

**INFORMATION AND COMMUNICATION TECHNOLOGIES SECTOR
2023 MID-YEAR MARKET REPORT**

JANUARY- JUNE, 2023

Economic Regulation Department
September, 2023

FOREWORD

I am delighted to present to you the Information and Communication Technology (ICT) sector 2023 Mid-year Market Report. The report highlights various developments in the sector observed over the first half of the year. The Zambia Information and Communication Technology Authority (ZICTA) continues to compile the report in a bid to provide various stakeholders such as Government agencies, market players, potential investors and the general public with insights on the performance of the country's ICT sector. The compilation of the report was based on information provided by operators in the sector, Government agencies and departments as well as other secondary data sources.

Key highlights from the report include some of the major developments in the ICT sector globally as well as selected developments observed in the country in the first half of 2023. The report also includes a review of the country's macro-economic environment over the reference period and its anticipated impact on the sector. An in-depth analysis of some of the key impact indicators in the ICT and postal services sector is also provided. As you will note in the report, the total number of active mobile network subscribers increased in the first half of 2023 by 7.3 percent to 20.1 million subscriptions from 18.7 million subscriptions recorded at the end of June 2022. Similarly, the number of active internet subscribers increased from 10.1 million subscriptions recorded in the first half of 2022 to 11.4 million subscriptions reported at the end of June, 2023 reflecting an increase of 13.5 percent. The volume of domestic outgoing traffic also recorded an increase by 10.9 percent from 13.1 billion minutes in the first half of 2022 to 14.5 billion minutes.. Consequently, revenues amongst mobile network operators increased from ZMW3.6 billion reported in the first half of 2022 to ZMW4.1 billion reported in the first half of 2023 reflecting a growth rate of 14.3 percent. In order to sustain the positive growth in the sector, the Government and the industry continued making notable investments in ICT infrastructure. In particular, the total number of telecommunication sites that were operational in the country increased by 5.5 percent to 12,618 sites relative to 11,960 sites recorded at the end of June 2022.

The Authority anticipates a positive growth outlook in ICT usage and access indicators in the second half of 2023. This is based on a number of factors which include the continued growth in telecommunication infrastructure which will subsequently increase network coverage and the quality of services and the introduction of responsive and innovative products by operators which will increase the demand for ICT products among other efforts. The Authority will continue to monitor developments in the sector as well as engage with the various stakeholders in the sector to support the continued growth and efficient operations of the sector..

It is my hope that the contents of this report provide a basis for the development of policies and initiatives that will benefit the sector and address some of the identified obstacles to the development of the sector.

Eng. Choolwe A. Nalubamba
DIRECTOR GENERAL

About this Report

The 2023 Mid-Year Market Report for the Information and Communication Technologies (ICT) Sector has been developed by the Economic Regulation department at the Zambia Information and Communications Technology Authority (ZICTA). The report is based on quantitative and qualitative insights gathered from various players in the ICT sector who include: providers of ICT services, Government ministries, agencies and departments; as well as physical and online resources which were complemented with information generated by the Authority.

Specifically, the report highlights global and national developments in the ICT sector over the first half of 2023. An assessment of the macro-economic environment is also presented with a focus on drawing implications for the ICT sector. The report also presents some highlights on key trends in ICT access and usage based on micro level data as well as some of the drivers that could explain any observed patterns. The main focus of the report is to highlight developments in the various market segments of the ICT sector including but not limited to details on the market size, competition landscape, revenue performance, investment and any impediments to the growth and development of the sector. A sectorial policy and regulatory review based on consultations with the industry is also provided. The report concludes with some sentiments on the forecast for the subsequent review period and provides some suggestions on interventions to consider for the remainder of the year.

The information provided in this report is primarily compiled to assist in enhancing the regulatory functions of the Authority, assist in aligning the existing policy to the current dynamics on the market as well as to highlight any impediments on the market that need redress. Notwithstanding, all opinions, errors or omissions are the responsibility of the authors and would not present any liability on the Authority.

List of Abbreviations

CPI	Consumer Price Index
eMBB	Enhanced mobile broadband
FTTX	Fibre To The X
FWA	Fixed Wireless Access
Gbps	Gigabytes per second
GCI	Global Cyber Security Index
GDP	Gross Domestic Product
GSMA	GSM Association
HHI	Herfindahl-Hirschman Index
ICT	Information and Communication Technology
INRIS	Integrated National Registration Information System
ITU	International Telecommunications Union
LMICs	Low- and Middle-Income Countries
LTE	Long Term Evolution
MNO	Mobile Network Operator
MPLS	Multiprotocol Labeling Switching
OTTs	Over –The-Top Technologies
PSTN	Public Switch Technology Network
SMS	Short Message Services
Tbps	Terabits per second
ZICTA	Zambia Information and Communications Technology Authority
ZEMA	Zambia Environmental Management Agency

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Executive Summary

Major Global Developments in the ICT Sector:

The GSMA's Mobile Gender Gap Report revealed that over 800 million women in low- and middle-income countries (LMICs) needed to adopt mobile internet by 2030 to close the digital gender gap. Further, the GSMA and the Africa Centre for Disease Control and Prevention (Africa CDC) signed a Memorandum of Understanding (MOU) to leverage mobile connectivity for addressing healthcare challenges in Africa. The GSMA's 'State of the Industry Report on Mobile Money 2023', revealed that mobile money services had exceeded industry expectations and experienced rapid growth worldwide. Particularly, the number of registered mobile money accounts increased by 13% from 1.4 billion in 2021 to 1.6 billion in 2022. Further, telecommunications regulatory leaders from around the world agreed on a set of Best Practice Guidelines at the International Telecommunication Union's Global Symposium for Regulators (GSR-23) in Egypt to ensure an inclusive and sustainable digital future by promoting the deployment of digital infrastructure globally. During the first half of 2023, the World Customs Organization (WCO) and the Universal Postal Union (UPU) consolidated their commitment to facilitating global trade and transport through the signature of a Joint Declaration at the first WCO–UPU Global Conference.

Major Local Developments in the ICT Sector:

By the end of June 2023, there were a total of eighty-nine (89) valid licences in the ICT sector compared to seventy eight (78) valid licences recorded at the end of June, 2022. Notably, ZICTA issued four new network licences for data only in the international market segment which would increase international data capacity into the country as well as provide scope for more transit services. Similarly, the Authority issued a total of eighty-eight (88) valid licenses to operators in the postal and courier services sector compared to fifty nine (59) licences reported at the end of June, 2022, reflecting an increase in the number of providers of courier services. The value of mobile money transactions continued to increase in the first half of 2023 when compared to the size of transactions in the first half of 2022. Particularly, the value of transactions increased from ZMW 151.3 billion in the first half of 2022 to ZMW 199.5 billion in the first half of 2023 representing an increase of 45.7 percent. Similarly, the volume of transactions increased from 670 million in the first half of 2022 to 976 million in the first half of 2023 representing an increase of 31.9 percent. Airtel Zambia officially launched its 5G connectivity network in the second quarter of 2023. The company also became the first telecommunications company in Zambia to introduce an e-SIM (embedded SIM) technology during the period under review. Further, Angola and Zambia signed a MoU to strengthen cooperation in the field of ICT. One of the key deliverables in the MoU was the opening of direct international data links between Zambia and Angola.

Performance of Selected Indicators in the ICT Sector. June 2022 –June 2023

The table below provides a summary of the developments in the ICT sector based on a selected list of key indicators:

INDICATOR	June 2022	June 2023	COMMENT
1. Total number of active mobile network subscriptions	18,708,450	20,073,710	Increased by 7.3 percent
2. Mobile Penetration Rate	95.0	102.0	Increase by 7 percentage points
3. Market Concentration (HHI)	0.366	0.379	Lessening of competition Increase by 0.013 percentage points
4. Number of unique mobile cellular subscriptions	7,396,426	12,786,285	Improvement of 72.9 percent

INDICATOR	June 2022	June 2023	COMMENT
5. Total domestic outgoing traffic on mobile cellular networks	13,053,466,206	14,487,598,716	Improvement of 10.99 percent
6. Volume of international outgoing traffic	7,561,963	5,450,752	Reduction of 27.9 percent
7. Volume of international incoming traffic	8,101,293	6,293,683	Reduction of 22.3 percent
8. Total number of operational telecommunication sites in the country	11,960	12,618	Improvement of 5.5 percentage points
9. Revenue performance in the mobile telephone subsector (ZMW)	3,595,200,879.01	4,109,249,099.48	Improvement of 14.3 percentage points
10. Total number of active internet (mobile & fixed) subscriptions	10,074,205	11,434,849	Improvement of 13.5 percentage points
11. Average Broadband capacity used by the mobile network operators.	133 Mbps	185 Mbps	Improvement of 38.9 percentage points
12. Volume of Broadband Capacity Utilised	99,000 Terabytes	129,000 Terabytes	Improvement of 31.1 percentage points
13. Number of telecommunication towers in Zambia	3,457	3,532	Improvement of 2.2 percentage points
14. Total broadband capacity utilised among wholesale Transmission carriers (Gbps)	125.4	175.9	Improvement of 40.3 percentage points
15. Total number of direct employees Among ICT Licensed Operators	1,759	1,998	Improvement of 13.6 percentage points

A sectorial policy and regulatory review undertaken at the end of June, 2023 through extensive consultations with operators revealed the following challenges:

- a) **Deterioration in the Macro Economic Environment:** Operators continued to highlight the challenges associated with the prevailing macro-economic environment. Notably, the depreciation of the local currency, rising inflation and high interest rates were noted to have increased the cost of acquiring key inputs for their operations as well as limited their prospects on profitability.
- b) **Delays in Issuance of Statutory Instruments:** There was a noted concern on the delayed issuance of statutory instruments that would operationalise the legislation on cyber security, data protection and electronic transactions.
- c) **High tax incidence in the ICT sector.** The tax burden in the ICT sector was considered high in spite of the harmonisation of the general corporate tax rate from 35 percent to 30 percent. Particularly, the excise duty of 17.5 percent applied on airtime was reported to have a direct effect of increasing the cost of services and consequently reduced the pace of adoption as well as intensity of usage of ICT services.

- d) **Delays in Approval for installation of infrastructure:** Operators indicated that there were delays by the Zambia Environmental Management Authority (ZEMA) in obtaining approvals for installation of infrastructure such as the construction of communication towers.
- e) **Rising energy Costs:** The cost of diesel which is a key input in the provision of services remained significantly high over the first half of 2023. In addition, following the change of frequency of adjustments in the pricing to monthly, this has led to more periodic variations in the price of fuel. Operators indicated that the cost of fuel adversely affected the cost of providing services as fuel was a key input in the provision of ICT services.
- f) **Low Awareness on Cyber Security Risks:** Operators identified cyber security risks as a growing challenge in the country. The incidence of these risks was particularly of concern given the growing number of users of ICT services and value added services such as mobile money. However, it was also observed that the extent of awareness of the existing risks and mitigation strategies among users of ICT services was low.

