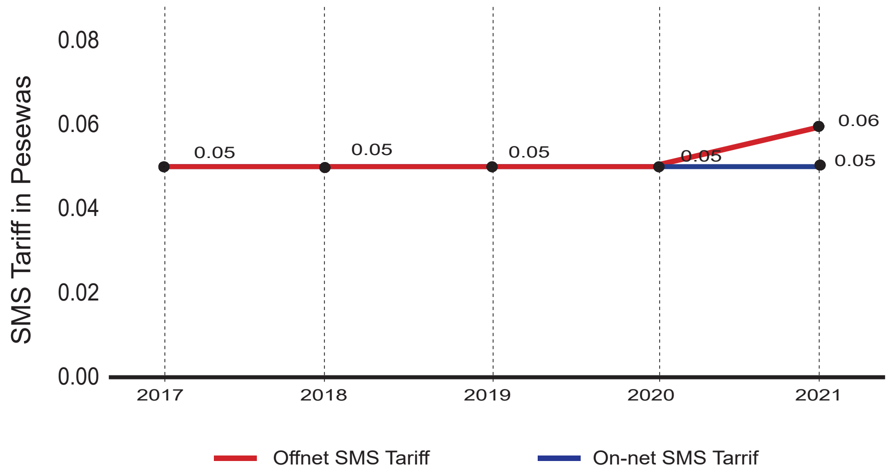
Figure 22: Mobile Voice Service Tariffs



Source: NCA; Mobile Network Operators, 2021

The average SMS tariff has been stable over the past four years until 2021 where off net tariffs increased from GH 0.05p to GH 0.06p. On net tariffs however remained unchanged at GH 0.50p over the five past year period.

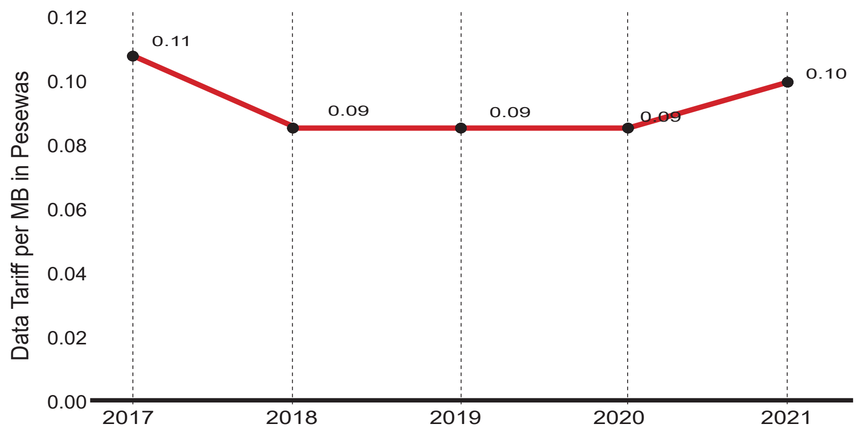
Figure 23: SMS Tariffs



Source: NCA, Mobile Network Operators, 2021

Average mobile data tariff increased from GH 0.09p/MB in 2020 to GH 0.10p/MB in 2021 The figure below represents the average industry price of data over the five-year period.

Figure 24: Mobile Data Tariff per MB



Source: NCA, Mobile Network Operators, 2021

SUMMARY - CHAPTER ONE

Mobile Voice	Mobile Voice	Mobile Data	Mobile Data
40.45 Million Subscriptions	**99.27%** Prepaid Subscriptions	**23.41** Million Subscriptions	**98.72%** Prepaid Subscriptions
131.34% Penetration Rate	**0.73%** Postpaid Subscribers	**76.04%** Penetration Rate	**1.28%** Postpaid Subscriptions

Market Share (Subscriptions)

MARKET SHARE
Voice Subscription

- 59.2% MTN
- 20.4% AirtelTigo
- 18.3% Vodafone
- 2.1% Glo

MARKET SHARE
Data Subscription

- 69.0% MTN
- 15.1% AirtelTigo
- 14.3% Vodafone
- 1.6% Glo

Traffic

Voice Traffic
108.07
Billion Minutes
representing
a year-on-year growth rate
of 34.2%

Average Voice Traffic per Subscription
26.74
Munites

Data Traffic
957.24
million gigabytes
representing
a year-on-year growth rate
of 88.5%

Average Data Traffic per Subscreiption
40.88
GB

SMS Counts
2.07
Billion Counts
representing
a year-on-year growth rate
of 1.21%

Average SMS Count per Subscription
51
Counts

CHAPTER TWO

FIXED NETWORK SERVICES

2.0 Introduction

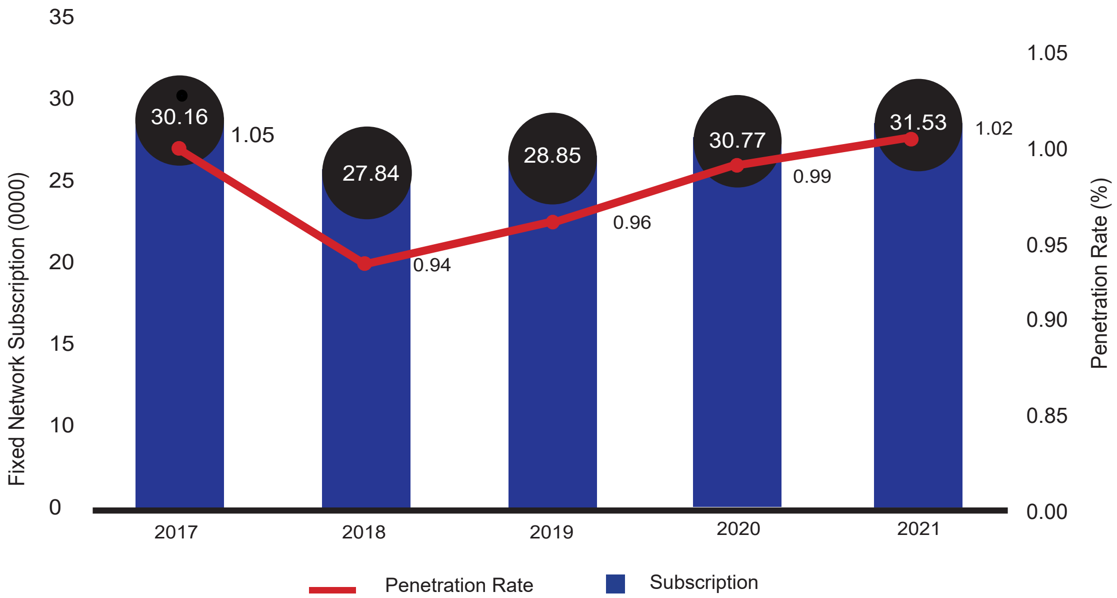
This chapter covers subscriptions, volume of traffic generated, and fixed data services over the five-year period from 2017 to 2021. The Ghanaian telecommunications industry has three (3) fixed network service providers namely; AirtelTigo, MTN and Vodafone.

2.1 Fixed Voice Subscriptions and Penetration rate

Fixed Voice Subscriptions continued to experience a steady growth for the third year running (2019 – 2021). In 2021, Fixed Voice subscriptions stood at 315,271 which indicates a 2.47% growth from 307,668 subscriptions recorded in 2020. Over the five-year period, fixed voice subscriptions increased from 301,551 in 2017 to 315,271 in 2021 representing a Compound Annual Growth Rate of 1.12%.

Subsequently, the penetration rate increased from 0.99% in 2020 to 1.02% in 2021 which reflects a steady rise in fixed line subscriptions since 2019.

Figure 25: Fixed Voice Subscriptions and Penetration rate (%)

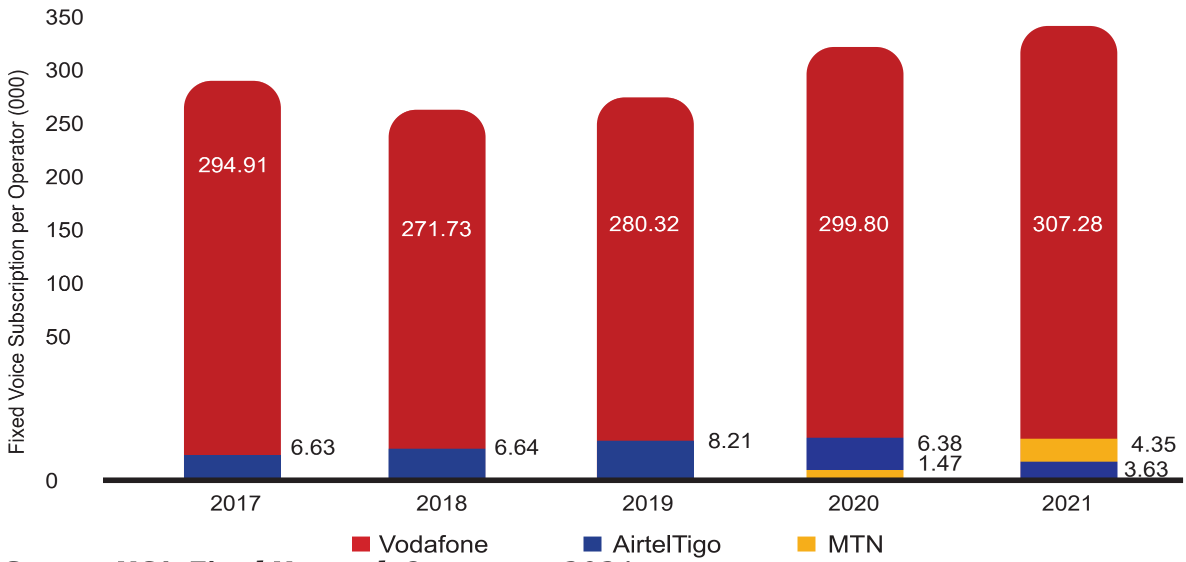


Source: NCA, Fixed Network Operators (2021)

2.2 Fixed Voice Subscription per Operator

Vodafone recorded 307,278 subscriptions, a 2.49% increase on 299,802 recorded in 2020. MTN ended 2021 with 4,359 subscriptions representing 195.13% growth from the previous year's subscription of 1,477. AirtelTigo ended the year with 3,634 subscriptions resulting in a decline of 43.12% from 2020's subscription of 6,389.

Figure 26: Fixed Voice Subscriptions per Operator

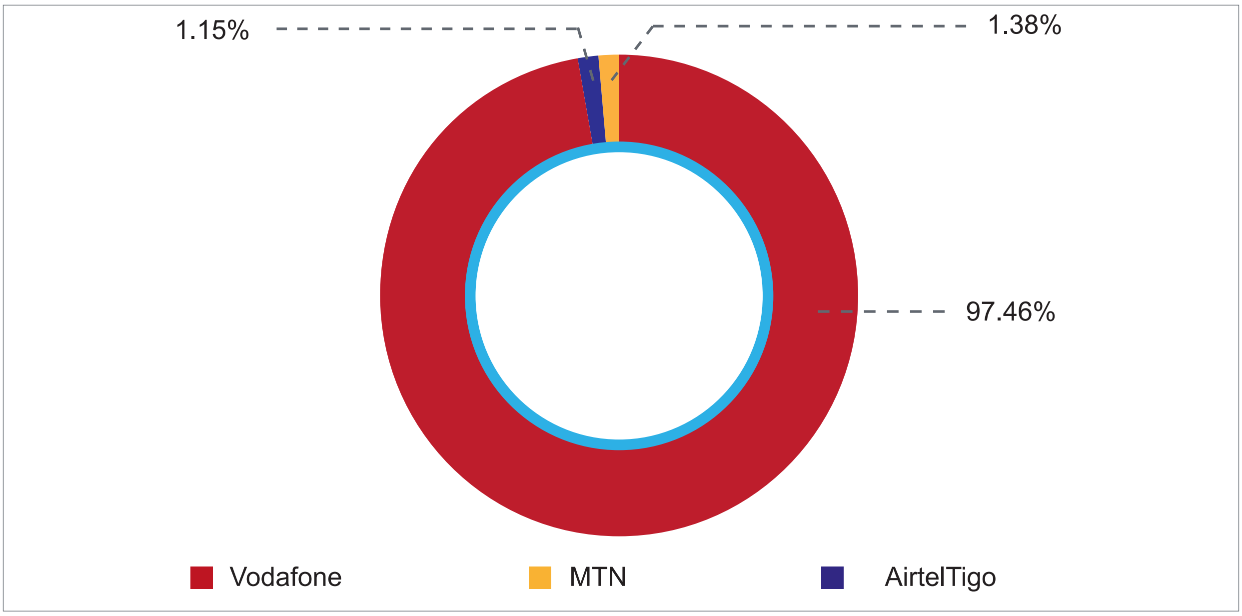


Source: NCA, Fixed Network Operators, 2021

2.2.1 Fixed Voice Subscription Market Share

Vodafone subscriptions constituted 97.47% of total fixed voice subscriptions market with MTN subscriptions covering 1.38% of the total market. AirtelTigo subscriptions represented 1.15% of the market.

Figure 27: Market Share of Fixed Voice Operators

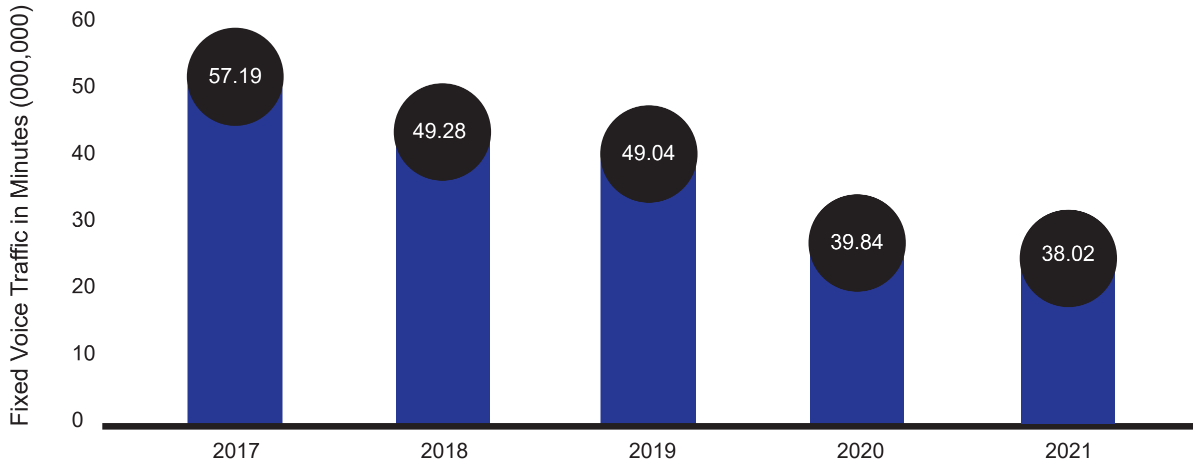


Source: NCA; Fixed Network Operators, 2021

2.3 Fixed Voice Traffic in Minutes

In 2021, traffic generated from fixed voice subscriptions was 38.02 million minutes compared to 39.84 million minutes in the subsequent year 2020, representing a decline of 4.56%. Over the five-year period, fixed voice traffic continued to decline from 57.19 million minutes in 2017 to 38.02 million minutes in 2021 resulting in a Compound Annual Growth Rate of -16.89%.