The outlook for the second half of 2023 based on the trends noted on the market as well as sentiments gathered from operators are summarized below:

- a) **Increased Participation in International Data Services:** The Authority issued licenses to additional players in the international data services market segment. The increased participation of international data service providers will assist with deepening competition in the provision of such services which would in turn improve quality of service, coverage and pricing outcomes.
- b) **Growth in Uptake of ICTs:** The demand for ICT services is expected to continue on a positive trajectory mainly on account of the increased relevance of services such as mobile money as well as social media adoption.
- c) **Macro-economic outlook and its implications:** The overall macro-economic environment presents some risks related to exchange rate movements and its pass-through effects on inflation. However, efforts by the Central Bank to manage these risks through its monetary policy interventions are likely to restore stability.
- d) **Investment in Infrastructure:** The continued investments in backbone and metro fiber networks as well as telecommunication sites by operators is expected to extend coverage and improve quality of services. It is anticipated that mobile network operators will continue investing in their 4G networks aimed at extending broadband coverage. Two Mobile Network Operators have now launched 5G services and are expected to expand to more areas while other players may equally launch similar technologies. Additionally, the government through the universal access and service fund is poised to deploy over 130 communication towers in unserved and underserved areas over the medium term.

1.0. RECENT GLOBAL DEVELOPMENTS IN THE ICT SECTOR

1.1. Increased Pledges for global digitalization

The International Telecommunications Union (ITU) issued a global appeal to increase the value of pledges for digitalization from the current USD 30 billion to USD 100 billion by 2026 during the commemoration of the World Telecommunication and Information Society Day. This appeal aims to raise resources for universal connectivity and digital transformation in the world's least developed countries (LDCs).. The ITU Secretary-General emphasized the need for action to accelerate digital transformation for everyone. Partner2Connect, through its pledging platform, was recognized to already have identified commitments worth USD 12 billion to bring LDCs online quickly. Further, the United Nations Secretary-General stressed the importance of bridging the digital divide and making digital transformation environmentally friendly. Currently, 2.7 billion people worldwide are offline, and the digital connectivity divide is widening, particularly for LDCs.¹

GSMA's Mobile Gender Gap Report The GSMA's Mobile Gender Gap Report revealed that over 800 million women in low- and middle-income countries (LMICs) needed to adopt mobile internet by 2030 to close the digital gender gap. Women in LMICs were reported to be 19 percent less likely to use mobile internet, resulting in approximately 310 million fewer women than men using it. The report highlighted the need for increased efforts from stakeholders to address this gap. It is projected that only 360 million more women will start using mobile broadband by 2030 if the current trend continues, falling short of the 800 million target. The report highlighted the barriers to mobile ownership as well as internet adoption and provided recommendations for policymakers, regulators, mobile operators, and NGOs. It emphasized the importance of collaboration among stakeholders to ensure women are not left behind in the digital world. The GSMA Connected Women Commitment initiative, involving over 40 mobile operators, had already reached over 65 million additional women. However, the report indicated that narrowing the gender gap required targeted action from all stakeholders, including MNOs, internet companies, policymakers, regulators, and the development community.²

1.2. Agreement between GSMA and the Africa Centre for Disease Control and Prevention

The GSMA and the Africa Centre for Disease Control and Prevention (Africa CDC) signed a Memorandum of Understanding (MOU) to leverage mobile connectivity for addressing healthcare challenges in Africa. The MOU established a partnership framework to focus on digital strategy, policy, and governance to enhance health security and outcomes on the continent. The collaboration will involve HealthConnekt Africa, an initiative aiming to connect all health facilities and workforce in Africa to the internet by 2030. The GSMA and Africa CDC will work together to connect pioneer African Union Member States' health facilities, equip health workers with smart devices, promote homegrown healthtech innovations, and organize events to accelerate the digital transformation of the health sector in Africa. This

¹ <https://www.itu.int/en/mediacentre/Pages/2023-05-17-wtisd-ITU-targets-USD-100-billion-by-2026-to-accelerate-global-digitalization.aspx>

² <https://www.gsma.com/newsroom/press-release/100-million-women-per-year-will-need-to-adopt-mobile-internet-to-close-the-gender-gap-by-2030-gsma-report-reveals/>

partnership is aligned with Africa CDC's efforts to strengthen African institutions for public health, enhance the public health workforce, and foster collaborative partnerships.³

1.3. GSMA's 'State of the Industry Report on Mobile Money 2023'

According to the GSMA's 'State of the Industry Report on Mobile Money 2023', mobile money services exceeded industry expectations and experienced rapid growth worldwide. The number of registered mobile money accounts increased by 13 percent from 1.4 billion in 2021 to 1.6 billion in 2022. Daily transactions surpassed \$3.45 billion, exceeding the predicted amount of \$3 billion. The total transaction value for mobile money grew by 22% from \$1 trillion to approximately \$1.26 trillion between 2021 and 2022. Despite this progress, efforts are still required to provide safe, affordable financial services to underserved communities, as around 1.4 billion people worldwide remain unbanked. The report highlighted 315 live mobile money deployments globally, with peer-to-peer transfers and cash-in/cash-out transactions being popular use cases. Mobile money-enabled international remittances increased by 28% to \$22 billion in 2022. The report noted a gender gap in mobile money adoption, with women in low- and middle-income countries being 28% less likely than men to own a mobile money account. The number of mobile money agents rose by 41% to reach 17.4 million in 2022, with Nigeria experiencing significant growth in this area. The GSMA emphasized the need for enabling policies to support mobile money deployments and drive further growth to promote financial resilience and digitization of economies.⁴

1.4. New Approaches for Trustworthy and Resilient Digital Infrastructure

Regulatory leaders from around the world agreed on a set of Best Practice Guidelines at the ITU Global Symposium for Regulators (GSR-23) in Egypt. These guidelines were aimed at ensuring an inclusive and sustainable digital future by promoting the deployment of digital infrastructure globally. The event, hosted by the National Telecommunication Regulatory Authority of Egypt, saw discussions on regulatory approaches for rural and underserved areas as well as emerging technologies. The guidelines, based on contributions from various stakeholders, highlight the importance of collaboration, competition, and innovation in creating investor-friendly markets. They also emphasized the potential of emerging technologies to empower underserved communities. The event included the launch of the Digital Regulation Network initiative and the publication of Collaborative Digital Regulation Country Reviews for Brazil, Colombia, Egypt, and Kenya. Partnerships were signed to strengthen collaboration in mapping broadband infrastructure, electronic communications, and e-waste policy.⁵

1.5. Universal Postal Union and World Customs Organisation Joint Declaration

During the first half of 2023, the World Customs Organization (WCO) and the Universal Postal Union (UPU) consolidated their commitment to facilitating global trade and transport through a Joint Declaration at the first WCO–UPU Global Conference, held in Tokyo from 6 to 8 June 2023. The declaration set out common objectives in the areas of digitalization, data exchange, supply chain security and capacity building. The consolidation signified a step under a Cooperation Agreement signed by the two organizations in May 2022, which is aimed at establishing a platform for exchange of information, experiences, expertise and best practices, while increasing awareness of the Customs and

³ <https://www.gsma.com/newsroom/press-release/gsma-signs-agreement-with-africa-centres-for-disease-control-and-prevention-to-harness-the-power-of-mobile-to-combat-disease-in-africa/>

⁴ <https://www.gsma.com/newsroom/press-release/mobile-money-exceeds-industry-expectations-reaching-a-transaction-value-of-1-26-usd-trillion-in-2022/>

⁵ <https://www.itu.int/en/mediacentre/Pages/gsr23-guidelines-to-secure-an-inclusive-and-sustainable-digital-future-for-all.aspx>

postal regulatory frameworks, mandates and available instruments and tools. The Joint Declaration reiterates a clear commitment to enhanced cooperation and coordination between the WCO and the UPU, and their Members, setting out the common objectives of facilitating trade and transport while interconnecting the world and protecting the public from the risks posed by illegal and dangerous goods. This is likely to increase efficiency in the customs process as well as enhance security in the transmission of Postal items for Designated Postal Operators such as Zampost and customs officials.

1.6. Global E-Commerce Performance for First Half of 2023

Assessments with respect to global E-Commerce, conducted by Forbes Advisor⁶ indicated that 20.8 percent of retail purchases are expected to take place online in 2023. This was attributed to a growing preference by entrepreneurs to cut down on costs associated with physical retail spaces, which include labour, utilities and rental costs. The proliferation of code-free website builders has contributed to lowering barriers to entry into online retail spaces. Consequently, the global e-commerce market is expected to total \$6.3 trillion in 2023. The assessment further showed that 57 percent of online shoppers purchased items internationally. This was attributed to most shoppers being unable to source their preferred items in their locality. A situation such as this has an impact on international trade, especially as the utilization of e-commerce rises. Directly related to the courier aspect of e-commerce, the study reported that there was a 22 percent rate of drop-out in an online shopping session because indicative shipping times seemed too long. Consumers tended to drop transaction sessions with one retailer and moved to others whose shipping times seemed more favourable.

1.7. Postal Traffic Forecasts by the UPU Strategy and Economics Committee

In the first half of 2023, the UPU's Strategy and Economics Committee presented Econometric forecasts of international postal traffic based on the statistics that were collected between the years 2019 and 2022. This was aimed at analyzing global pre and post pandemic postal traffic. A summary of various services such as EMS, Parcel Post and Letter Post were included in the forecast. The forecast of movement of low weight items showed a strong post-pandemic decline in terms of number of items, -63 percent between Q1 2019 and Q2 2023, CAGR -22 percent.⁷ This signaled volume losses for relatively low weight (courier) items as carried by designated postal operators. The drop in the movement of courier items through DPOs could be attributed to two main factors; the reduction of production and shutdown of some merchant businesses during the pandemic; and the use of alternative delivery methods inclusive of private courier and logistics companies.

⁶ [38 eCommerce Statistics of 2023 – Forbes Advisor](#)

⁷ [\(UPU Economics and Strategy Committee 3\)](#)

2.0. SELECTED LOCAL DEVELOPMENTS IN THE ICT SECTOR

2.1. Issuance and Renewal of Licenses to Operators in the ICT sector

By the end of June 2023, there was a total of eighty nine (89) valid licences in the ICT sector compared to seventy eight (78) valid licences recorded at the end of June, 2022. The valid licences constituted twenty (20) Network licence (Facilities), twenty nine (29) Network licence (Facilities and Service), twenty nine (29) Service (With Network Facilities and Service) Category A and nine (9) Service (Without Network Facilities and Service) licences. During the period under review, the Authority had no record of licensed entities under the Value Added Service (VAS) licence category.