Figure 28: Fixed Voice Traffic in minutes

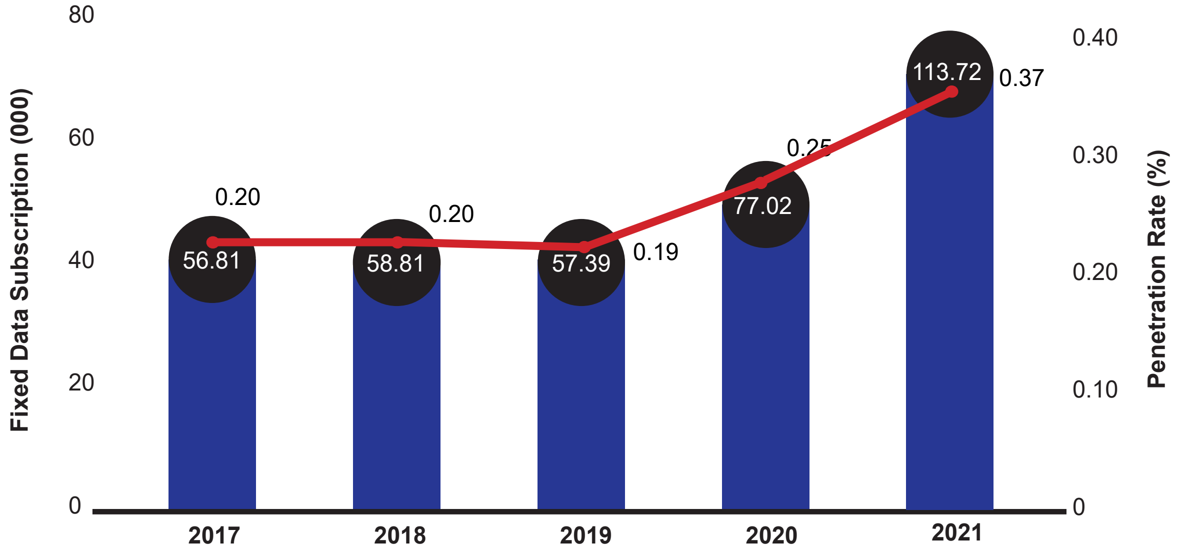


Source: NCA, Fixed Network Operators, 2021

2.4 Fixed Data Subscriptions & Penetration Rate (%)

Fixed data subscriptions increased from 77,022 in 2020 to 113,722 in 2021 representing a growth rate of 47.6%. Fixed Data Subscriptions experienced a 5.60% compound annual growth rate from 2017 to 2021. The growth in subscriptions also resulted in a rise in penetration rate from 0.25% in the previous year to 0.37% in the year under review. This was after an initial drop from 0.20 in 2018 to 0.19 in 2019.

Figure 29: Fixed Data Subscriptions &Penetration rate (%)

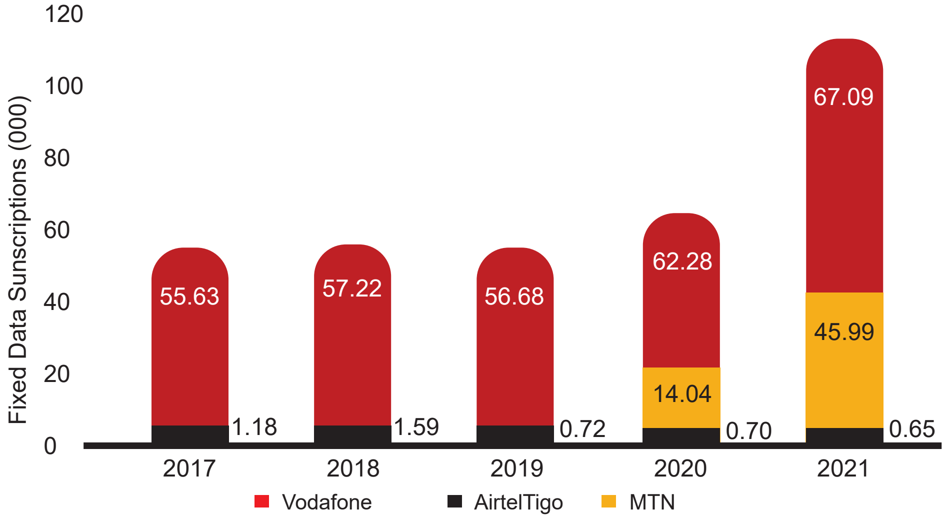


Source: NCA, Fixed Network Operators (2021)

2.5 Fixed Data Subscriptions per Operator

Vodafone subscription increased from 62,284 in 2020 to 67,086 in 2021 representing a 7.71% growth rate, MTN's data subscriptions also increased from 14,038 in 2020 to 45,987 in 2021 representing a growth rate of 227.56%. AirtelTigo recorded 649 subscriptions in 2021 a decrease of 7.29% from 700 subscriptions recorded in the previous year.

Figure 30: Fixed Data Subscriptions per Operator

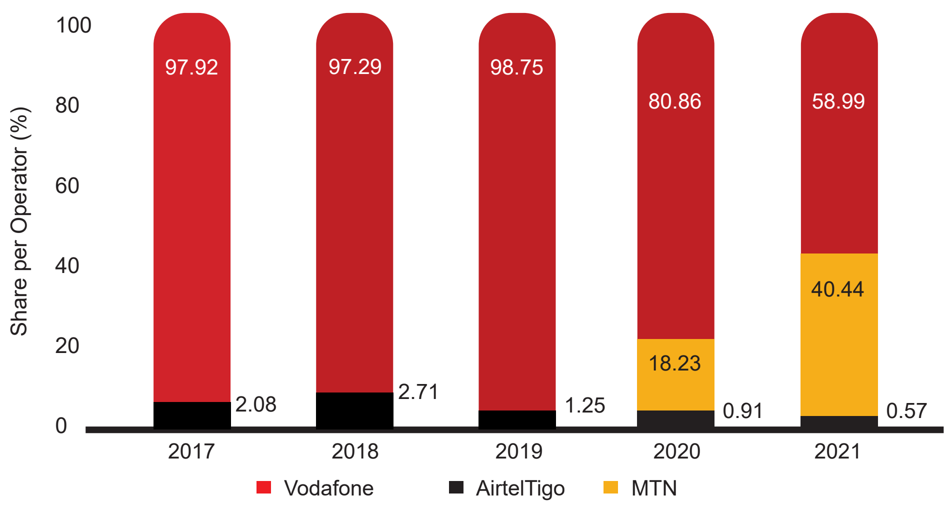


Source: NCA, Fixed Network Operators, 2021

2.6 Market Share per Operator

Vodafone's market share of fixed data subscriptions decreased from 80.86% in 2020 to 58.99% in 2021, whereas MTN had a market share of 40.44% in 2021 which is an increase from the 18.23% recorded in 2020. AirtelTigo subscriptions accounted for 0.57% of the market share as compared to 0.91% recorded in 2020.

Figure 31: Market Share (%) of Fixed Network



Source: NCA, Fixed Network Operators, 2021

SUMMARY - CHAPTER TWO

Fixed Voice Subscription and Market Share

Fixed Voice Subscriptions

315,271

representing a 2.47% annual growth rate

	vodafone	airteltigo	MTN
Subscriptions	307,278	3,643	4,359
Market Share	97.46%	1.15%	1.38%

Fixed Data Subscription and Market Share

Fixed Data Subscriptions

113,722

representing a 47.6% annual growth rate

	vodafone	airteltigo	MTN
Subscriptions	67,086	650	45,990
Market Share	58.99%	0.57%	40.44%

Fixed Voice Traffic and Market Share

Fixed Voice Traffic

39.84 M

minutes representing a decline of 4.57%

	vodafone	airteltigo	MTN
million minutes	37.14	0.87	0.02
Market Share	97.63%	0.30%	0.07%

Chapter Three

BROADBAND WIRELESS ACCESS

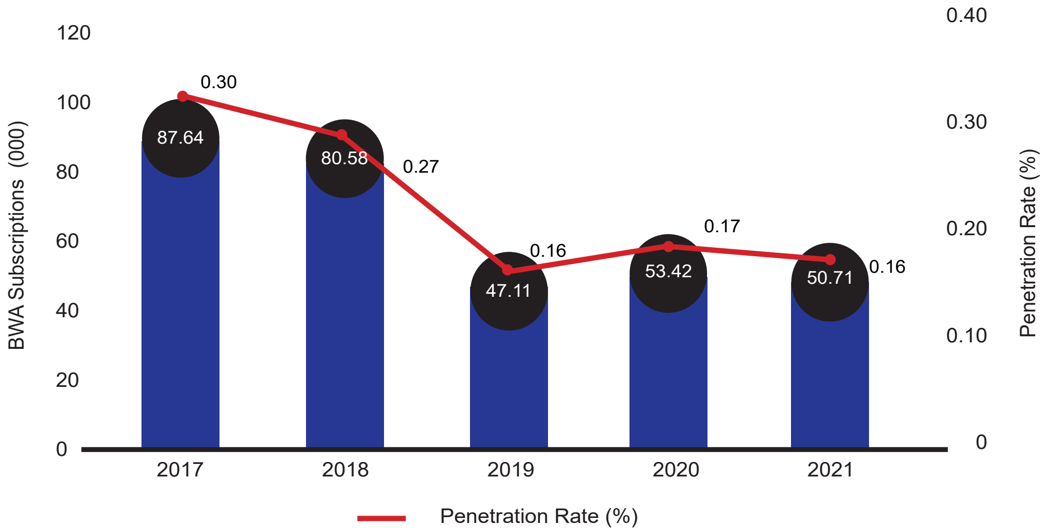
3.0 Introduction

There are five (5) Broadband Wireless Access (BWA) service providers and these are Broadband Home, Blu Communications, Busy Internet, Surfline and Telesol. The chapter highlights data analysis on subscriptions and penetration and volume of traffic.

3.1 Broadband Wireless Subscriptions and Penetration Rate (%)

Broadband Wireless Access (BWA) subscription decreased from 53,415 in 2020 to 50,714 in 2021 recording a 5.06% decline in growth. From 2017 to 2021, Broadband subscriptions fell consistently from 87,639 in 2017 to 50,714 subscriptions in 2021 representing a negative compound average growth rate of 12.78%. The penetration rate declined from 0.17% in 2020 to 0.16% in 2021.

Figure 32: Broadband Wireless Subscriptions and Penetration Rate (%)

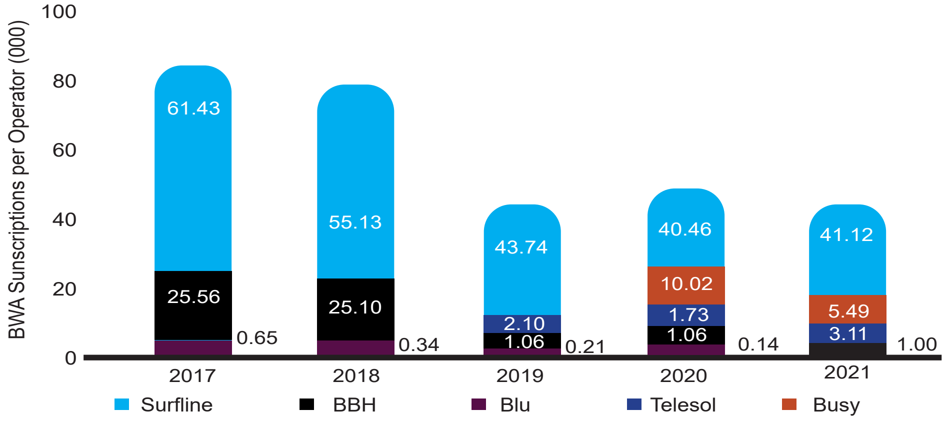


Source: NCA, Broadband Wireless Operators, 2021

3.2 Broadband Wireless Subscriptions per Operator

Surfline recorded 41.12 thousand subscriptions at the end of 2021 which represents a 1.63% increase in subscriptions compared to the previous year. Busy had 5.49 thousand subscriptions representing a decline in subscriptions from 10.02 thousand subscriptions. Telesol at the end of 2021 had 3.10 thousand subscriptions recording an increase from 1,730 in the previous year. BBH had 996 subscriptions, a decline of 5.68% as compared to 1,056 subscriptions in the previous year.

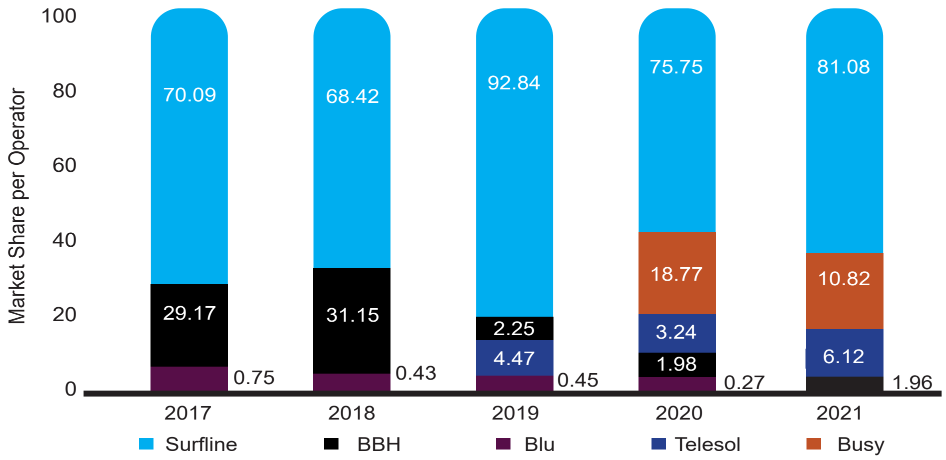
Figure 33: BWA Subscriptions per Operator



Source: NCA, Broadband Wireless Operators, 2021

Surfline's market share decreased from 93.56% in 2020 to 81.09% in 2021. Busy Internet held 10.84% of the total BWA market whereas Telesol and BBH had market share of 3.81% and 1.96% respectively in 2021.

Figure 34: Market Share for BWA subscription

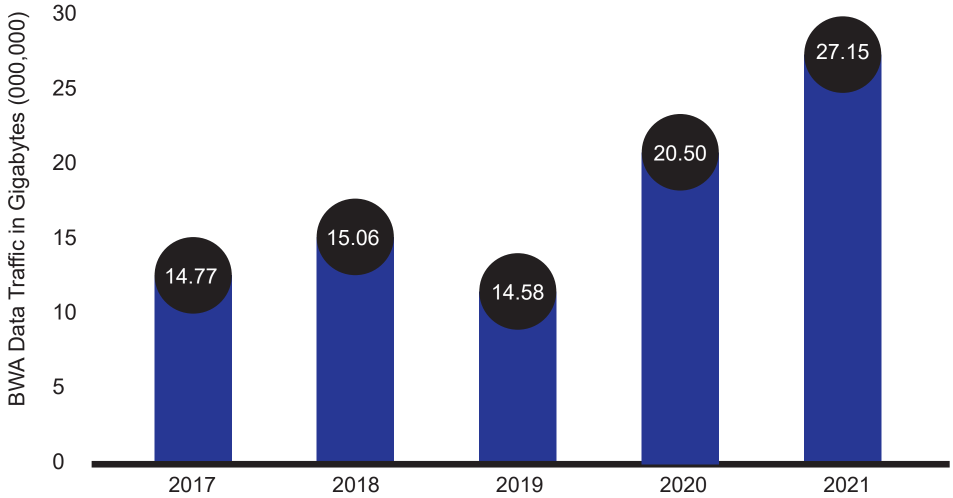


Source: NCA, Broadband Wireless Operators, 2021

3.3 BWA Traffic in Gigabytes

Total data traffic generated by BWAs at the end of 2021 was 27.15 million gigabytes indicating an increase of 34.70% from 20.15 million gigabytes in the previous year. Data generated in the past five years have increased from 14.77 million gigabytes in 2017 to 27.15 million in 2021 resulting in a Compound Annual Growth Rate of 12.95%.

Figure 35: BWA Traffic in Gigabytes

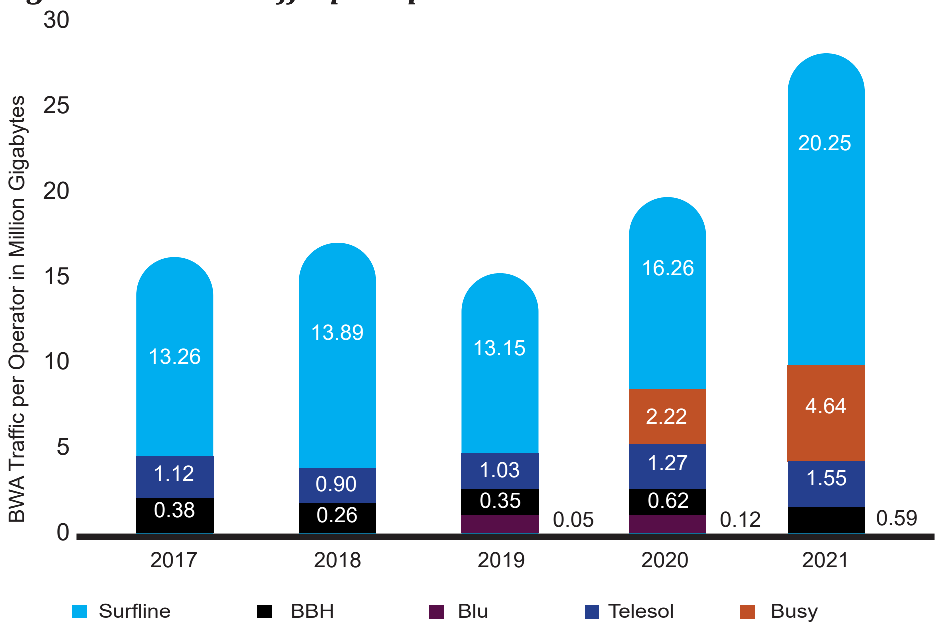


Source: NCA, Broadband Wireless Operators, 2021

3.4 BWA Traffic per Operator

Surfline generated 20,247,645 Gigabyte in 2021. BBH also generated 593,566 Gigabytes while Blu generated 118,983 gigabytes of traffic. Busy generated 4,635,201 Gigabyte traffic with Telesol generating 1,553,628 Gigabytes of data traffic for the year under review.

Figure 36: BWA Traffic per Operator



Source: NCA, Broadband Wireless Operators, 2021

SUMMARY - CHAPTER THREE

BWA Subscriptions and Market Share

BWA

50,714
5.06% decline from the previous year's figure

Subscriptions

0.16%
0.01% decline from the previous year's figure

Penetration

Operator	Subscriptions	Market Share
Surfline	41,123	81.18%
Telesol	3,106	3.81%
Busy	5,489	10.84%
BBH	996	1.97%

BWA Traffic and Market Share

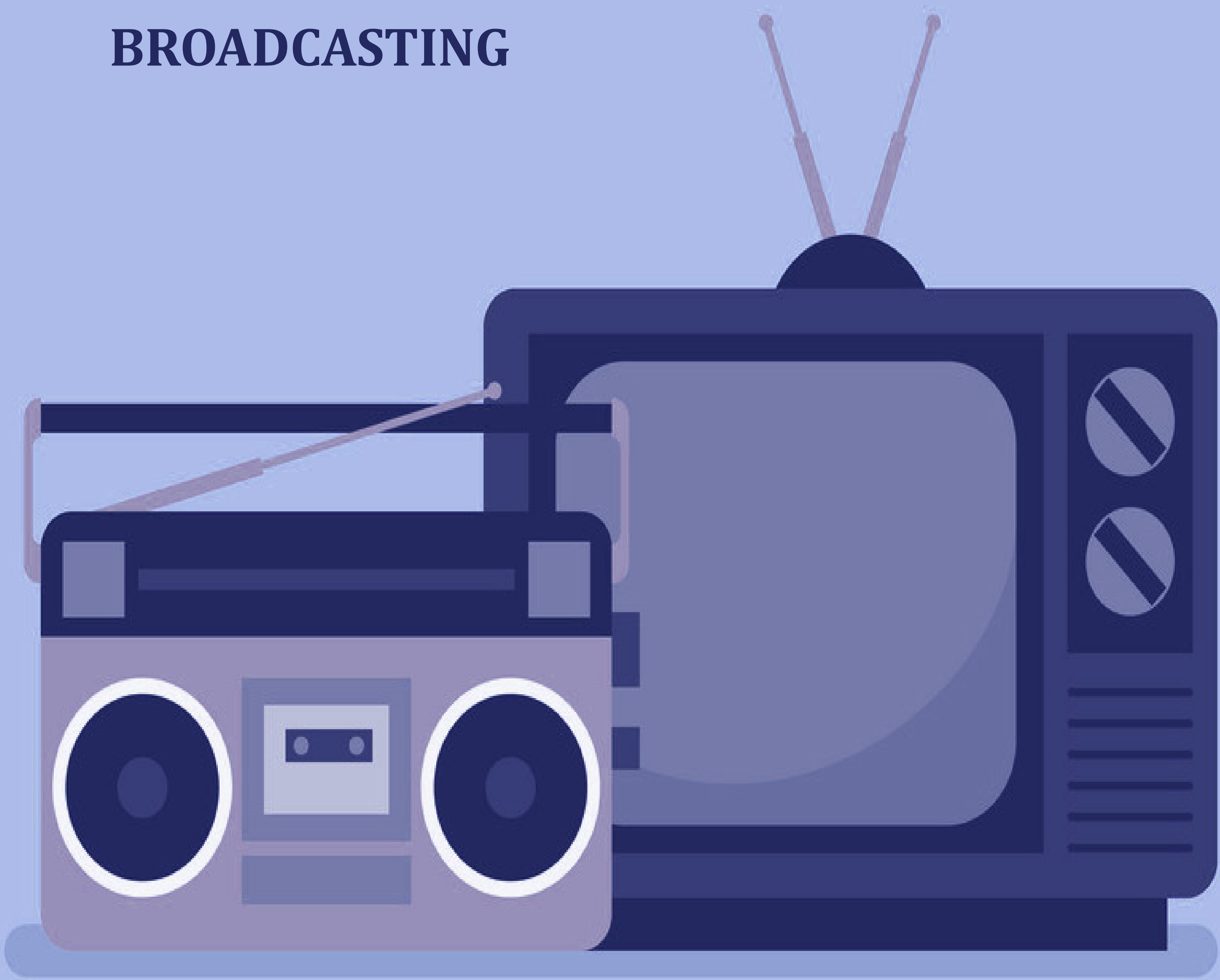
Fixed Voice Traffic

27.15 M
Gigabyte representing a 34.70% annual growth rate

Operator	Traffic	Market Share
surfline	20.25 million GB	74.58% Market Share
busy (great things happen)	4.64 million GB	17.07% Market Share
telesol (just a touch)	1.55 million GB	5.72% Market Share
Blu	0.59 million GB	2.19% Market Share
BBH Broadband Home	0.11 million GB	0.44% Market Share

Chapter Four

BROADCASTING



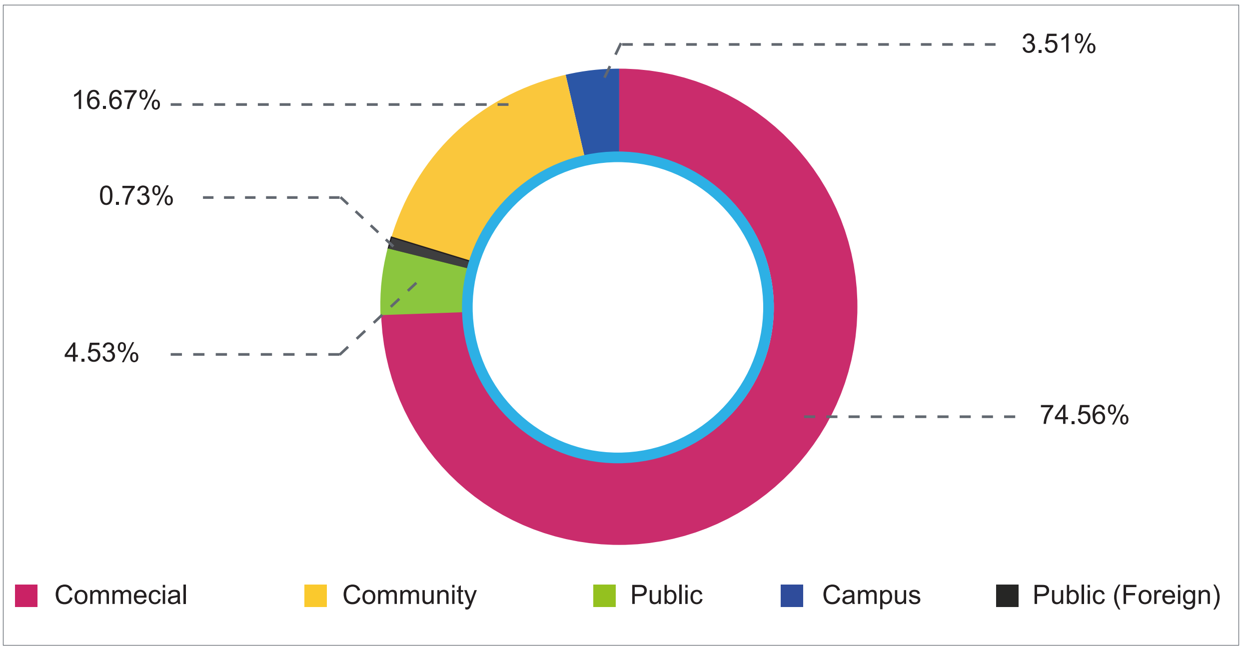
4.0 Introduction

This chapter gives information about the Frequency Modulation (FM) and Television (TV) Broadcasting. This analysis includes regional distribution of FM stations, mode of transmission of television signals and total authorised FM and TV stations. This chapter also provides data on Amateur Radio services in the country.

4.1 Types of Authorised Frequency Modulation (FM) stations

There were 684 FM stations authorised in Ghana as at the end of 2021. A total of 489 FM stations were in operation whilst 195 stations were not in operation. Out of the total authorized FM stations, 510(74.56%) were Commercial FM stations, 114 (16.67%) were Community FM stations, 31(4.53%) were public FM stations, 24(3.51%) were campus FM stations and 5 (0.73%) were Public (Foreign) FM stations.

Figure 37: Types of Authorised FM Stations as at 2021

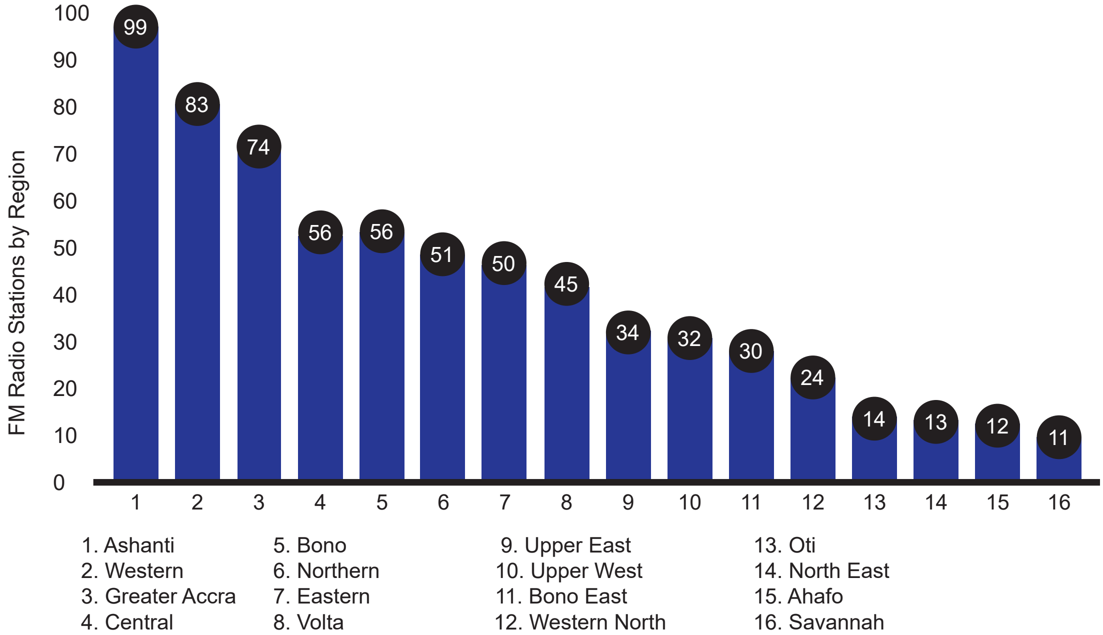


Source: National Communications Authority, 2021

4.2 Regional Distribution of Authorised FM stations

The Ashanti Region has the highest authorised FM stations with 99 FM stations while Savannah recording the least with 11 authorised FM stations.

Figure 38: Regional Distribution of Authorised FM Stations

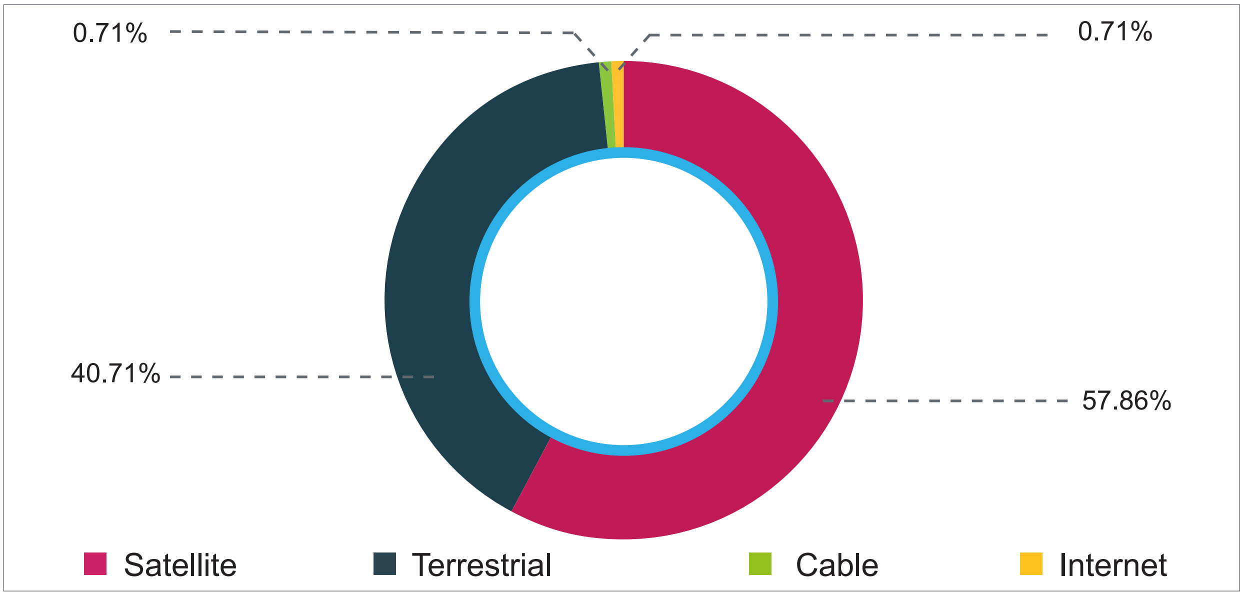


Source: National Communications Authority, 2021

4.3 Types of Television Broadcasting Platforms

At the end of 2021, there were 142 authorised television stations in the country out of which 112 were operational. There are four (4) platforms used to transmit television signals in Ghana and these platforms are satellite, terrestrial, cable and internet. Satellite television stations account for 57.86% of the authorised TV stations with 81 stations and Terrestrial being 40.71% of the total authorised television stations with 57 stations. One television station has been authorised each for cable and internet respectively with 0.71% of the market.

Figure 39: Number of authorised TV stations by platform for transmission



Source: National Communications Authority, 2021

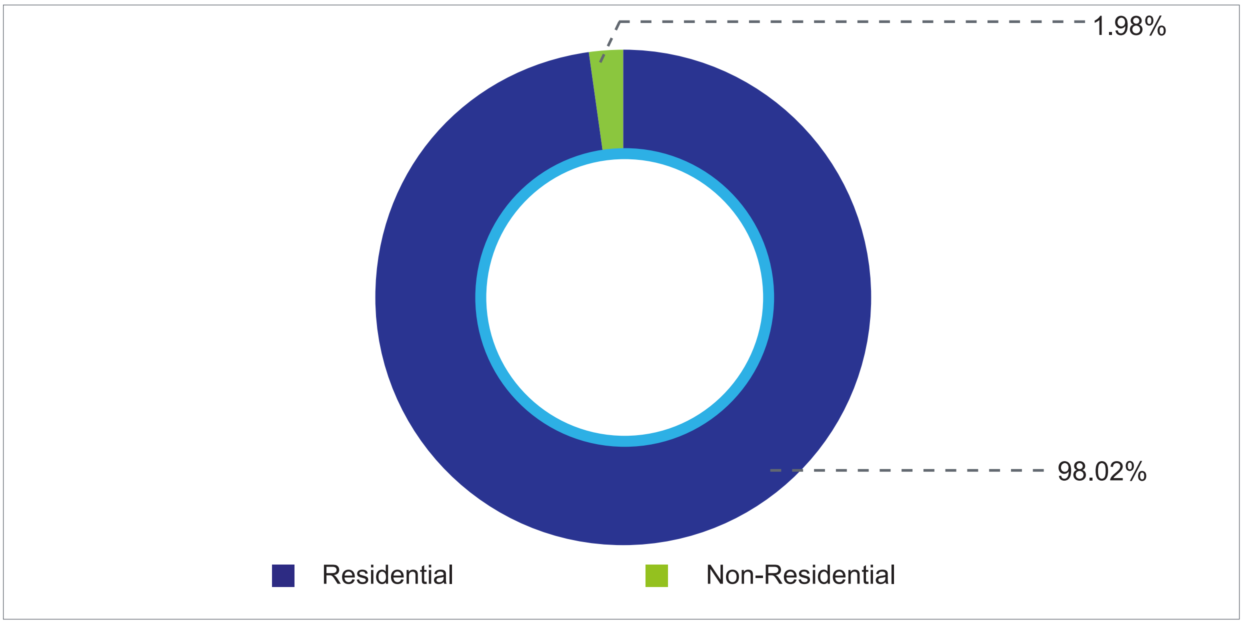
4.4 Categories of Television Services

There are 15 categories of Television Services that are authorised by the Authority. Most authorised TV Category is the Satellite Television Broadcasting (Free-to-home direct to home bouquet).