Table 1: Valid Licences in the ICT Sector: June 2022 to June 2023

Type of Licence	Market Segment	June- 2022	June- 2023
1. Network Licence (Facilities)	International	NA	5
	National	NA	13
	Provincial	NA	2
	District	NA	2
2. Network Licence (Facilities and Service)	International	4	4
	National	30	18
	Provincial	4	2
	District	7	5
3. Service Licence (With Network Facilities and Service) Category A	International	NA	4
	National	22	18
	Provincial	2	2
	District	4	5
4. Service Licence (Without Facilities and Service) Category B	National	6	9
	Provincial	0	0
	District	0	0
TOTAL		78	89

Source: ZICTA

2.2. Issuance and Renewal of Licenses to Operators in the Postal Sector

By the end of June, 2023, the Authority issued a total of eighty eight (88) valid licenses to operators in the postal and courier services sector compared to fifty nine (59) licences reported at the end of June, 2022, reflecting an increase in the number of valid postal licences. (See Table 2).

Table 2: Licensed Postal Operators: June 2022 to June 2023

Licence Type	Market Segment	Jun-2022	Jun-2023
1. Public Postal	International	1	1
2. Courier	International & Domestic	20	30
3. Courier	Domestic	20	35
4. Courier	Local	7	22
TOTAL		59	88

Source: ZICTA

2.3. Issuance of Four International Data Gateway Licences

The Zambia Information and Communications Technology Authority issued four (4) data gateway Licences in the International Market segment in the first half of 2023. . This development will facilitate increased bandwidth capacity for the country and allow for more superior data services for data consumers. With this license, the new service providers can leverage their terrestrial and cross-border fibre network and satellite communications to provide high-quality internet services in addition to import/export internet data capacity for other ISPs..

2.4. Trends in Mobile Money Transactions

The value of mobile money transactions recorded an upward trajectory in the first half of 2023 when compared to the size of transactions in the first half of 2022. Particularly, the value of transactions increased from ZMW 151.3 billion in the first half of 2022 to ZMW 199.5 billion in the first half of 2023 representing an increase of 45.7 percent. Similarly, the volume of transactions increased from 670 million in the first half of 2022 to 976 million in the first half of 2023 representing an increase of 31.9 percent. This performance was mainly attributed to the continued reliance on electronic and mobile platforms to send and receive funds as well as payment of utility services such as electricity, water and pay TV subscriptions.

Table 3: Trends in Volumes and Values of Electronic Money Transactions

	Jun-22	Dec-22	Jun-23	Percent change YTD
Volumes of Transactions (Millions)	670	1,581	976	45.7%
Values in ZMW (Millions)	151,296	295,828	199,491	31.9%

Source: Bank of Zambia

2.5. Airtel Networks Zambia Launches 5G Network in Zambia

Airtel Networks Zambia officially launched its 5G connectivity network in the second quarter of 2023. It is anticipated that this will offer data speeds up to 10 times faster than 4G, low latency, and seamless connectivity for millions of devices. The 5G network rollout is part of Airtel Zambia's comprehensive infrastructure growth plan, aligning with Zambia's 8th National Development Plan for digital innovation and inclusivity. The technology will revolutionize various sectors, including smart cities, education, healthcare, Agri-tech, transport systems, and entertainment. Airtel Zambia reported that the 5G launch signifies the company's dedication to progress and empowering the people of Zambia. Overall, Airtel Zambia's 5G launch marks a significant milestone in the country's technological advancement and connectivity landscape, promising transformative opportunities for businesses and individuals alike. This launch made Airtel Zambia the second 5G network carrier after MTN Zambia..⁸

2.6. Airtel Zambia Launches eSIM Service and HD calls using VoLTE technology

Airtel Zambia became the first telecommunications company in Zambia during the period under review to introduce an eSIM (embedded SIM) technology, allowing customers to access services without a physical SIM card. The eSIM offers the same functionality as a physical SIM but simplifies the user experience and eliminates concerns about losing or damaging the SIM card.. In addition to the eSIM launch, Airtel Zambia also introduced HD calls using VoLTE technology..⁹

2.7. Phasing out of scratch card airtime purchases

The Zambian government announced efforts to strengthen the relationship between fintechs and Mobile Network Operators (MNOs) in the country, with a focus on promoting digital transactions and phasing out scratch card airtime purchases. By prioritizing digitized distribution channels, the government aims to reduce costs associated with producing and distributing physical scratch cards across the country. Additionally, digital recharge platforms are expected to contribute to the reduction of fraud and facilitate easier tax collection for the Zambia Revenue Authority, as it becomes more feasible to track actual airtime sales by MNOs. These measures align with the Ministry of Science and Technology's objective to enhance the bond between fintechs and MNOs, thereby promoting the growth of digital transactions in Zambia..¹⁰

⁸ <https://www.techrends.co.zm/airtel-launches-5g-network-in-zambia/>

⁹ <https://www.techrends.co.zm/airtel-zambia-launches-1st-esim-service-in-zambia/>

¹⁰ <https://extensia-ltd.com/2023/01/04/zambian-govt-to-help-strengthen-the-bond-between-fintechs-and-mnos/>

2.8. Angola and Zambia Sign ICT Cooperation Agreement

Angola and Zambia signed a MoU to strengthen cooperation in the field of ICT. The agreement aims to enhance collaboration in digital transformation, artificial intelligence (AI), space technology, and establishing direct cross-border optical fiber connectivity. It also includes goals such as knowledge exchange, staff training, and Zambia's ambition to develop its own space program with Angola's support. The agreement will improve telecom regulation, operational frameworks, and the quality of ICT services in both countries. This collaboration reflected the intent by the two parties to drive economic growth, foster innovation, and improve the lives of their citizens through ICT.¹¹

2.9. Government's plan to review the Postal Services Act

The Minister of Science and Technology announced the government's plan to review the Postal Services Act in order to address emerging issues in the postal and courier services sector. The review aims to create an enabling environment for the growth of the sector and generate employment opportunities. The government is committed to supporting the development of the postal services sector, including courier services, and recognizes the need for regulation. ZICTA was tasked with creating a competitive postal environment and supporting the growth of Micro, Small, and Medium Enterprises (MSMEs) in the sector.¹²

2.10. Government reduces license fees for operating postal, courier services

Following consultations, ZICTA reduced local license fees for postal and courier services from ZMW 10,000 to ZMW 5,000, and international license fees from ZMW 15,000 to ZMW 10,000. These reductions of 50% and 53% respectively were aimed at increasing the participation of small and medium-sized enterprises (SMEs) in the sector, promote competition, reduce unemployment, and ultimately boost government revenues. The regulation and formalization of registered postal and courier businesses will build trust and enhance the quality of services and customer experience. The reduction in entry fees is expected to attract around 150 informal postal and courier businesses to formalize their operations. The use of electric vehicles and motorcycles in the sector will also be encouraged through a reduction in customs duties, promoting fuel cost-efficiency and lower carbon emissions. The reduction in customs duty on bicycles will benefit the designated operator, Zampost, which utilizes bicycles for postal services in rural areas. The Ministry of Technology and Science plans to review the postal services act to incorporate emerging issues in the sector.¹³

¹¹ <https://africanews.space/angola-and-zambia-sign-ict-cooperation-agreement/>

¹² <https://www.lusakatimes.com/2023/02/01/felix-mutati-announces-the-governments-plan-to-review-the-postal-services-act/>

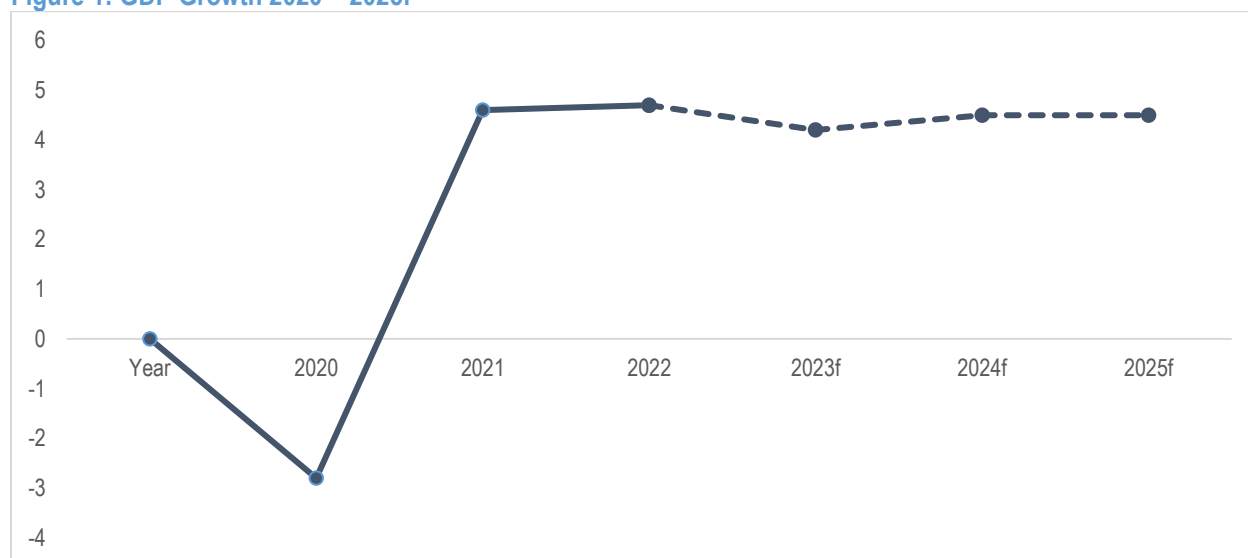
¹³ <https://www.lusakatimes.com/2023/02/01/felix-mutati-announces-the-governments-plan-to-review-the-postal-services-act/>

3.0. DEVELOPMENTS IN THE MACROECONOMIC ENVIRONMENT

3.1. Economic Growth Performance

The preliminary GDP estimates by the Zambia Statistics Agency showed that the economy grew by 4.7 percent in 2022 compared to 4.6 percent in 2021. This growth was mainly associated with the Education industry which had the highest positive contribution to the growth at 1.9 percent followed by the Transport & storage (1.2%) and Information & communication (1.0 %) making these sectors the primary drivers of growth in the economy. Growth within the ICT sector was reported to have been at 14.8 percent in 2022 making the sector one of the fastest growing sectors in the economy. Consequently, the share of the contribution of the ICT sector to GDP at current prices increased to 3 percent in 2022 compared to 2.3 percent in 2021 mainly on account of the growth in the sector. The Zambian economy is expected to grow by 2.7% in 2023 from 4.7% in 2022, as contractions in mining and energy drag on growth¹⁴. The overall increase in GDP is expected to impact the Information and Communications Technology (ICT) sector positively as it will increase the need for effective communication and digital platforms in various economic sectors. It is anticipated that the increase in economic activity will spur digitalization and consequently increase the ICT sectors' contribution to GDP.