4.5 Pay TV Services

The subscriber base for the Pay TV for 2021 covers subscribers from DSTv, GOTv, K-Net and Nour Vision. At the end of 2021, there were 383,437 subscribers with 375,834 subscribers being residential subscribers (98.02%) and 7,603 being business subscribers with 1.98% of the market.

Figure 41: Distribution of Pay Tv Subscription



Source: NCA, PayTV Operators 2021

4.6 Amateur Radio Services[2]

Per the Electronic Communications Acts, 2008, Acts 775 Section 7, the class licence is grouped into the following:

a) Amateur Radio Class A:

Refers to Advance stations: that is stations which have an output power of not more than 1,000 watts

b) Amateur Radio Class B:

Refers to Beginner stations: that is, stations which have an out- put power of not more than 250 watts; and.

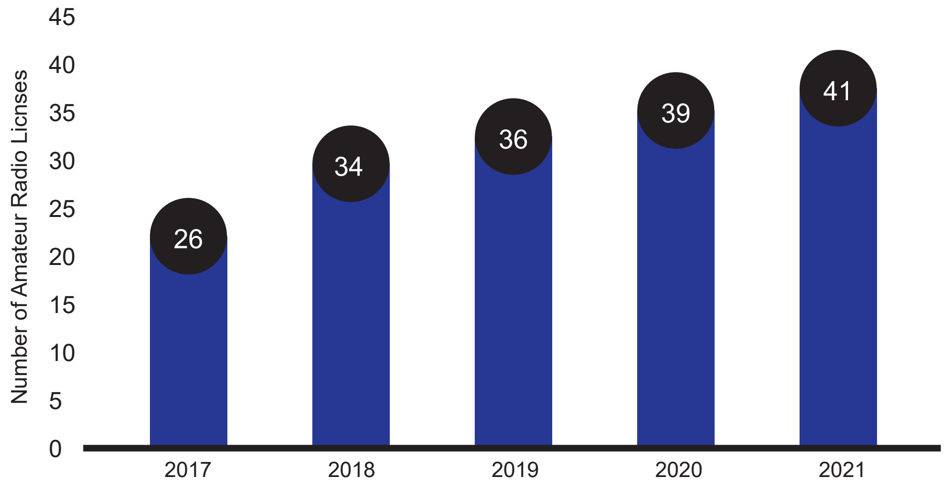
c) Amateur Radio Class C:

Refers to Intermediate stations: that is, stations which have an out-put power of not more than 100 watts.

2. Amateur Radio Service is a radio communication service for the purpose of self-training, interconnection and technical investigations carried out by amateurs.

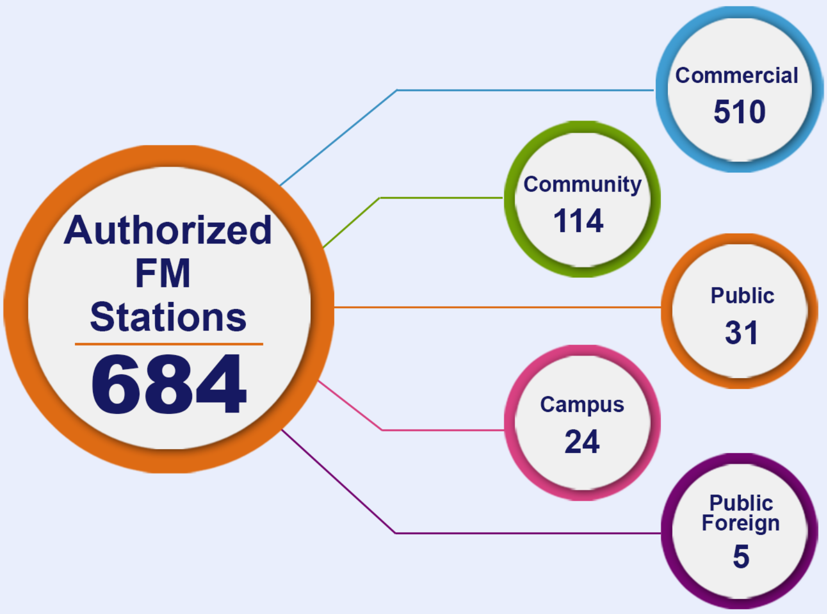
At the end of 2021, 41 Amateur radio licences were issued representing a 5.13% increase from 39 licences in 2020. Over the five years, licences issued grew by 57.69% from 26 licences in 2017 to 41 licences in 2021.

Figure 42: Amateur Radio licences



Source: National Communication Authority, 2021

SUMMARY - CHAPTER FOUR



FM Stations

489

FM Stations are **operational** representing 71.49% of authorized FM Sations

195

FM Stations are **not operational** representing 28.51% of authorized FM Sations

Regional Distribution of Authorized FM Stations

Ashanti Region

99

Highest Authorized FM Stations

Western Region

83

Second Highest Authorized FM Stations

Ahafo Region

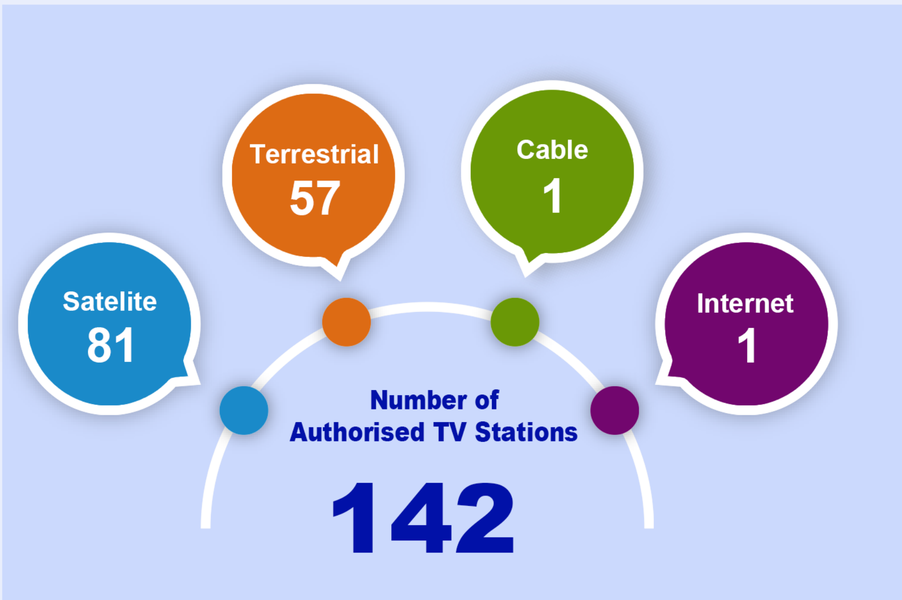
12

Second Least Authorized FM Stations

North East Region

11

Least Authorized FM Stattions



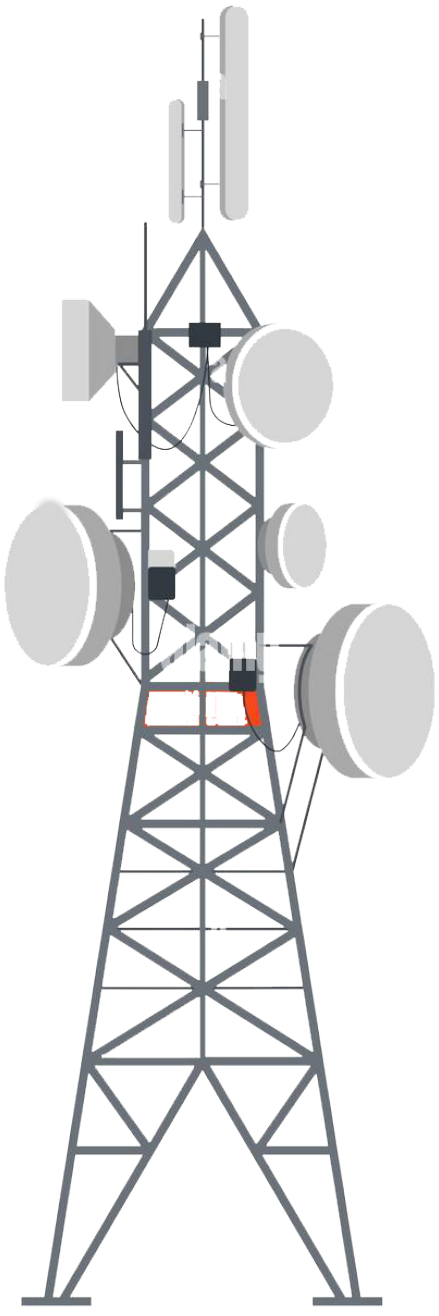
TV Stations

112

TV Stations are **operational** representing 78.87% of authorized FM Sations

30

TV Stations are **not operational** representing 21.13% of authorized FM Sations



Chapter Five

INFRASTRUCTURE SERVICES

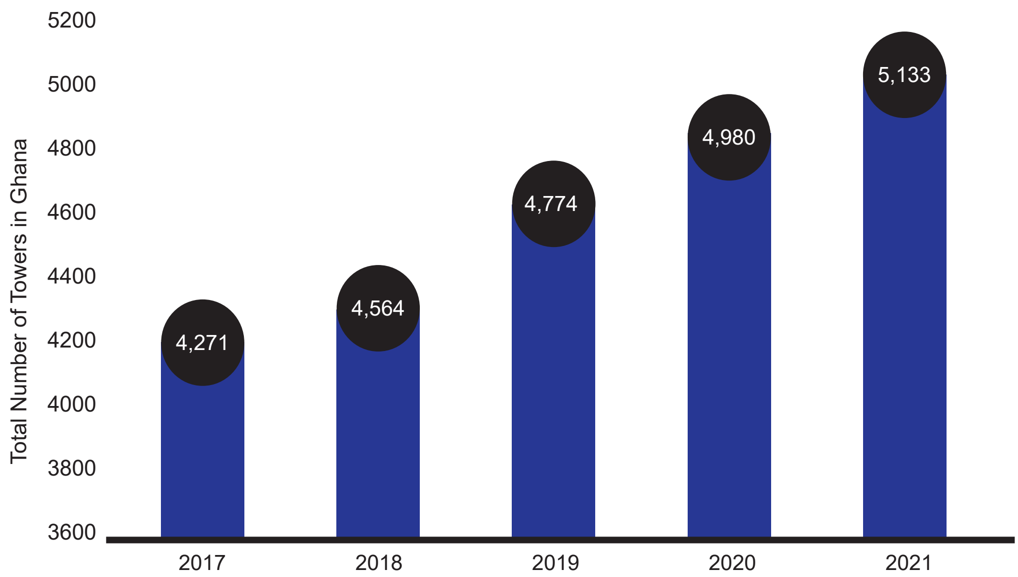
5.0 Introduction

This chapter gives an overview of infrastructure services provided by Towers Companies, International Submarine Operators and Domestic Fiber Operators. It expands to cover the total number of towers, tenancy ratio, regional distribution of towers, capacity lit and used by submarine operators and the length of domestic fibre laid and used.

5.1 Total Number of Towers

The total number of towers owned and managed by the Tower Companies is 5,133 towers, a 3.07% increase from 4,980 towers in 2020. Over the five-year period, the compound average growth rate is 4.70% from 4,271 towers in 2017 to 5,133 towers in 2021.

Figure 43: Year -on- Year number of Towers

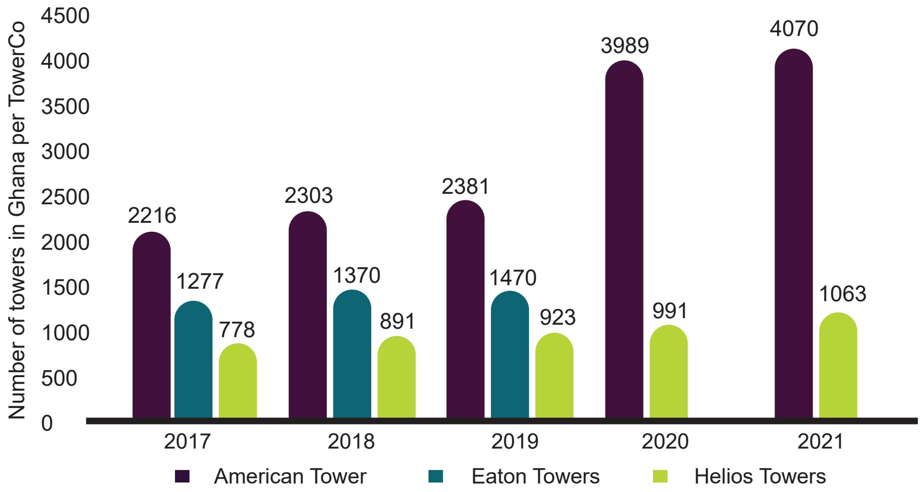


Source: NCA, Tower Companies, 2021

5.2 Number of Towers by Tower Companies

After the acquisition of Eaton Towers by American Towers, the number of towers owned and managed by American Towers are 4,070 representing 79.3% of towers while Helios Towers represent 20.7% of the total towers with 1,063 Towers.

Figure 44: Total number of Towers per Operator

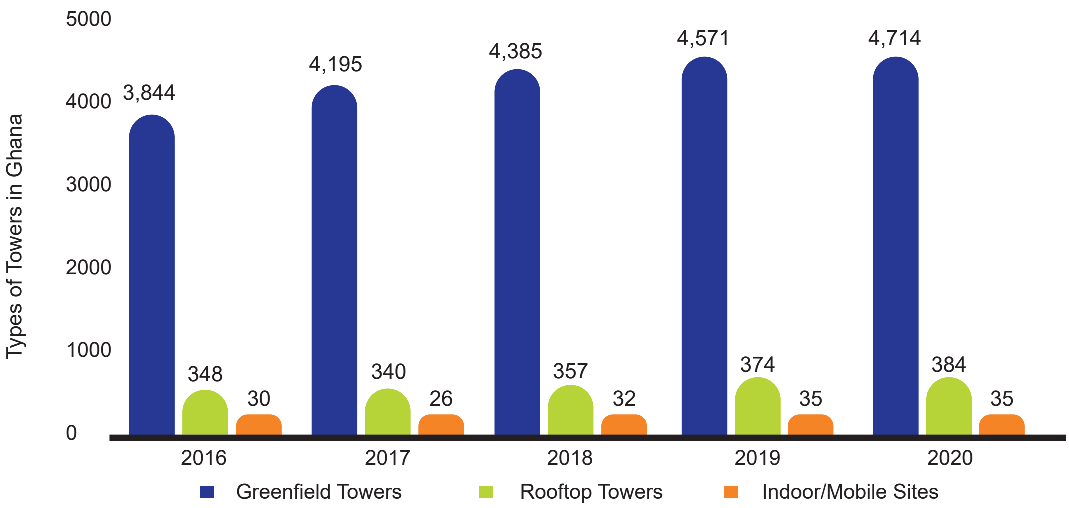


Source: NCA, Tower Companies, 2021

5.3 Types of Towers

There are 3 types of towers used to provide telecommunications in Ghana. These are the Greenfield, Rooftop and Indoor network/mobile sites towers. At the end of 2021, 91.84% of the total towers were Greenfield towers, 7.48% were Rooftop towers and 0.68% were Indoor network/mobile sites.