Figure 1: GDP Growth 2020 – 2025f



Source: Zambia Statistical Agency

3.2. Inflation Rate Performance

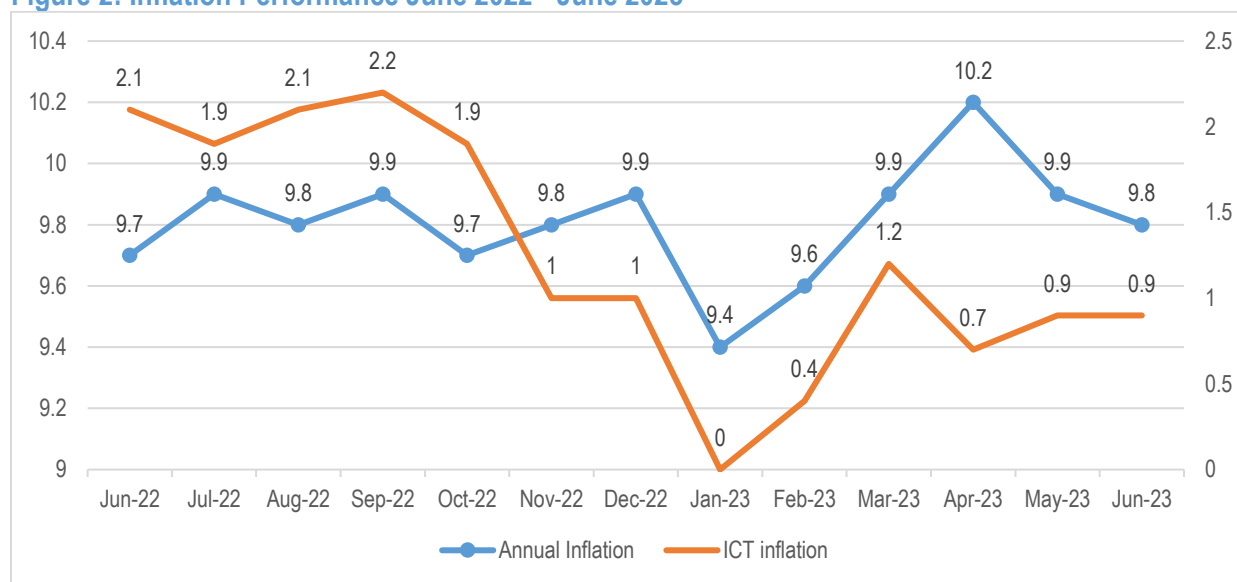
After declining for six consecutive quarters, inflation rose to an average of 9.9 percent in the second quarter of 2023 from 9.6 percent in the first quarter, moving away from the 6-8 percent target band. This inflation performance was attributed to the depreciation of the Kwacha against the US dollar, higher maize grain and meat prices, reduced supply of vegetables, and the upward adjustment in electricity tariffs explain this outturn¹⁵. Annual food inflation for June 2023 was recorded at 11.2 percent compared to 11.6 percent in the previous month. This means on average prices of food items increased by 11.2 percent between June 2022

¹⁴ Ministry of Finance 2024 Budget Plan

¹⁵ Bank of Zambia, 2023 January to June Monetary Policy Statement

and June 2023. The annual non-food inflation for June 2023 increased to 7.8 percent from 7.6 percent in May 2023. In the ICT sector, the overall rate of price increases declined from 2.1 percent at the end of June 2022 to 0.9 percent at the end of June 2023 reflecting a decline of 57.0 percent. This reduction is anticipated to increase the usage of ICT services as the price changes are anticipated to increase the demand for these services. However, the overall rise in the prices of goods and services is expected to negatively impact the ICT sector as the cost of key inputs that are locally sourced is expected to increase and could consequently have an adverse effect on profitability and the overall cost of doing business.

Figure 2: Inflation Performance June 2022 - June 2023

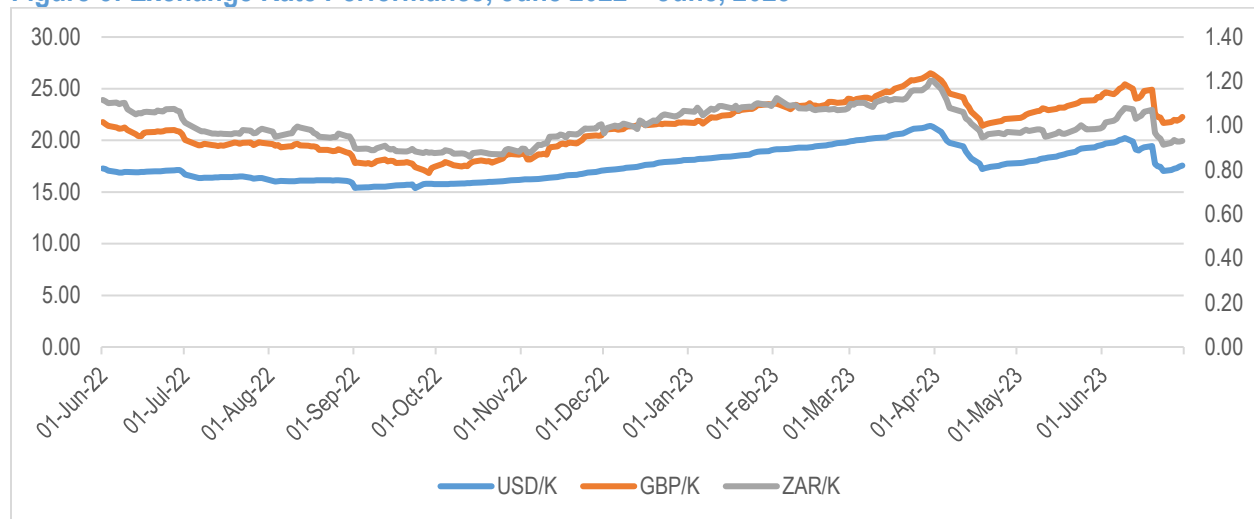


Source: Zambia Statistical Agency

3.3. Performance of the Foreign Exchange Market

The Zambian Kwacha depreciated against most major trading currencies between the end of June 2022 and June 2023. Relative to the major trading currencies, the Kwacha depreciated by an average of 1.56 percent with respect to the United States Dollar (USD) while a 2.39 percent depreciation was recorded relative to the British Pound. On the other hand, a 16.96 percent appreciation was recorded against the South African Rand (ZAR). Specifically, the local currency depreciated from 17.29 ZMW/USD to 17.56 ZMW/USD; and from 21.76 ZMW/GBP to 22.28 ZMW/GBP during the reference period. Despite the positive market sentiments related to the external debt restructuring agreement reached with the Official Creditors to Zambia under the G20 Common Framework for debt restructuring notwithstanding, the forex market has continued to be characterised by low supply of foreign exchange amid rising demand as the economy recovers from effects of the COVID-19 pandemic. Overall, the continued depreciation of the local currency is anticipated to have an adverse impact on the economy as a whole as it may slow down investments on account of rising costs of imported inputs.. For the ICT sector, it is expected that the depreciation of the currency may increase the cost of internationally sourced inputs such as international bandwidth and international terminal costs and could lead to rising prices from the pass through effects of the exchange rate on inflation..

Figure 3: Exchange Rate Performance; June 2022 – June, 2023

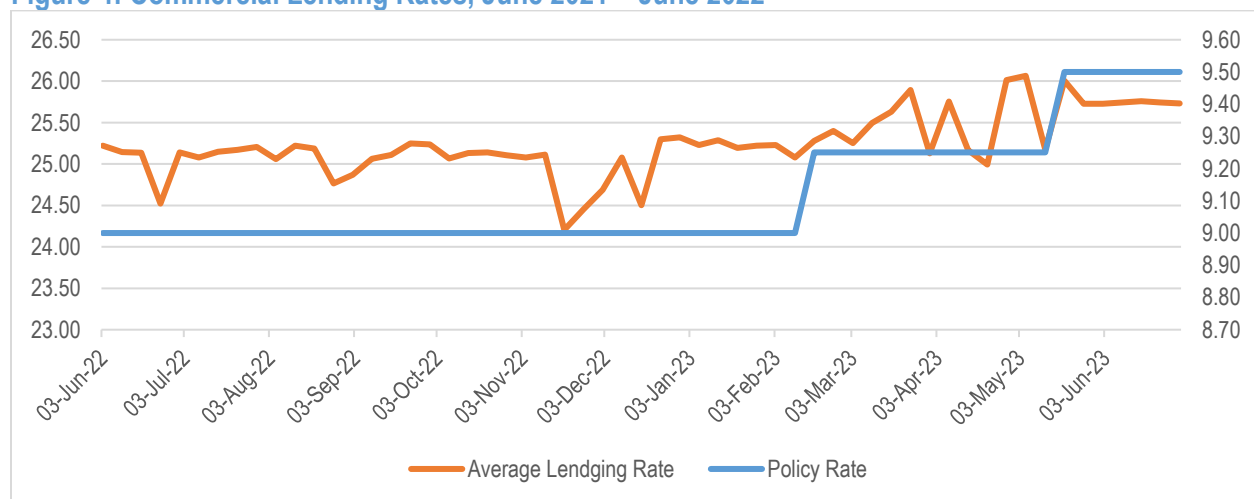


Source: Bank of Zambia

3.4. Average Lending Rates and Monetary Policy Rates.

An annual review of the commercial bank average lending rates showed a marginal increase from 25.22 percent at the end of June 2022 to 25.73 percent at the end of June 2023 reflecting a 2.02 percent rise. The rise in average commercial bank lending rates, which reflects the country’s average cost of borrowing, was mostly attributed to a rise in money supply over the period of reference. On the other hand, the monetary policy rate was revised upwards by 50 basis point from 9.0 percent to 9.5 percent in June 2023. This increase was done in a bid to steer the inflation rate towards the medium term annual target range of 6 to 8 percent. An increase in the monetary policy rate is expected to increase the base lending rate and consequently the commercial bank lending rate, a phenomenon which was observed at the close of 2022. It is anticipated that any future declines in the commercial banks average lending rates is expected to positively impact the ICT sector as it will increase the sectors’ access to funds for investment which may have positive implications on the quality of services provided as well as coverage among other attributes.

Figure 4: Commercial Lending Rates, June 2021 – June 2022

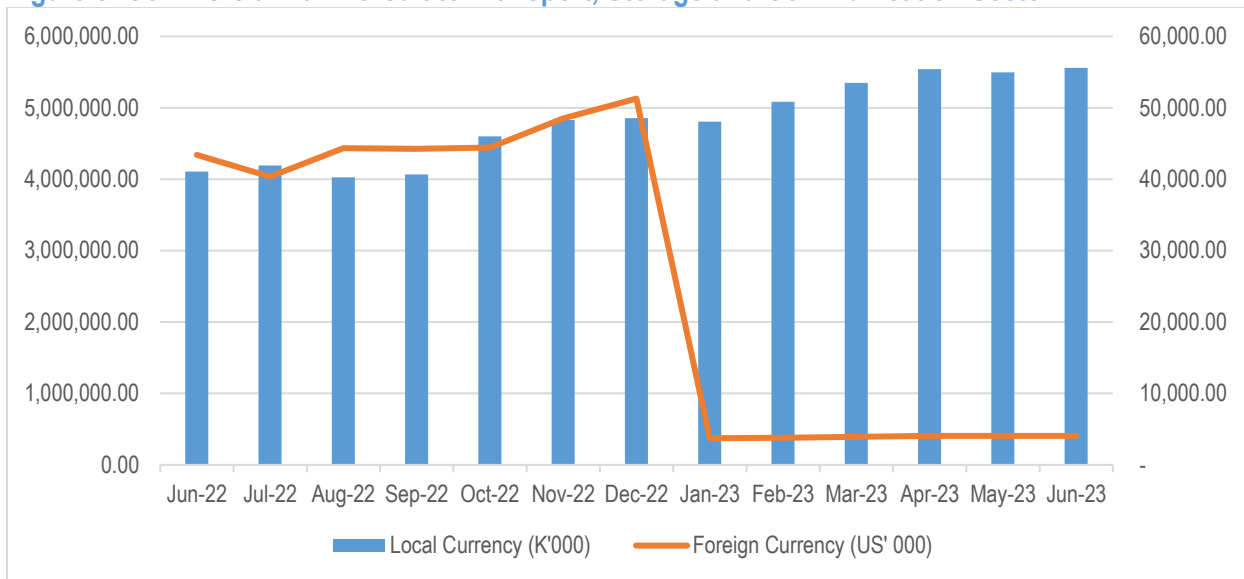


Source: Bank of Zambia

3.5. Access to Commercial Bank Credit in the ICT sector

The total local currency credit allocated to the Transport, Storage and Communications sector increased significantly on a year to date basis from ZMW4.11 billion at the end of June 2022 to ZMW5.56 billion at the end of June 2023 representing an improvement of 35.27 percent. On the other hand, foreign currency credit allocated to the sector declined significantly from \$43.4 million to \$4.1 million over the reference period reflecting a decline of 90.7 percent. The overall decline in both foreign currency credit allocated to the sector is expected to have a negative impact on the sector as it reduces funds available for infrastructure investments.

Figure 5: Commercial Bank Credit to Transport, Storage and Communication Sector



Source: Bank of Zambia

4.0. PERFORMANCE OF THE ICT SECTOR

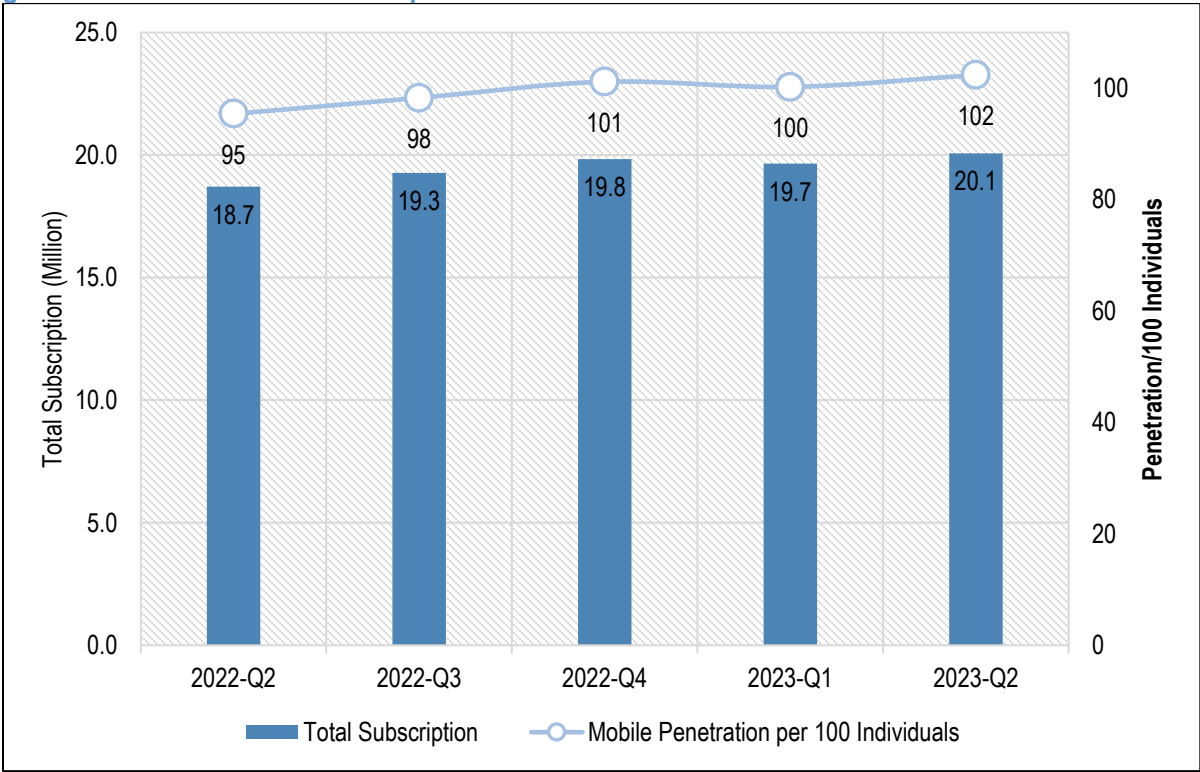
4.1.

4.2. Mobile Telephony Market

4.2.1. Active Mobile Network Subscription

The total number of active mobile cellular subscriptions increased by 7.3 percent, from 18.7 million subscriptions in June of 2022 to 20.1 million subscriptions at the end of June 2023. Consequently, the mobile cellular penetration, computed as the ratio of active¹⁶ SIM cards to the total population, increased on a year to date basis from 95 to 102 per 100 individuals. The growth in the number of active mobile telephone subscriptions was mainly explained by increased investments by operators in extending network coverage as well as the growing relevance of mobile telephone services among the populace for needed services such as mobile money services.

Figure 6: Trends in Mobile Subscription: June 2022 to June 2023



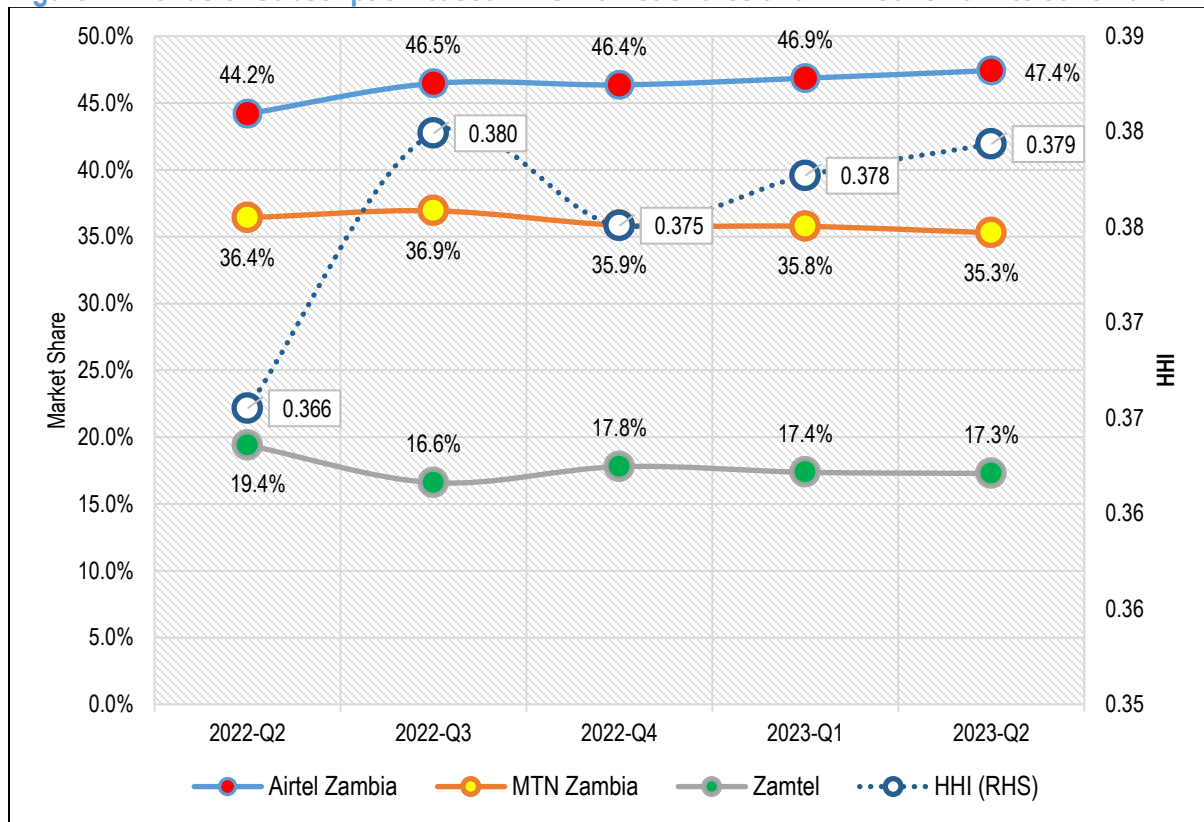
Source: Operator submissions

¹⁶ SIM cards which recorded at least a call, SMS, data or mobile money activity during the quarter 2.

4.2.2. Market Shares of Mobile Telephone Subscriptions and Trends in Market Concentration

A review of the evolution of market shares and the associated Hirschman-Herfindahl Index (HHI) for the period June 2022 to June 2023 showed that Airtel Zambia maintained the largest market share based on subscriptions. At the end of June 2023, the subscription based market share for Airtel Zambia increased by 3.2 percentage points to 47.4 percent from 44.2 percent reported at the end of June 2022. On the other hand, the subscription-based market shares for MTN Zambia and Zamtel declined by 1.1 percentage points and 2.1 percentage points over the same period respectively. Specifically, MTN Zambia subscription decreased to 35.3 percent from 36.4 percent while that of Zamtel decreased to 17.3 percent from 19.4 percent over the review period. The HHI, which measures market concentration, increased over the period from 0.366 to 0.379 reflecting a lessening of market competition as measured by the concentration index.

Figure 7: Trends of Subscription-based MNO Market Shares and HHI: June 2022 to June 2023



Source: Operator submissions

4.2.3. Unique Mobile Cellular Subscription Trends

The total number of unique mobile network subscriptions recorded at the end of June, 2023, measured by the count of subscribers' unique identification numbers in the consolidated SIM registration database for all the three mobile network operators, was 12.8 million. This subscriber base represents a unique mobile penetration of 65 individuals per 100 inhabitants and is 37 points lower than the penetration for multiple subscription of 102 individuals per 100 inhabitants. Airtel Zambia had the largest number of unique

subscriptions at 6.3 million unique subscriptions, followed by MTN Zambia and Zamtel at 4.7 million and 1.9 million unique subscriptions respectively. The concentration of multiple subscriptions across the three operators declined by 37.9 percent to 1.6 subscribers per unique subscriber in June 2023 from 2.5 subscribers per unique subscriber in 2022. During the review period MTN Zambia had the highest concentration of multiple subscription at 2.1 subscribers per unique subscriber while concentrations for Airtel Zambia and Zamtel were 1.1 and 1.8 subscribers per unique subscriber respectively.