Figure 45: Types of Towers

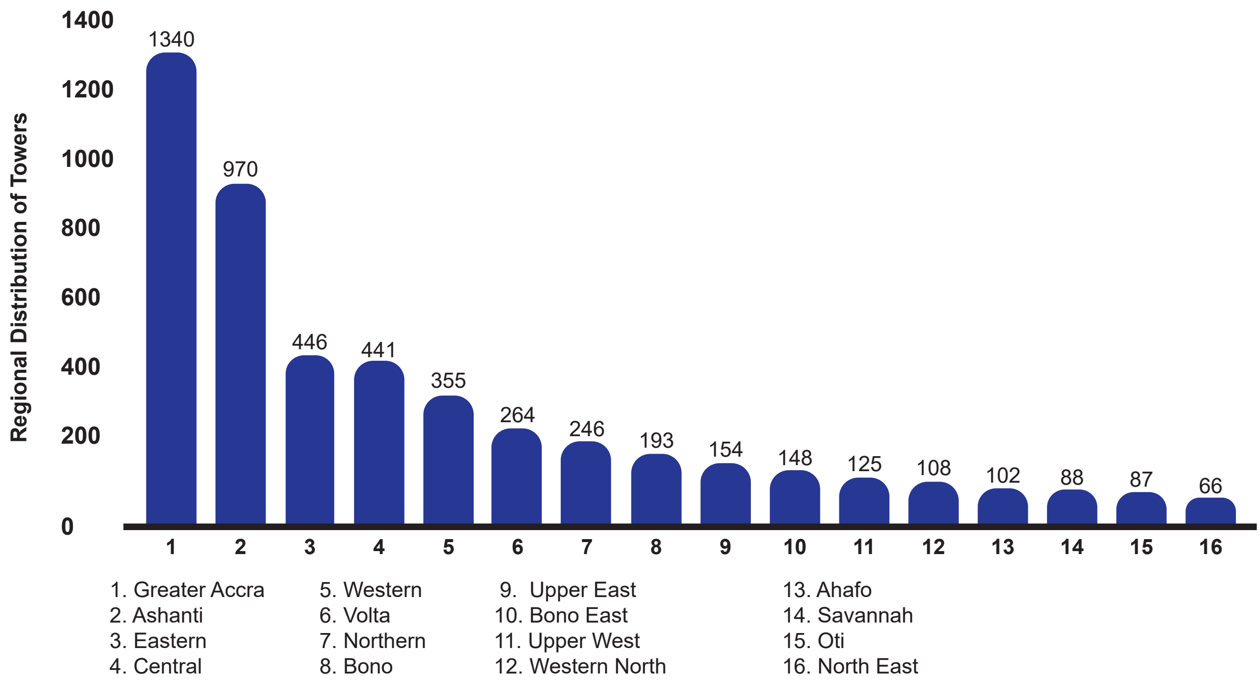


Source: NCA, Tower Companies, 2021

5.4 Regional Distribution of Towers in Ghana

Most Towers are in the Greater Accra region with 1,340 towers and the least number of towers are in North East Region. (66 towers)

Figure 46: Regional Distribution of Towers

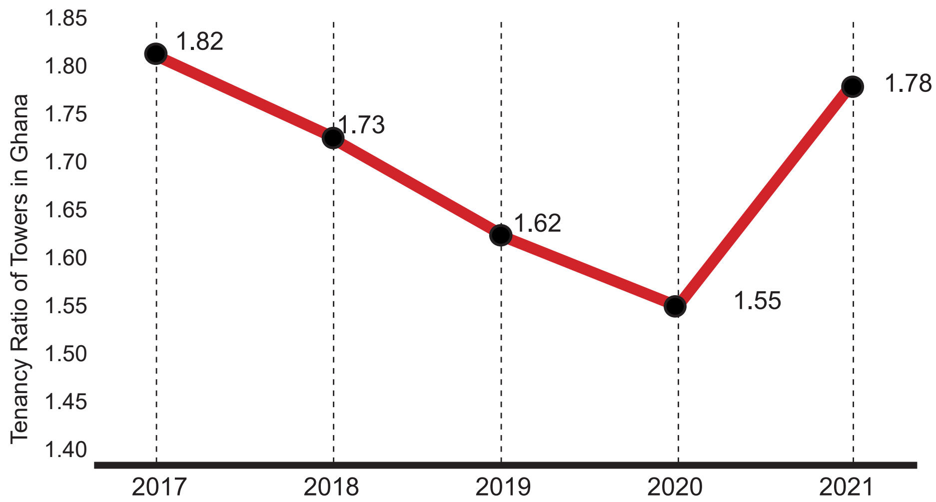


Source: NCA, Tower Companies, 2021

5.5 Tenancy Ratio

Tenancy Ratio increased from 1.55 in 2020 to 1.78 in 2021, recording a 14.83% increase. Over the five year period, the tenancy ratio was lowest in 2020 with a ratio of 1.55.

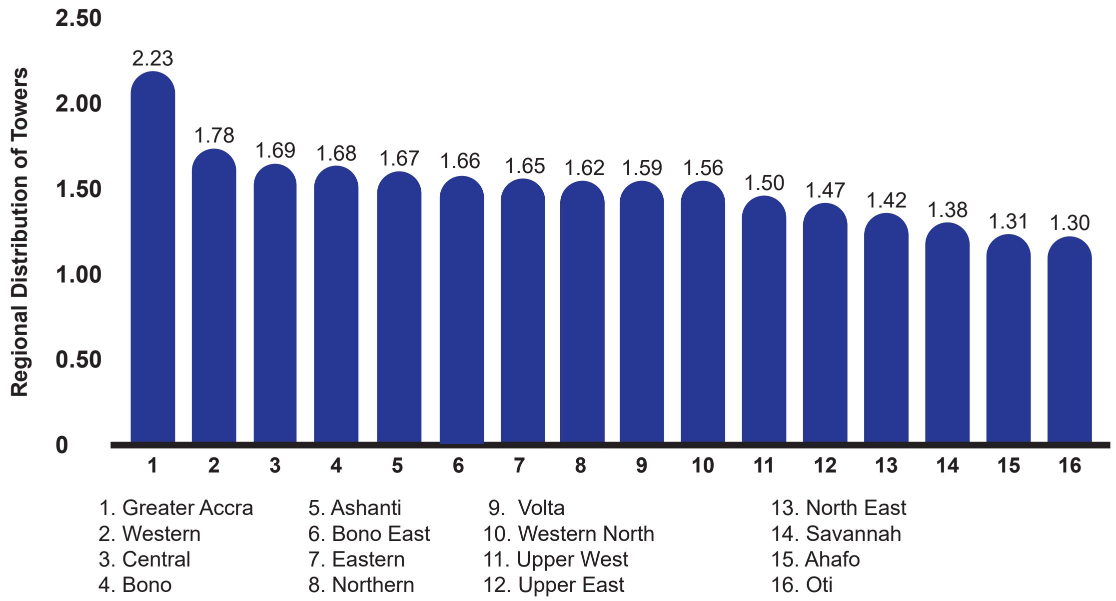
Figure 47: Tenancy Ratio



Source: NCA, Tower Companies 2021

The regional distribution of tenancy ratio in 2021 was between 2.23 and 1.30 with a nationwide average of 1.78. Greater Accra region recorded the highest with 2.23 while Oti region had a tenancy ratio of 1.30.

Figure 48: Regional Distribution of Tenancy Ratio



Source: NCA, Tower Companies, 2021

5.6 Submarine Cable Service

As at the end of 2021, there were 5 Authorised Submarine Cable Landing operators in the country, namely:

a) Scancom PLC (WACS)

b) MainOne Cable Company Ltd.

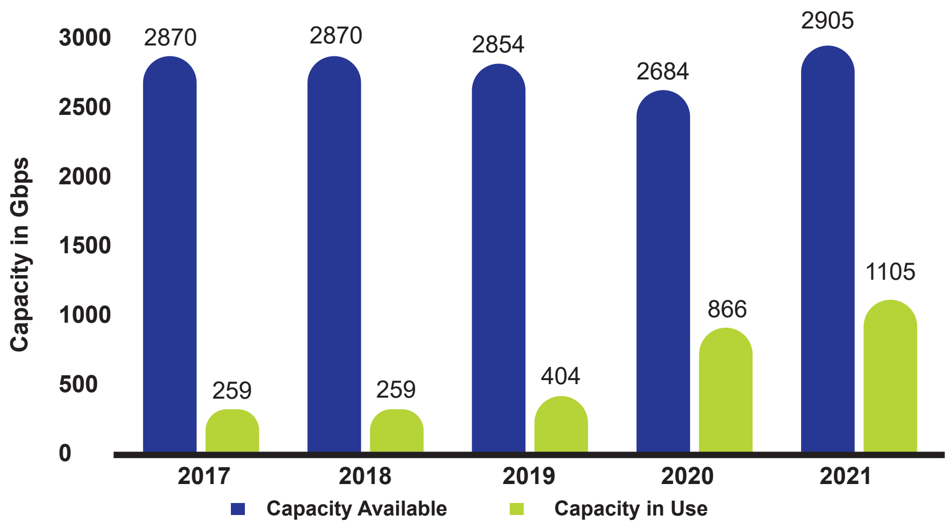
c) ETG Integrated Services Ltd.

d) Ghana Telecommunications Company Ltd (SAT 3).

e) Glo Mobile Ghana Ltd.

The total capacity available as at the end of 2021 was 2905Gbps an increase from 2684 Gbps and the total capacity in use also increased from 865.97 Gbps to 1105.29 Gbps in 2021. Less than half of the capacity available has been in use over the last 4 years.

Figure 49: Total Capacity Available and in Use

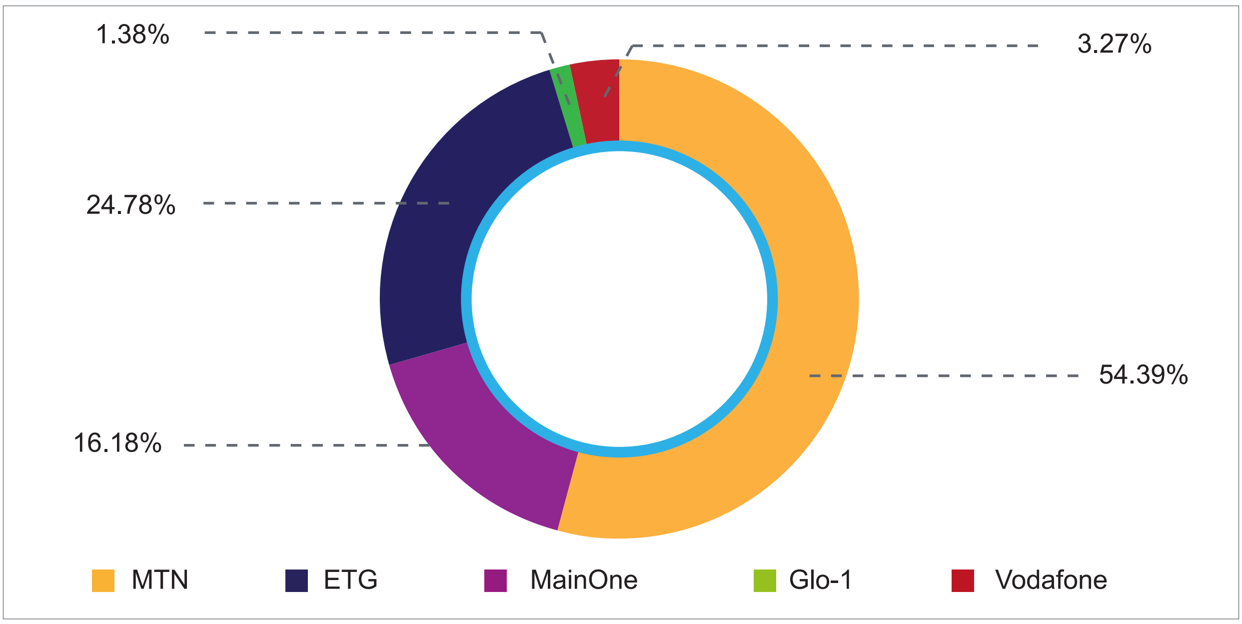


Source: NCA, Submarine Cable Providers 2021

5.7 Market Share of Submarine Cable Operators

As the end of the year 2021, 54.39% of the total capacity available was provided by MTN Ghana, 24.78% was provided by ETG (Dolphine), 16.18% provided by MainOne. Vodafone provided 3.27 % of total capacity available and 1.38% provided by GLO-1.

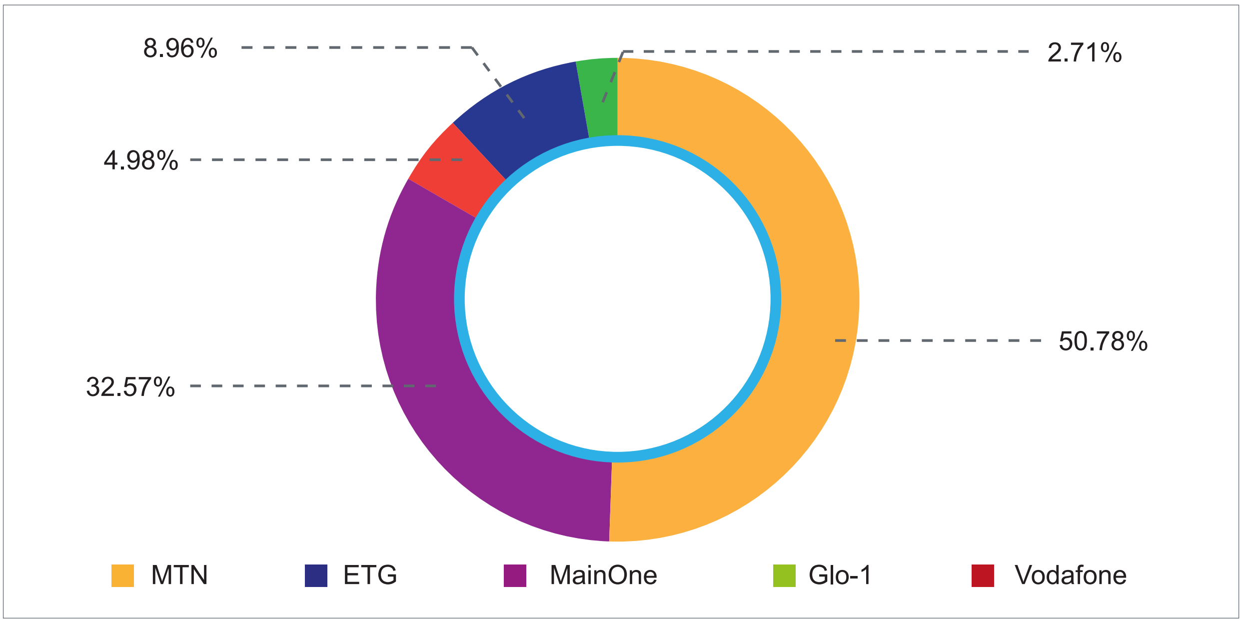
Figure 50: Market Share of Submarine Cable Providers per Capacity Available



Source: NCA, Submarine Cable Providers 2021

In the year of review, 50.78% of the total capacity used was by MTN Ghana, MainOne used 32.57% , ETG (Dolphine) used 8.96% and GLO-1 used 2.71%.

Figure 51: Market Share of Submarine Cable Providers per capacity in used



Source: NCA, Submarine Cable Providers 2021

SUMMARY - CHAPTER FIVE

Total Number of Towers and Market Share

Total Number of Towers

5,133

representing a **4.70%** annual growth rate

Type	Number	Market Share
Green Feild Towers	4,714	91.84%
Roof-Top Towers	384	7.48%
Mobile/Indoor Towers	35	0.68%

Number of Towers per Operator and Tenancy Ratio

Operator	Towers	Share
American Tower	4,070	79.30%
Helios Towers	1,063	20.70%

Regional Distribution of Tenancy Ratio

Region with the lowest tenancy ratio		Region with the highest tenancy ratio
1.23	1.55	1.92
Savanah	National Average	Greater Accra

Submarine Cable Services

Cable	Submarine Cable Capacity Available (Gbps)	Submarine Cable Capacity in Use (Gbps)
Vodafone	95	55
MTN	1,580	561.3
Glo-1	40	30
MainOne	470	360
ETG	720	98.9

Chapter Six

OTHER SERVICES

6.0 Introduction

This Chapter gives details on the other major services regulated by the National Communications Authority.