Table 4: Unique Subscriptions: June 2022 to June 2023

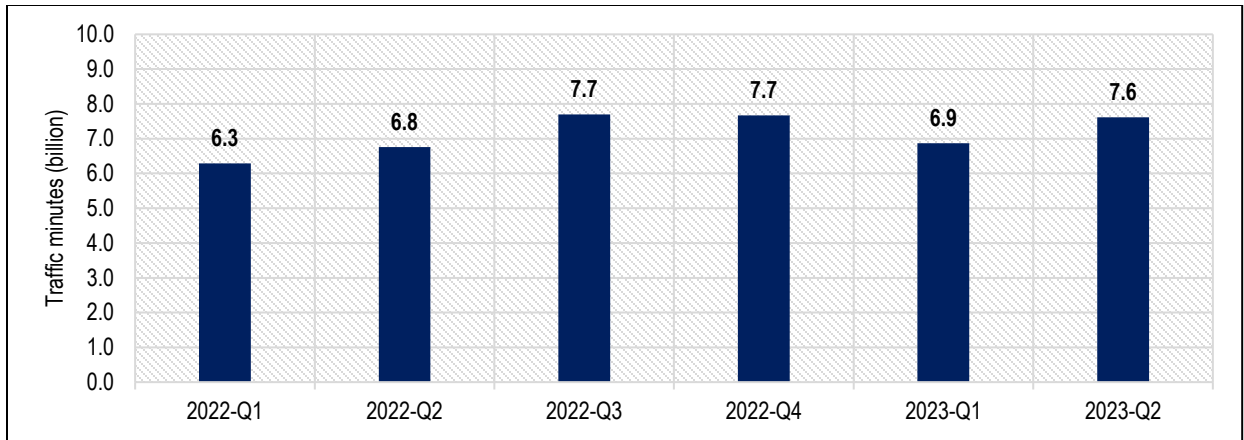
	Operator	Multiple Subscription	Unique Subscription	Intensity Ratio of SIM Multiplicity
Jun-23	MTN Zambia	7,084,783	4,565,165	2.1
	Airtel Zambia	9,520,219	6,336,783	1.1
	Zamtel	3,468,708	1,884,337	1.8
	Across All	20,073,710	12,786,285	1.6
Dec-22	MTN Zambia	7,112,482	4,322,472	2.1
	Airtel Zambia	9,195,828	6,026,290	1.2
	Zamtel	3,529,690	1,646,546	2.1
	Across All	19,838,000	7,913,875	2.5
Jun-22	MTN Zambia	6,812,430	4,237,055	1.6
	Airtel Zambia	8,267,842	5,401,276	1.5
	Zamtel	3,628,178	1,789,023	2.0
	Across All	18,708,450	7,396,426	2.5
Percent Change YTD		7.3%	72.9%	-37.9%

4.2.4. Mobile Cellular Traffic

4.2.4.1. Domestic Outgoing Traffic

The volume of total domestic outgoing traffic increased on a year-to-date basis by 11.0 percent in the first half of 2023 to 14.4 billion minutes from 13.1 billion minutes in the first half of 2022. The increase in the outgoing domestic traffic was mainly on account of the continued increased adoption and usage of volume-based bundled offers that offer a high volume of minutes to users at discounted rates.

Figure 8: Trends in Domestic Outgoing Traffic Minutes: June 2022 to June 2023

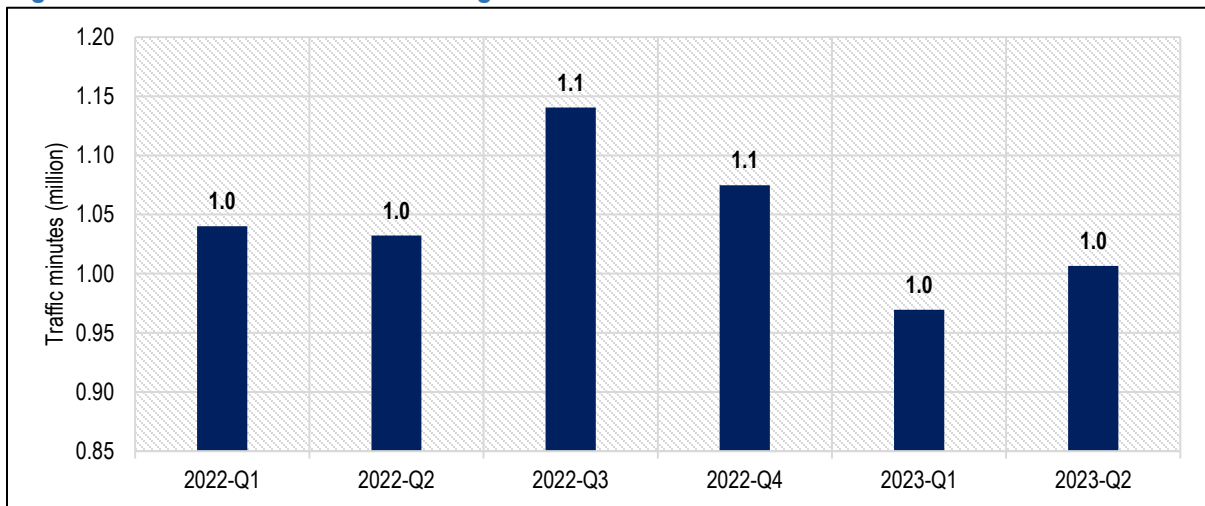


Source: Operator submissions

4.2.4.2. Domestic Incoming Traffic

The total domestic incoming traffic declined by 4.6 percent on a year to date basis to about 2.0 billion minutes at the end of first half of 2023 from 2.1 billion minutes at the end of first half of 2022. The decrease in total domestic incoming traffic was largely influenced by the continued reliance on internet calls that take place on various social media platforms and other OTT services.

Figure 9: Trends in Domestic Incoming Traffic Minutes: June 2022 to June 2023

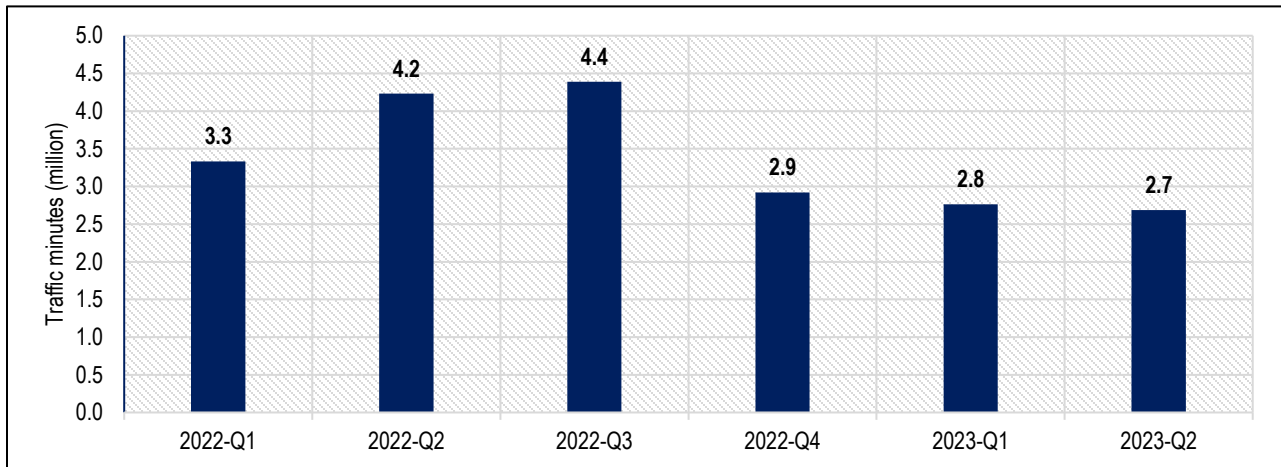


Source: Operator submissions

4.2.4.3. International Outgoing Traffic

The overall volume of international outgoing traffic declined by 27.9 percent on a year to date basis to 5.5 million minutes at the end of June 2023 from 7.6 million minutes at the end of June 2022. The continued decline in international traffic was mainly attributed to the continued substitution of traditional calling platforms with internet-based applications such as WhatsApp supported by the more attractive pricing for internet-based applications.

Figure 10: Trends in International Outgoing Traffic Minutes: June 2022 to June 2023

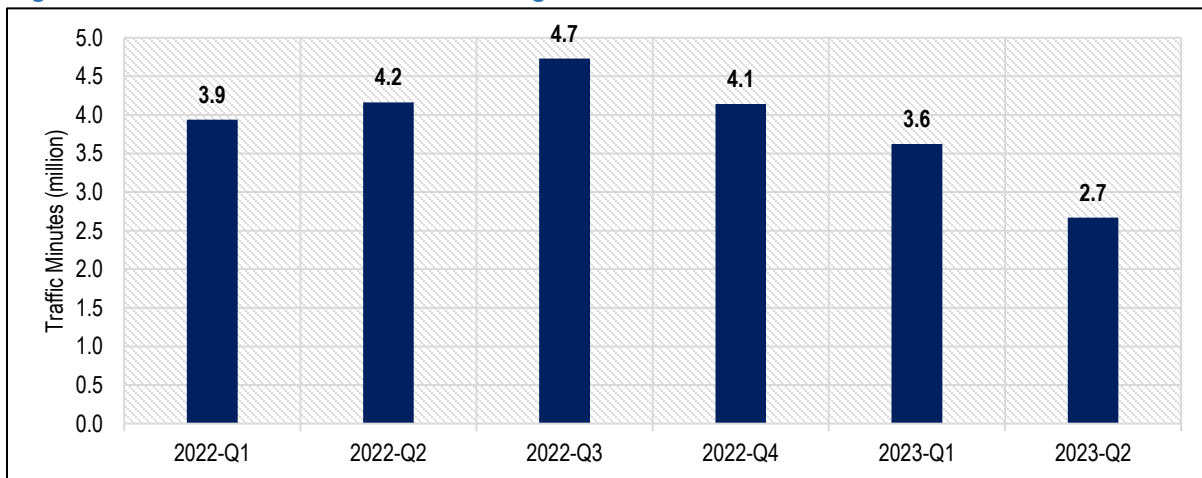


Source: Operator submissions

4.2.4.4. International incoming Traffic

The volume of International incoming voice traffic continued to decline in the first half of 2023. Notably, the volume of international incoming minutes declined by an average of 22.7 percent on a year to date basis to 6.3 million minutes in June 2023 from 8.1 million minutes in June 2022. The reduction in call termination on conventional networks was attributed to the continued substitution of traditional calling platforms with internet-based applications such as WhatsApp supported by the more attractive pricing for internet-based applications.