6.1 Numbering Resources

Telephony Numbering Resources are a string of numbers and or alphanumeric used to address electronic communication terminals, networks, protocols, or applications. The Authority regulates and authorizes the use of two main types of numbering resources:

Normal Numbering Resource: Ghana uses the closed numbering plan that follows the ITU.T E164 recommended format to assign numbers. The numbers available for use in connection with network and application services in Ghana and are categorized to include the following

- Network destination codes (NDC)
- Mobile Station International Subscriber Directory Number (MSISDN)
- Mobile Network Codes (MNC)
- Machine-to-Machine Numbering Resources (M2MNR)
- Geographic Numbering Resource

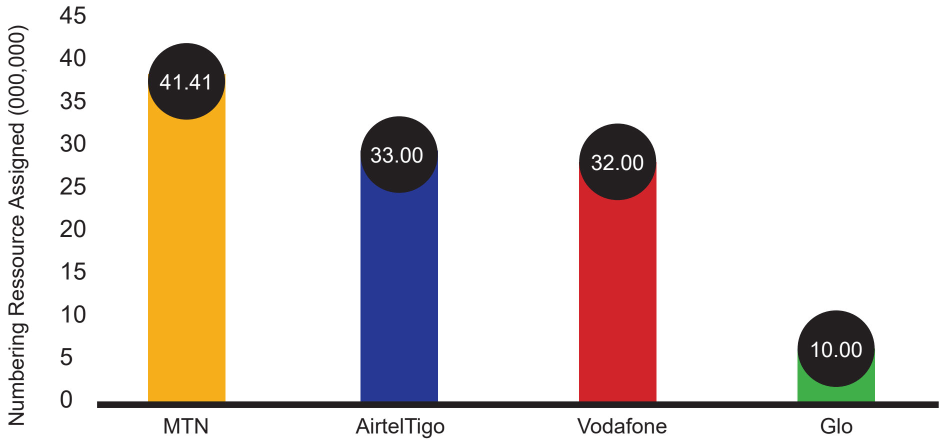
Special Numbering Resource:

The Authority also provides Special Numbering Resources (SNR), which are non-geographic and non-network dependent codes used in sending data and voice. These encompass the following:

- Toll-Free Numbering Resources
- Shared Cost Numbering Resources (SCNR)
- Premium Rate Numbering Resources:
- Short Codes

As at the end of 2021, a total of 116,410,000 Normal Numbering Resources had been assigned to the various service providers. The following are the number of Numbering resources assigned to the various service providers.

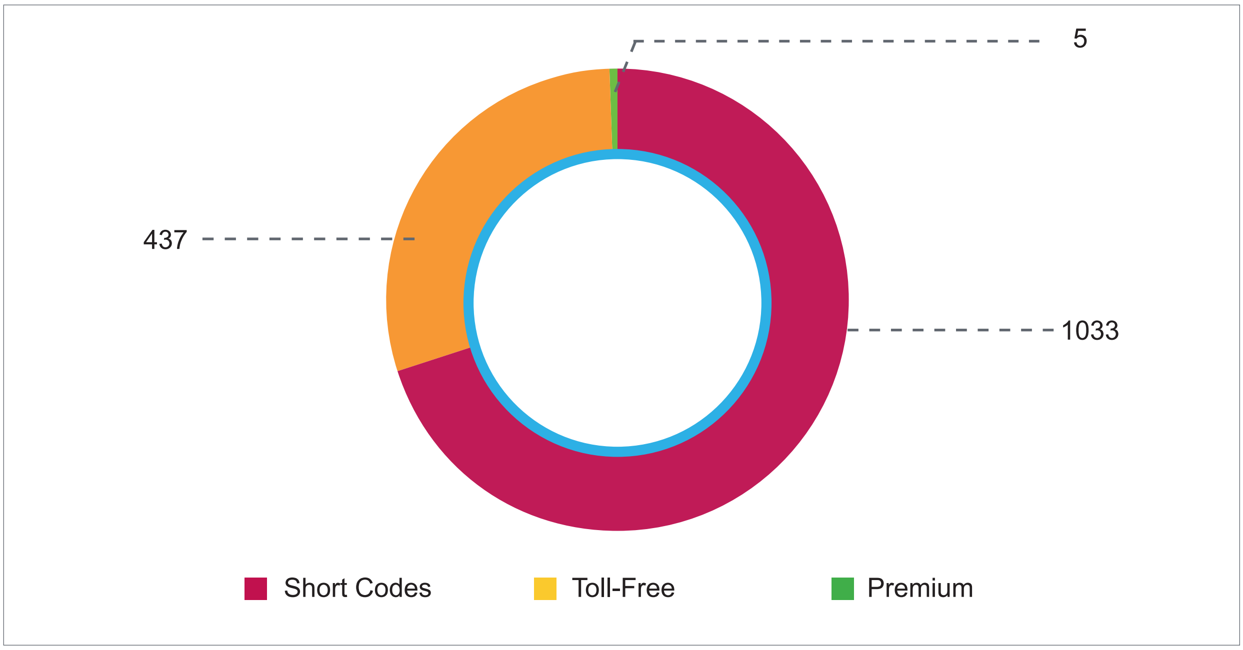
Figure 52: Normal Numbers assigned per operator



Source: National Communication Authority, 2021

Special Numbering Resources assigned to individuals and corporate entities as at the end of the year under review was 1475.

Figure 53: Special Numbering Resources assigned



Source: National Communication Authority, 2021

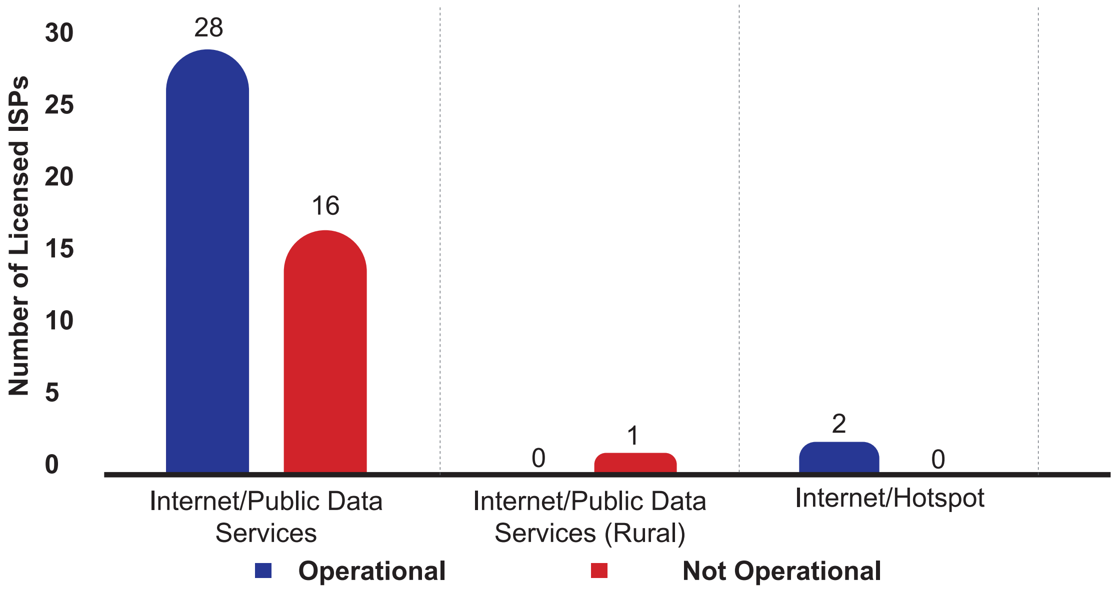
6.2 Internet Service Providers (ISPs)

Internet Service Provider (ISP) refers to an entity that provides access and connectivity to the Internet using both licenced and unlicenced frequency bands for its deployments. The following are the service classifications under ISP:

- Internet / Public Data Service
- Internet / Public Data Service (Rural)
- Internet Hotspot[3]

3. An Internet Hotspot is a physical location where people may obtain Internet access using Wi-Fi technology, via a Wireless Local Area Network (WLAN) connected to an Internet Service Provider's network (or MNO, BWA). The said entity can only use the unlicensed frequency bands for its deployments. The coverage area of an Internet Hotspot Provider should not exceed three (3) Administrative Districts. An Internet Hotspot Provider may qualify to apply for an ISP Authorisation if the Provider seeks to cover more than three (3) administrative districts.

Figure 54: Number of Licenced ISPs



Source: National Communication Authority, 2021

6.3 VSAT Network Services[4]

A Very Small Aperture Terminal (VSAT) is a two-way satellite ground station with a dish antenna that is usually smaller than 3.8 meters.

There are three (3) classes of VSAT Network Licences as follows;

a. ***VSAT NETWORK CLASS 1:***

   Refers to the establishment, operation, and provision of a VSAT Network in Ghana, with a minimum of 101 terminals (i.e. (unlimited Terminals 101+).

b. ***VSAT NETWORK CLASS 2:***

   Refers to the establishment, operation, and provision of a VSAT Network in Ghana, with a minimum of 51 terminals and a maximum of 100 terminals (i.e. (51-100 Terminals)).

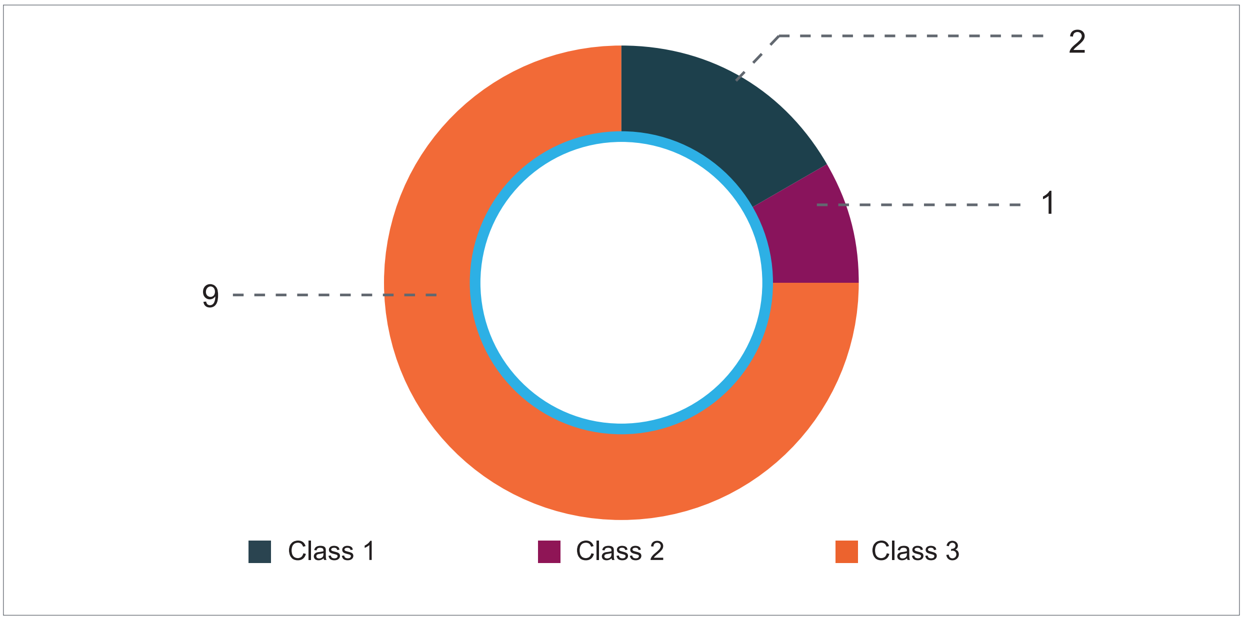
c. ***VSAT NETWORK CLASS 3:***

   Refers to the establishment, operation, and provision of a VSAT Network in Ghana, with a maximum of 50 terminals (i.e. (Less/= 50 Terminals)

As at the end to 2021, twelve (12) entities held valid licences to operate VSAT Network Services in the country. Out of the 12 entities, 2 had Class 1 license, 1 had class 2 license and 9 had Class 3 licences.

4. VSAT Network Service refers to the deployment of VSATs using a hub to enable the provision of telecommunications services to the public.

Figure 55: Number of Licenced VSAT Operators

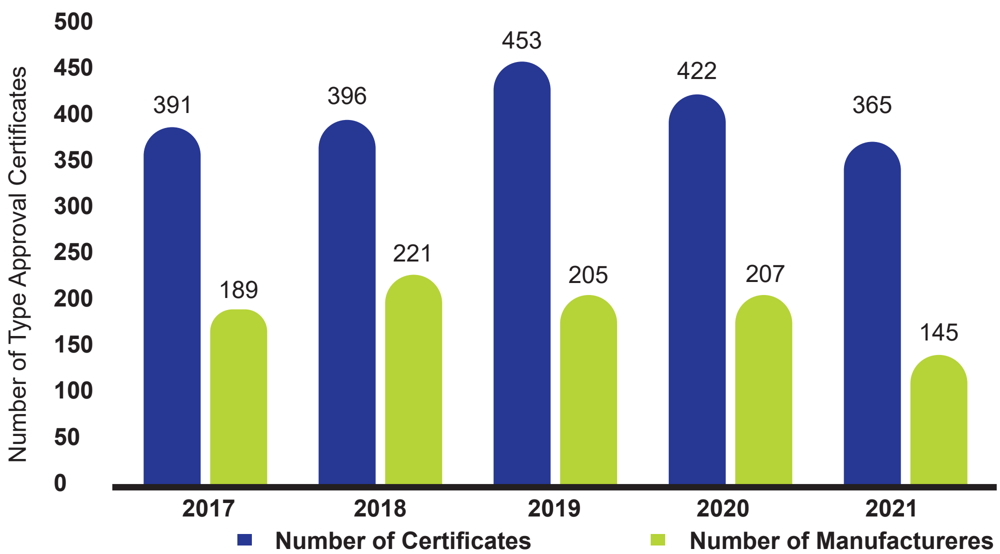


Source: National Communication Authority, 2021

6.4 Type Approval

At the end of 2021, 365 certificates were issued under type approval. This represents a 29.95% decline from the previous year's 422 certificates issued. A total of 145 certificates were given to manufacturers, a decline of 13.51% as compared to 207 certificates issued to manufacturers in the previous year.