Figure 11: Trends in International Incoming Traffic Minutes: June 2022 to June 2023



Source: Operator submissions

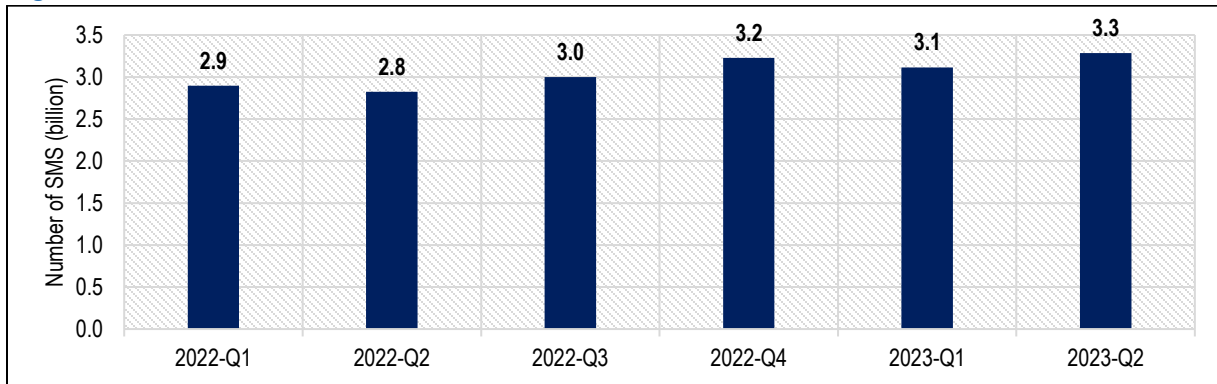
4.2.4.5. Volume of SMS Traffic

The total short messaging service (SMS) traffic¹⁷ increased by 11.9 percent on a year-to-date basis to 6.4 billion SMSs in June 2023 from 5.7 billion SMSs in June 2022. The increases in SMS volumes was partly

¹⁷ Aggregation of SMS traffic for domestic incoming and outgoing as well as international incoming and outgoing

attributed to the increased use of SMSs as mode of disseminating information (feedback, notifications, promotions) by mobile cellular operators, government and corporate entities.

Figure 12: Trends in SMS Traffic: June 2022 to June 2023

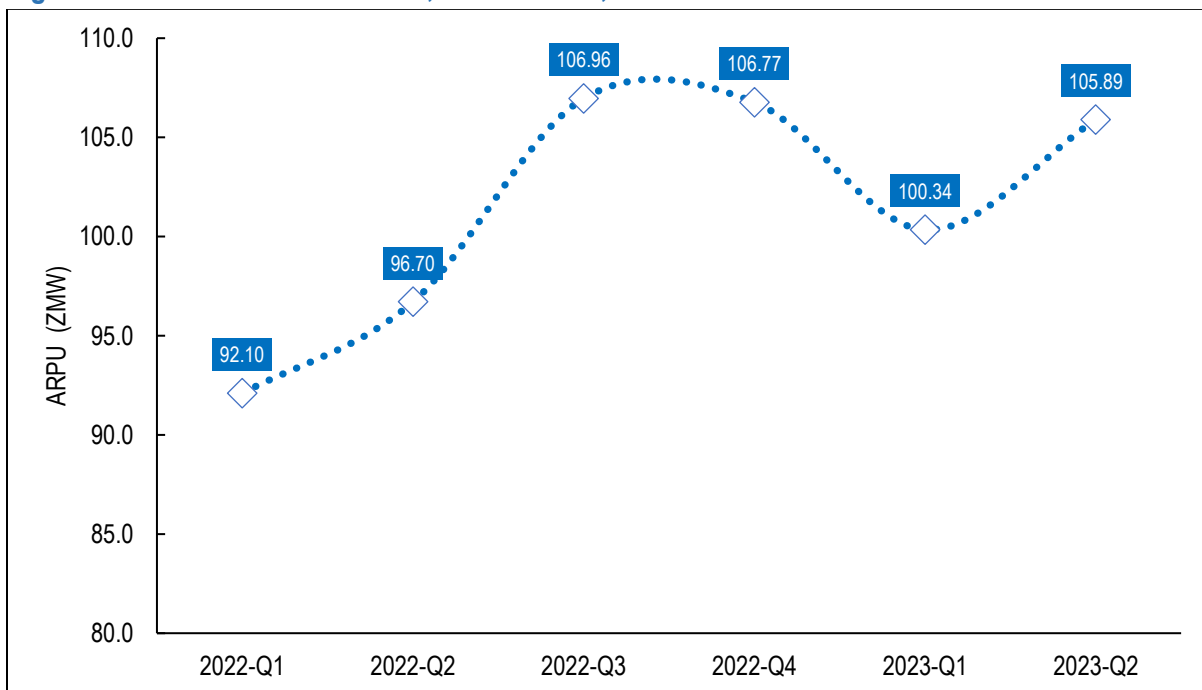


Source: Operator submissions

4.2.5. MNO Average Revenue per User

The average revenue per user (ARPU), calculated as the ratio of total revenue to the total subscription, increased over the review period by 9.5 percent, from an average of ZMW 96.70 per user in June 2022 to ZMW 105.89 per user in June 2023. The overall increase in the ARPU is partly attributed to the increased usage of innovative ICT products and services introduced on the market by the mobile cellular service providers.

Figure 13: Combined ARPU: June, 2022 to June, 2023

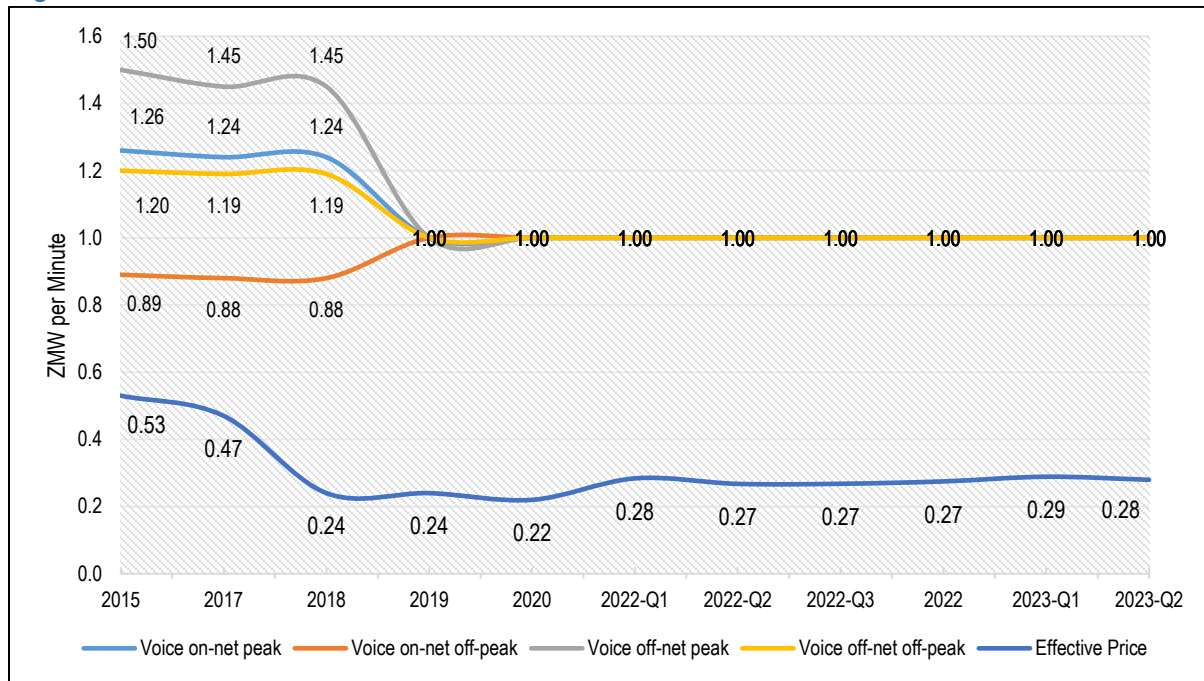


Source: Operator submissions

4.2.6. Mobile Voice Tariffs

The headline mobile voice call tariff at the end of the first half of 2023 was maintained at an average of 82 ngwee per minute for both on-net and off-net calls during peak hours, while the on-net and off-net calls during off-peak hours tariffs averaged 82 ngwee. On the other hand, the effective tariff, calculated as the ratio of total revenues to the total domestic outgoing voice traffic, increased to 28 ngwee per minute in the first half of 2023 from 27 ngwee per minute at the end of 2022. The increase in the effective tariff has mostly been attributed to revenues growing faster than actual usage of traffic. The increased usage of ICT products and services particularly bundled offers which provide more services at discounted tariffs is a revenue maximization strategy that offers high volume of minutes at a discount despite utilization not being fully exploited.

Figure 14: Mobile Voice Tariffs ‘Per Minute in ZMW’: 2015-2022



*2022 estimate based in 2022q2 values

A benchmarking of default tariffs on mobile voice services across eighteen countries drawn from SADC and COMESA regions, revealed that the tariffs in Zambia are relatively competitive. Zambia ranked ‘fourth’ on Peak On-net and Peak Off-net; at the same time the country ranked ‘sixth’ for Off-peak On-net and Off-net calls. The improvement in ratings could be attributed to highly competitive product offerings in the mobile subsector in Zambia as well as the fluctuation in the currency exchange rates against the US dollar experienced locally and within the region.