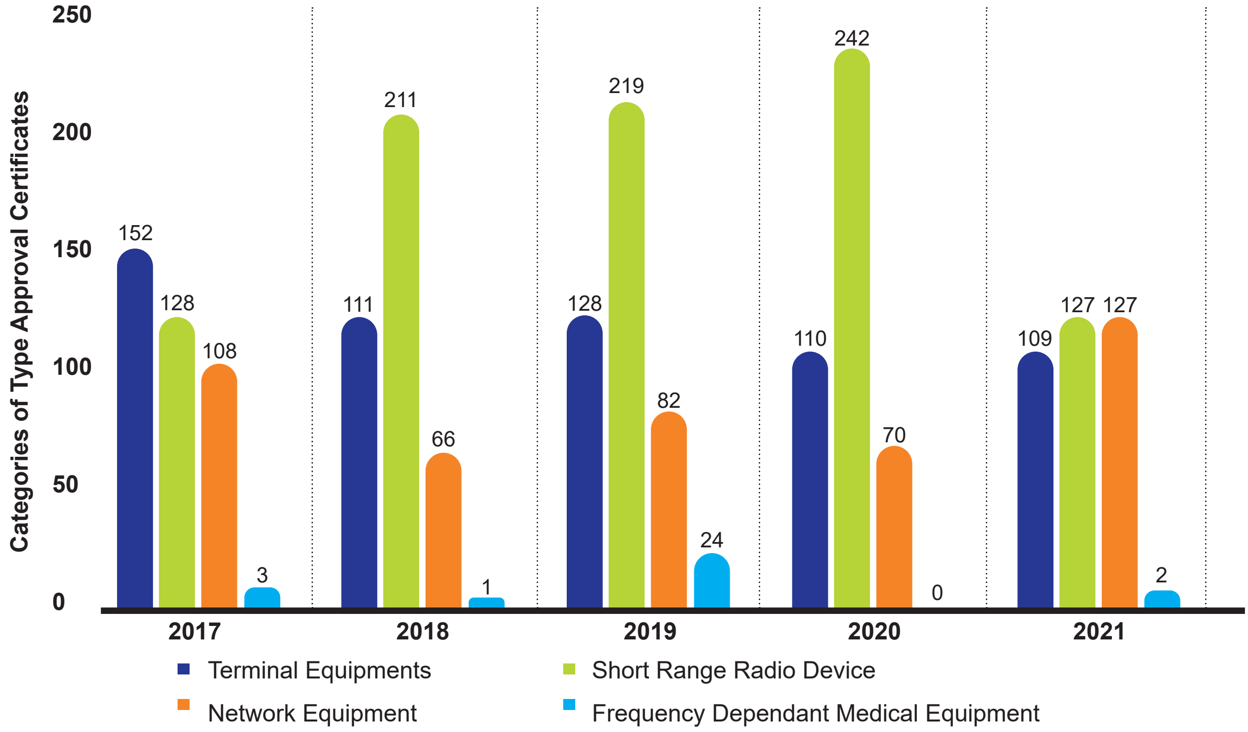
Figure 56: Number of Type Approval Certificates Issued



Source: National Communication Authority, 2021

Over the five-year period, short range radio devices were the most type approved, followed by terminal equipment and then Network equipment. In 2021, 127 short range radio devices, 127 Network Equipment, 109 Terminal Equipment and 2 frequency dependent Medical Equipment were type approved.

Figure 56: Categories of Type Approval Certificates Issued

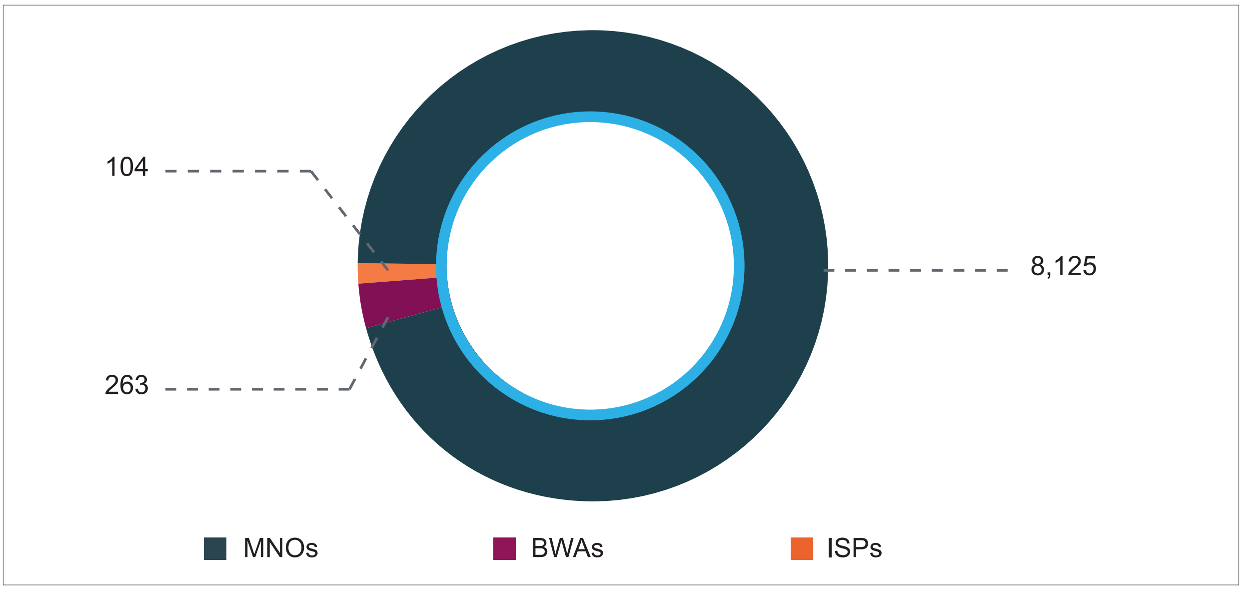


Source: National Communication Authority, 2021

6.5 Microwave Links

In order to facilitate communications between two-sites, the microwave link is used. As at the end of 2021, the Authority had assigned 8,492 microwave links with 95.68% being use by the MNOs, 3.10% used by the BWAs and the remaining 1.22% used by the ISPs.

Figure 58: Number of Microwave Links Assigned



Source: National Communication Authority, 2021

SUMMARY - CHAPTER SIX

Numbering Resources

Normal Numbering

116.41 Million

	MTN	airteltigo	vodafone	glo
Million Numbers	41.41	33.00	32.00	10.00
Market Share	35.57%	28.35%	27.49%	8.59%

Special Numbering

1475

Short Codes	Toll-Free	Premium
1033	437	5

Internet Service Providers (ISPs)

Number of Authorised ISPs

47

Out of which 30 are operational representing 62.5%

Public Data Services	Public Data Services (Rural)	Hotspot
44	1	2

VSAT Operators

Number of Licensed VSAT Operators

12

Class 1	Class 2	Class 3
2	1	9

Type Approval

Type Approval Certificates

385 Certificates

145 Manufactureres

Terminal Equipment	Short Range Radio Devices	Network Equipment	Frequency Dependant Medical Equipment
109 Certificates	127 Certificates	127 Certificates	0 Certificates

Microwave Links

Number of Microwave Links Assigned

8,492

MNOs

8,125

representing 95.68% of total Microwave Links Assigned within the Years

BWAs

263

representing 3.10% of total Microwave Links Assigned within the Years

ISPs

104

representing 1.22% of total Microwave Links Assigned within the Years

APPENDIX

Table 1: Mobile Voice Subscriptions and Penetration rate

Subscriptions	2017	2018	2019	2020	2021
Mobile Voice	36,715,761	40,934,875	40,857,077	40,461,609	40,454,073
Growth rate (%)	*-4.1*	*11.49*	*-0.19*	*-0.97*	-0.02
Net Additions	-1,589,317	4,219,114	-77,798	-395,468	-7,536
Population	28,776,565	29,474,851	30,190,081	30,922,666	30,792,608
Penetration rate (%)	*127.60*	*138.88*	*135.33*	*130.85*	131.38

Source: National Communication Authority, 2021

Table 2: Distribution of Postpaid and Prepaid Subscriptions

	2017	2018	2019	2020	2021
Prepaid	36,275,284	40,391,558	40,216,604	40,173,414	40,158,443
Postpaid	440,477	543,317	640,473	288,195	295,630
Mobile Voice Subscriptions	**36,715,761**	**40,934,875**	**40,857,077**	**40,461,609**	**40,454,073**
Growth rate (%)	-4.15	11.49	-0.19	-0.97	-0.02
Net Additions	-1,589,317	888,285	-77,798	-395,468	-14,971
Population	28,776,565	29,474,851	30,190,081	30,922,666	30,792,608
Penetration rate (%)	*127.6*	*138.88*	*135.33*	*131.84*	131.38

Source: National Communication Authority, 2021

Table 3: Mobile Voice Subscriptions per Operator

Mobile Network Operator		2017	2018	2019	2020	2021
MTN	Subscriptions	17,832,546	20,092,798	22,555,848	23,144,302	23,966,302
	Market Share (%)	*48.57*	*49.08*	*55.21*	*57.20*	*59.24*
Vodafone	Subscriptions	9,028,161	9,813,234	9,122,403	8,400,565	8,250,436
	Market Share (%)	*24.59*	*23.97*	*22.33*	*20.76*	*20.39*
Tigo	Subscriptions	5,217,875				
	Market Share (%)	*14.21*				
Airtel	Subscriptions	3,986,163				
	Market Share (%)	*10.86*				
AirtelTigo	Subscriptions		10,289,491	8,453,053	8,135,618	7,390,278
	Market Share (%)		*25.14*	*20.69*	*20.11*	*18.27*
Glo	Subscriptions	627,752	739,352	725,773	781,124	847,057
	Market Share (%)	*1.71*	*1.81*	*1.78*	*1.93*	*2.09*
Expresso	Subscriptions	23,264				
	Market Share (%)	*0.06*	*0.00*			
Total		**36,715,761**	**40,934,875**	**40,857,077**	**40,461,609**	**40,454,073**

Source: National Communication Authority, 2021

Table 4: Mobile Voice Traffic per Operator

Mobile Operator		2017	2018	2019	2020	2021
MTN	Traffic	43,842,841,382	58,625,073,109	70,521,752,504	89,786,199,833	98,334,998,826
	Share (%)	71.66	80.86	86.78	90.36	90.99
Vodafone	Traffic	11,236,871,661	9,268,358,493	6,682,666,929	5,215,491,661	5,547,932,163
	Share (%)	*18.37*	*12.78*	*8.22*	*5.25*	*5.13*
Tigo	Traffic	3,483,638,837	2,241,434,284	-	-	
	Share (%)	*5.69*	*3.09*			
Airtel	Traffic	2,507,664,075	1,134,300,736			
	Share (%)	*4.10*	*1.56*			
AirtelTigo	Traffic		1,156,888,791	3,953,752,066	4,174,073,901	4,010,269,647
	Share (%)		*1.60*	*4.87*	*4.20*	*3.71*
Glo	Traffic	113,183,248	79,037,480	108,413,410	188,390,005	179,977,127
	Share (%)	*0.18*	*0.11*	*0.13*	*0.19*	*0.17*
Expresso	Traffic	574,674				
	Share (%)	*0.00*				
Total Voice Traffic		**61,184,773,877**	**72,505,092,893**	**81,266,584,909**	**99,364,155,400**	**108,073,177,763**

Source: National Communication Authority, 2021

Table 5: Distribution of Off net and On net Traffic (Domestic)

	2017	2018	2019	2020	2021
On-Net					
Traffic	51,054,275,008	63,337,163,519	73,774,794,534	92,094,192,477	100,174,180,889
Share (%)	*83.44*	*87.36*	*90.78*	*92.68*	*92.69*
Growth (%)	*27.53*	*24.06*	*16.48*	*24.83*	*8.77*
Off-Net					
Traffic	10,130,498,869	9,167,929,374	7,491,790,375	7,269,962,924	7,898,996,874
Share (%)	*16.56*	*12.64*	*9.22*	*7.32*	*7.31*
Growth (%)	*-4.30*	*-9.50*	*-18.28*	*-2.96*	*8.65*
Total	**61,184,773,877**	**72,505,092,893**	**81,266,584,909**	**99,364,155,400**	**108,073,177,763**

Source: National Communication Authority, 2021

Table 6: Distribution of Inbound and Outbound International Traffic

	2017	2018	2019	2020	2021
Inbound International					
Traffic	494,285,309	474,844,085	313,030,354	220,895,472	239,092,078
Share(%)	*46.00*	*45.40*	*37.50*	*31.72*	*34.53*
Growth(%)	*-16.89*	*-3.93*	*-34.08*	*-29.43*	*7.91*
Outbound International					
Traffic	580,197,745	571,134,846	521,630,329	475,444,765	453,152,114
Share(%)	*54.00*	*54.60*	*62.50*	*68.28*	*65.47*
Growth(%)	*-17.40*	*-1.56*	*-8.67*	*-8.85*	*-4.93*
Total	**1,074,483,054**	**1,045,978,931**	**834,660,683**	**696,340,237**	**692,244,192**

Source: National Communication Authority, 2021

Table 7: Average Mobile Voice Traffic per Subscription

Subscriptions	2017	2018	2019	2020	2021
Mobile Voice Subscription	36,715,761	40,934,875	40,857,077	40,461,609	40,454,073
Mobile Voice Traffic	61,184,773,877	72,505,092,893	81,266,584,909	99,364,155,400	108,073,177,763
Average traffic per subscription	1,666	1,771	1,989	2,456	2,672

Source: National Communication Authority, 2021

Table 8: Mobile Data Subscriptions and Penetration rate (%)

Subscriptions	2017	2018	2019	2020	2021
Prepaid	23,225,101	26,930,768	29,960,572	26,130,249	23,237,338
Postpaid	239,049	301,384	380,721	339,714	177,189
Mobile Data	23,464,150	27,232,152	30,341,293	26,469,963	23,414,527
Growth rate (%)	*19.46*	*16.06*	*11.42*	*-12.76*	*-11.54*
Net Additions	3,821,998	3,768,002	3,109,141	-3,871,330	-2,892,911
Population	28,776,565	29,474,851	30,190,081	30,922,666	30,792,608
Penetration rate (%)	*81.54*	*92.39*	*100.50*	*85.60*	*76.04*

Source: National Communication Authority, 2021

Table 9: Mobile Data Subscription per Operator

Mobile Network Operator		2017	2018	2019	2020	2021
MTN	Subscriptions	13,736,988	16,689,717	22,260,198	19,146,862	16,159,901
	Market Share (%)	58.54	61.29	73.37	72.33	69.02
Vodafone	Subscriptions	4,097,805	4,213,054	3,700,970	3,055,454	3,346,148
	Market Share (%)	17.46	15.47	12.20	11.54	14.29
Tigo	Subscriptions	2,848,021				
	Market Share (%)	12.14				
Airtel	Subscriptions	2,532,873				
	Market Share (%)	10.79				
AirtelTigo	Subscriptions		6,076,649	4,110,972	3,926,130	3,524,022
	Market Share (%)		22.31	13.55	14.83	15.05
Glo	Subscriptions	238,312	252,732	269,153	341,517	384,456
	Market Share (%)	1.02	0.93	0.89	1.29	1.64
Expresso	Subscriptions	10,151				
	Market Share (%)	0.04				
Total		23,464,150	27,232,152	30,341,293	26,469,963	23,414,527

Source: National Communication Authority, 2021

Table 10: Mobile Data Traffic per Operator

Mobile Network Operator		2017	2018	2019	2020	2021
MTN	Data Traffic (GB)	73,687,491	141,396,759	262,451,963	511,530,510	675,662,190
	Market Share (%)	*52.3*	*59.37*	*68.13*	*71.71*	*70.58*
Vodafone	Data Traffic (GB)	30,878,064	58,192,034	69,276,035	113,916,081	183,653,560
	Market Share (%)	*21.9*	*24.44*	*17.98*	*15.97*	*19.19*
Tigo	Data Traffic (GB)	11,581,093	11,795,779	-	-	
	Market Share (%)	*8.2*	*4.95*	-	-	
Airtel	Data Traffic (GB)	20,475,845	14,329,275	-	-	
	Market Share (%)	*14.5*	*6.02*	-	-	
AirtelTigo	*Data Traffic (GB)*	-	*8,028,510*	45,759,166	67,669,723	70,881,825
	Market Share (%)	-	*3.90*	*11.88*	*9.49*	*7.40*
Glo	Data Traffic (GB)	4,395,203	4,407,590	7,738,808	20,196,277	27,047,252
	Market Share (%)	*3.10*	*2.20*	*2.01*	*2.83*	*2.83*
Total		**141,017,697**	**238,149,946**	**385,225,972**	**713,312,591**	**957,244,828**

Source: National Communication Authority, 2021

Table 11: Average Mobile Data Usage per Subscription

Subscriptions	2017	2018	2019	2020	2021
Mobile Voice Subscription	23,464,150	27,232,152	30,341,293	26,469,963	23,414,527
Mobile Data Traffic (GB)	141,017,697	238,149,946	385,225,972	713,312,591	957,244,828
Average Data Usage per subscription	**6.01**	**8.75**	**12.70**	**26.95**	**40.88**

Source: National Communication Authority, 2021

Table 12: Distribution of Off-net and On-net SMS Count

	2017	2018	2019	2020	2021
On-Net SMS					
Traffic	1,322,354,207	2,106,301,048	2,367,716,985	1,648,715,441	1,600,711,943
Growth (%)	*10.36*	*59.28*	*12.41*	*(30.37)*	*(8.57)*
Off-Net SMS					
Traffic	530,750,129	528,189,581	381,146,115	392,946,906	577,412,213
Growth (%)	29.54	(0.48)	(27.84)	3.10	46.94
Total	**1,853,104,336**	**2,634,490,629**	**2,748,863,100**	**2,041,662,347**	**2,178,124,156**

Source: National Communication Authority, 2021

Table 13: SMS Counts per Operator

Mobile Network Operator	2017	2018	2019	2020	2021
MTN	814,318,300	1,182,942,766	1,400,664,864	1,184,006,344	1,268,498,378
Vodafone	463,475,522	1,124,902,232	1,286,085,070	832,384,480	884,774,319
Tigo	468,091,327	266,197,198	n/a	n/a	n/a
Airtel	99,565,628	38,192,723	n/a	n/a	n/a
AirtelTigo	n/a	14,236,856	58,597,086	21,124,918	17,255,704
Glo	7,653,559	8,018,854	3,516,080	4,146,605	7,595,756
Expresso	n/a	n/a	n/a	n/a	n/a
Total	**1,853,104,336**	**2,634,490,629**	**2,748,863,100**	**2,041,662,347**	**2,178,124,156**

Source: National Communication Authority, 2021

Table 14: Average SMS Count per Subscription

Subscriptions	2017	2018	2019	2020	2021
Mobile Voice Subscription	36,715,761	40,934,875	40,857,077	40,461,609	40,454,073
Total SMS Count	1,853,104,336	2,634,490,629	2,748,863,100	2,041,662,347	2,178,124,156
Average SMS per subscription	50	64	67	50	54

Source: National Communication Authority, 2021

Table 15: Pricing of Mobile Services

Average Industry Tariffs	2017	2018	2019	2020	2021
On-net Voice	0.11	0.11	0.11	0.12	0.13
Off-net Voice	0.12	0.12	0.12	0.13	0.13
On-net SMS	0.05	0.05	0.05	0.05	0.05
Off-net SMS	0.05	0.05	0.05	0.05	0.06
Data/MB	0.11	0.09	0.09	0.09	0.10

Source: National Communication Authority, 2021

Table 16: Fixed Voice Subscription and Penetration Rate (%)

Subscriptions	2017	2018	2019	2020	2021
Fixed Network Subscriptions	301,551	278,379	288,531	307,668	315,271
Growth Rate (%) in Subscription	*19.9*	*-7.68*	*3.65*	*6.63*	*2.47*
Net Additions	50,061	-23,172	10,152	19,137	7,603
Country Population	28,776,565	29,474,851	30,190,081	30,922,666	30,792,608
Penetration Rate (%)	*1.05*	*0.94*	*0.96*	*0.99*	*1.02*

Source: National Communication Authority, 2021

Table 17: Fixed Voice Subscriptions per Operator

Fixed Network Operators		2017	2018	2019	2020	2021
Vodafone	Subscriptions	294,915	271,732	280,321	299,802	307,278
	Share (%)	*97.8*	*97.61*	*97.15*	*97.44*	*97.46*
AirtelTigo	Subscriptions	6,636	6,647	8,210	6,389	3,634
	Share (%)	*2.2*	*2.39*	*2.85*	*2.08*	*1.15*
MTN	*Subscriptions*	-	-	-	*1477*	4,359
	Share (%)	-	-	-	*0.48*	*1.38*
Total Industry Subscriptions		**301,551**	**278,379**	**288,531**	**307,668**	**315,271**

Source: National Communication Authority, 2021

Table 18: Fixed Voice Traffic in Minutes

Fixed Network Operator		2017	2018	2019	2020	2021
Vodafone	Traffic (Miwnutes)	50,020,696	45,226,383	49,042,238	35,907,849	37,144,772
	Shares (%)	*87.5*	*91.8*	*100*	*90.14*	*97.63*
AirtelTigo	Traffic (Minutes)	7,172,581	4,052,821	27	3,926,459	873,298
	Shares (%)	*12.5*	*8.2*	*0*	*9.9*	*2.30*
MTN	*Traffic (Minutes)*	-	-	-	*1,294*	28,265
	Shares (%)	-	-	-	*0.00*	0.07
Total Traffic (Minutes)		**57,193,277**	**49,279,204**	**49,042,265**	**39,835,602**	**38,046,335**

Source: National Communication Authority, 2021

Table 19: Fixed Data Subscriptions and Penetration Rate (%)

Subscriptions	2017	2018	2019	2020	2021
Fixed Network Subscriptions	56,810	58,808	57,393	77,022	113,722
Growth Rate (%)	*-0.34*	*0.04*	*-0.02*	*0.34*	*0.48*
Net Additions	-29,786	1,998	-1,415	19,629	36,700
Country Population	28,776,565	29,474,851	30,190,081	30,922,666	30,792,608
Penetration Rate (%)	*0.20*	*0.20*	*0.19*	*0.25*	*0.37*

Source: National Communication Authority, 2021

Table 20: Fixed Data Subscriptions per Operator

Fixed Network Operator		2017	2018	2019	2020	2021
Vodafone	Subscriptions	55,627	57,216	56,677	62,284	67,086
	Shares (%)	*97.92*	*97.29*	*98.75*	*80.87*	*58.99*
AirtelTigo	Subscriptions	1,183	1,592	716	700	649
	Shares (%)	*2.08*	*2.71*	*1.25*	*0.91*	*0.57*
MTN	Subscriptions				14,038	45,987
	Shares (%)				*18.23*	*40.44*
Total Industry Subscriptions		**56,810**	**58,808**	**57,393**	**77,022**	**113,722**

Source: National Communication Authority, 2021

Table 21: BWA Subscriptions and Penetration Rate (%)

Subscriptions	2017	2018	2019	2020	2021
BWA	87,639	80,581	46,050	53,415	50,714
Growth rate (%)	-16.06	-8.05	-42.85	-6.08	-5.06
Net Additions	-16,763	-7,058	-34,531	7,365	-2,701
Population	28,776,565	29,474,851	30,190,081	30,922,666	30,792,608
Penetration rate (%)	0.30	0.27	0.15	0.17	0.16

Source: National Communication Authority, 2021

Table 22: BWA Subscriptions per Operator

Broadband Wireless Access Operator		2017	2018	2019	2020	2021
Surfline	Subscriptions	61,426	55,134	43,735	40,462	41,123
	Growth rate (%)	-20.14	-10.24	-20.68	-7.48	1.63
	Market Share (%)	70.09	68.42	92.84	93.56	81.18
BBH	Subscriptions	25,560	25,100	1,058	1,056	996
	Growth rate (%)	-3.19	-1.8	-95.78	-0.19	-5.68
	Market Share (%)	29.17	31.15	2.25	2.44	1.97
Blu	Subscriptions	653	347	211	143	-
	Growth rate (%)	-39.59	-46.86	-39.19	-32.23	-
	Market Share (%)	0.75	0.43	0.45	0.27	-
Busy	Subscriptions				10,024	5,489
	Growth rate (%)				-	-45.24
	Market Share (%)				18.77	10.84
Telesol	Subscriptions	-	-	2,104	1,730	3,106
	Growth rate (%)	-	-	-	-17.78	76.30
	Market Share (%)	-	-	4.47	3.81	3.81
Total		**87,639**	**80,581**	**47,108**	**53,415**	**50,658**

Source: National Communication Authority, 2021

Table 23: BWA Traffic in Gigabytes per Operator

	2017	2018	2019	2020	2021
Surfline	13,261,059	13,894,836	13,153,292	16,263,920	20,247,645
BBH	1,124,126	903,401	1,034,714	318,972	593,566
Blu	381,917	264,963	345,440	80,267	118,983
Busy	-	-	-	2,223,327	4,635,201
Telesol	-	-	51,449	1,268,272	1,553,628
Total	**14,767,102**	**15,063,200**	**14,584,895**	**20,154,758**	**27,149,023**

Source: National Communication Authority, 2021

Table 24: Regional Distribution of Authorised FM in Ghana as at the end of 2021

NO.	NAME OF REGIONS	TOTAL NO. AUTHO-RISED	PUBLIC	PUBLIC (FOR-EIGN)	COMMU-NITY	CAMPUS	COM-MER-CIAL	TOTAL NO. IN OPERA-TION	TOTAL NO. NOT IN OPERA-TION
1	ASHANTI	**99**	2	1	14	4	78	79	20
2	BONO	**56**	1	0	6	2	47	40	16
3	BONO EAST	**30**	2	0	4	0	24	26	4
4	AHAFO	**12**	0	0	1	0	11	8	4
5	CENTRAL	**56**	2	0	13	3	38	39	17
6	EASTERN	**50**	2	0	13	1	34	38	12
7	GREATER ACCRA	**74**	2	3	10	4	55	62	12
8	NORTHERN	**51**	3	0	9	2	37	27	24
9	SAVANNAH	**11**	3	0	4	0	4	8	3
10	NORTH EAST	**13**	1	0	5	0	7	3	10
11	UPPER EAST	**34**	2	0	9	3	20	22	12
12	UPPER WEST	**32**	2	0	11	2	17	18	14
13	VOLTA	**45**	3	0	4	1	37	37	8
14	OTI	**14**	1	0	3	0	10	9	5
15	WESTERN	**83**	2	1	8	2	70	56	27
16	WESTERN NORTH	**24**	3	0	0	0	21	17	7
TOTAL		**684**	**31**	**5**	**114**	**24**	**510**	**489**	**195**

Source: National Communication Authority, 2021

Table 25: Authorized TV stations as at the end of 2021

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)	38	38	0
3	Digital Terrestrial Free-To-Air Television Programme Channel (Regional Coverage)	6	6	0
4	Digital Terrestrial Pay Television (Service only)	0	0	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	8	2	6
8	Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	3	3	0
9	Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet)	9	6	3
10	Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel)	68	48	20
11	Digital Terrestrial Television additional Services (e.g. Teletext, etc.)	0	0	0
12	Digital Terrestrial Mobile Television Service (Stand-alone Authorization)	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		**142**	**112**	**30**

Source: National Communication Authority, 2021

Table 26: Number of Towers and Market Share per Tower Company

Tower Company		2017	2018	2019	2020	2021
Eaton Towers	Number of Towers	1,277	1,370	1470		
	Market Share (%)	*29.9*	*30*	*30.79*		
American Towers	Number of Towers	2,216	2,303	2,381	3,989	4,070
	Market Share (%)	*51.9*	*50.5*	*49.9*	*80.1*	*79.3*
Helios Towers	Number of Towers	778	891	923	991	1063
	Market Share (%)	*18.2*	*19.5*	*19.3*	*19.9*	*20.7*
Total		**4,271**	**4,564**	**4,774**	**4,980**	**5,133**

Source: National Communication Authority, 2021

Table 27: Types of Towers

TOWER	2017	2018	2019	2020	2021
Greenfield	3,844	4,195	4,385	4,571	4714
Rooftop	348	340	357	374	384
Indoor Network/Mobile Sites	30	26	32	35	35
Total number of towers	**4,222**	**4,561**	**4,774**	**4,980**	**5,133**

Source: National Communication Authority, 2021

Table 28: Tenancy Ratio

	2017	2018	2019	2020	2021
Total Number of Towers	4,271	4,564	4,774	4,980	5,133
Total Number of Tenants	7,765	7,837	7,753	7,729	9,148
Tenancy Ratio	**1.82**	**1.73**	**1.62**	**1.55**	**1.78**

Source: National Communication Authority, 2021

Table 29: Regional Distribution of Towers and Tenancy Ratio

Region	Number of Towers	Number of Tenants	Tenancy Ratio
Ahafo	102	134	1.31
Ashanti	970	1616	1.67
Bono	193	325	1.68
Bono East	143	238	1.66
Central	441	747	1.69
Eastern	446	734	1.65
Greater Accra	1340	2994	2.23
North East	66	94	1.42
Northern	246	398	1.62
Oti	87	113	1.30
Savannah	88	121	1.38
Upper East	154	226	1.47
Upper West	125	187	1.50
Volta	264	421	1.59
Western	355	632	1.78
Western North	108	168	1.56

Source: National Communication Authority, 2021

Table 30: Authorized VSAT Network Operators as at the end of 2021

S/N	VSAT NETWORK	NUMBER OF COMPANIES
1	Class 1	2
2	Class 2	1
3	Class 3	9
Total		**12**

Source: National Communication Authority, 2021

Table 31: Numbering Resources

Types of Numbering	2017	2018	2019	2020	2021
Short codes	383	370	467	605	437
Premium numbers	19	0	0	8	5
Toll Free	118	70	75	1159	1033
Mobile numbers (SIM cards)	99,610,000	99,610,000	105,610,000	105,610,000	116,410,00

Source: National Communication Authority, 2021

Table 32: Type Approval Certificates

	2017	2018	2019	2020	2021
Number of certificates	391	396	453	422	365
Number of Manufacturers	189	221	205	207	145
Terminal Equipment	152	111	128	110	109
Short Range Radio Devices	128	211	219	242	127
Network Equipment	108	66	82	70	127
Frequency Dependant Medical Equipment	3	1	24	0	2

Source: National Communication Authority, 2021

Table 33: Total Capacity Available (Gbps)

Total Capacity Available (Gbps)	2018	2019	2020	2021
Vodafone	60	64	74	95
MTN	1770	1770	1,580	1,580
MainOne	270	270	270	470
ETG (Dolphine)	740	720	720	720
GLO-1	30		40	40

Source: National Communication Authority, 2021

Table 34: Total Capacity in use (Gbps)

Total Capacity in use (Gbps)	2018	2019	2020	2021
Vodafone	59	50	42	55
MTN	150	280	616.8	561.3
MainOne	17.5	37.29	124.05	360
ETG (Dolphine)	25.62	30	43.12	98.99
GLO-1	7	7	40	30

Source: National Communication Authority, 2021

Table 35:ISP Service Classifications.

No.	ISP Service Classification	Operational	Not Operational	Number of Companies
1	Internet / Public Data Service	28	16	44
2	Internet / Public Data Service (Rural)	0	1	1
3	Internet Hotspot	2	0	2
Total		**30**	**17**	**47**

Source: National Communication Authority, 2021

NCA CONTACTS AND PRESENCE NATIONWIDE

The following are the locations and addresses of the Authority's offices across the country:

1. Accra
Head Office
No.6 Airport City, KIA, Accra
Digital Address: GL-126-7029
P.O. Box CT 1568, Cantonments
Greater Accra Region, Ghana
Tel: +233 (0) 302 776621 / 302 771701
Email: info@nca.org.gh
Website: https://www.nca.org.gh

2. Bolgatanga
H/No ZB 70, Zorbisi Estates
Digital Address: UB-0034-8536
PMB-Bolgatanga
Upper East Region, Ghana
Tel: +233 (0) 382 021141
Email: complaints.bolgatanga@nca.org.gh

3. Koforidua
Residency Street,
Behind New Juaben Municipal Library
Digital Address: EN-001-4621
PMB – Koforidua
Eastern Region, Ghana
Tel: +233 (0) 342 28380/ 342 28382
Email: complaints.koforidua@nca.org.gh

4. Tamale
Watherson Residential Area
Digital Address: NT-0027-8191
P. O. Box TL 1590, Tamale
Northern Region, Ghana
Tel: +233 (0) 3720 28105/ 3720 20104
Email: complaints.tamale@nca.org.gh

5. Sunyani
House No. 83/D, Penkwase
Digital Address: BS-0012-4632
P. O. Box SY125, Sunyani
Brong Ahafo Region, Ghana
Tel: +233 (0) 352 027564
Email: complaints.sunyani@nca.org.gh

6. Kumasi
Fuller Road, Danyame, Kumasi
Digital Address: AK-063-2250
P. O. Box KS 10768, Kumasi
Ashanti Region, Ghana
Tel: +233 (0) 322 020014/ (0) 322 020018
Email: complaints.kumasi@nca.org.gh

7. Ho
H/No A6/29, Stadium Road
Digital Address: VH-0006-0554
P. O. Box HP1576, Ho,
Volta Region, Ghana
Tel: +233 (0) 3620 26339
Email: complaints.ho@nca.org.gh

8. Takoradi
Bakado
Digital Address: WS-014-8190
P. O. Box SL 409, Sekondi
Western Region, Ghana
Tel: +233 (0) 312 028063/ (0) 312 028049
Email: complaints.takoradi@nca.org.gh