Table 5: Benchmarking of Mobile Voice Tariffs in US dollars

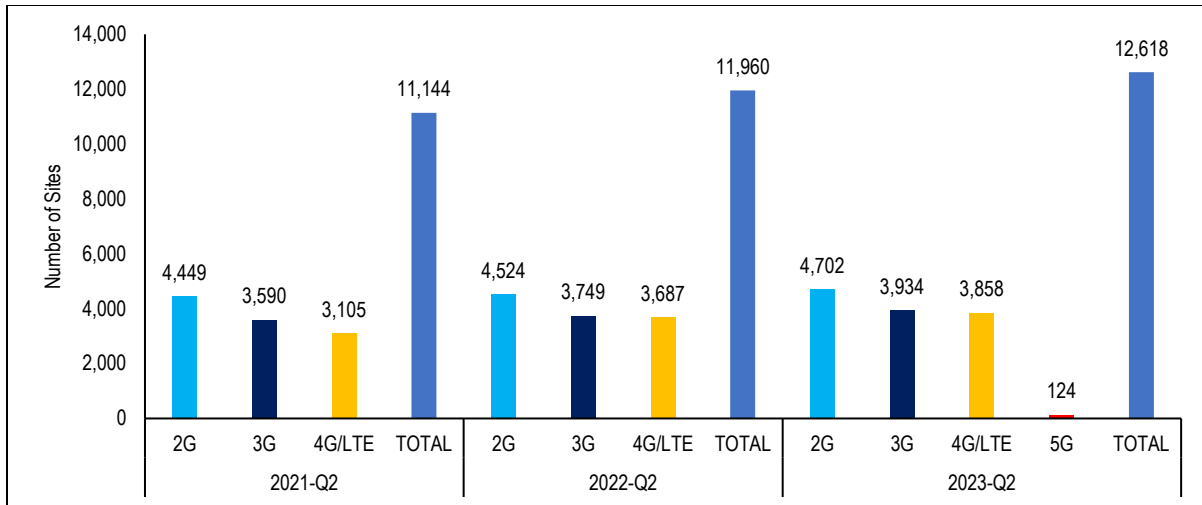
Country	On-Net/Peak		On-net/Off-Peak		Off-Net/Peak		Off-Net/Off-Peak	
	Price (USD)	Rank	Price (USD)	Rank	Price (USD)	Rank	Price (USD)	Rank
Angola	0.086	10	0.074	11	0.086	10	0.074	10
Botswana	0.096	12	0.059	10	0.096	11	0.059	9
Kenya	0.034	6	0.018	2	0.034	6	0.018	2
Lesotho	0.133	14	0.096	13	0.133	13	0.096	12
Madagascar	0.068	9	0.038	8	0.068	9	0.038	8
Malawi	0.049	8	0.049	9	0.507	15	0.507	15
Mauritius	0.032	5	0.032	7	0.032	5	0.032	7
Mozambique	0.102	13	0.102	14	0.102	12	0.102	13
Namibia	0.087	11	0.087	12	0.037	8	0.087	11
Nigeria	1.576	17	1.576	17	1.576	17	1.576	17
Rwanda	0.037	7	0.017	1	0.037	7	0.017	1
Seychelles	0.221	15	0.221	15	0.221	14	0.221	14
South Africa	0.825	16	0.825	16	0.825	16	0.825	16
Swaziland	0.029	3	0.029	5	0.029	3	0.029	5
Tanzania	0.025	2	0.025	4	0.025	2	0.025	4
Uganda	0.022	1	0.022	3	0.022	1	0.022	3
Zambia	0.032	4	0.032	6	0.032	4	0.032	6
Zimbabwe	6.4175	18	6.4175	18	6.4175	18	6.4175	18

Source: MNO Websites

4.2.7. Telecommunication Infrastructure

The total number of operational telecommunications sites in the country continued to rise in a bid to increase network coverage and introduce new technologies. The total number of sites increased by 5.5 percent to 12,618 sites at the end of June 2023, from 11, 960 sites reported at the end of June 2022. Over the review period all mobile cellular operators reported growth in the number of sites. However, the increase was particularly high for MTN Zambia partly due to the roll out of 5G sites in Lusaka and Copperbelt Provinces. The highest growth in the total number of sites was reported for 3G sites over the review period. 3G sites increased by 4.9 percent to 3,934 sites in June 2023 from 3,749 sites in June 2022. Similarly, sites with 2G technology increased by 3.9 percent to 4,702 site in June 2023 from 4,524 sites in June 2022 while number of sites with 4G technology grew by 4.6 percent to 3858 sites from 3,687 sites over the review period. In June 2023, 2G sites accounted for the largest proportion of telecommunication sites at 37.2 percent, followed by 3G sites at 31.2 percent and 4G sites at 30.6 percent. Further, sites with 5G technology introduced by MTN Zambia in quarter one of 2023 contributed about 1.0 percent to the total number of sites reported during the review period. The increase in 3G and 4G sites as well the introduction of 5G is expected to continue and promote access to mobile broadband and therefore improve the quality of internet services in Zambia.

Figure 15: Telecommunication Sites by Type of Technology: June, 2022 to June, 2023

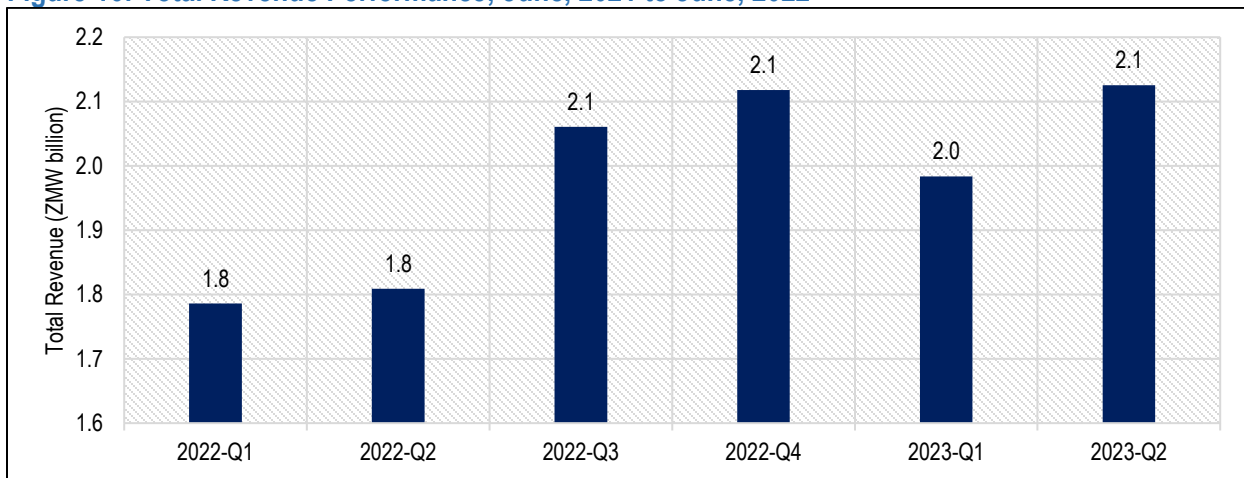


Source: Operator submissions

4.2.8. Mobile Revenue Performance

The total revenues reported by mobile cellular operators increased by 14.3 percent to ZMW 4.1 billion in the first half of 2023 from ZMW 3.6 billion reported in the first half of 2022. Overall, the performance of the telecommunication subsector was positive over the review period given the growth in total revenues reported by mobile cellular operators. The trend in MNO revenues is expected to continue rising due to increased adoption of responsive and innovative ICT products and services introduced by service providers as well as increased investments in coverage.

Figure 16: Total Revenue Performance; June, 2021 to June, 2022

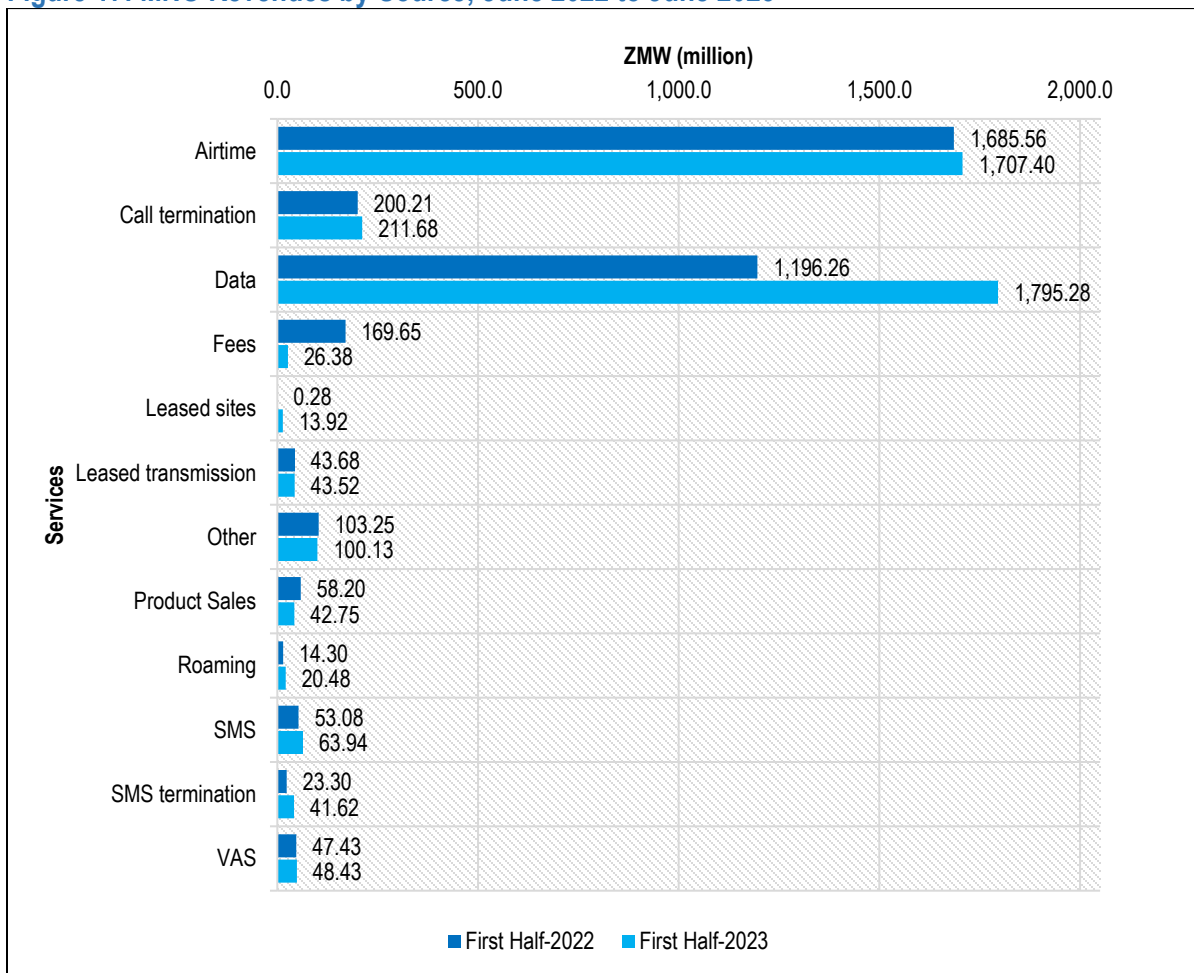


Source: Operator submissions

Total MNO revenues in the first half of 2023 were mostly comprised of revenues from airtime and data services. Revenues from data services were for the first time dominant at 43.6 percent of total revenues while airtime sales accounted for 41.5 percent of the total revenues. The proportion for revenues from data service increased significantly by 10.3 percentage points from the first half of 2022 while airtime sales revenues

declined by 5.4 percentage point over the same period. Revenues from leased sites, fees and roaming accounted for the least proportional contribution to the total revenue at less than 1.0 percent.

Figure 17: MNO Revenues by Source; June 2022 to June 2023



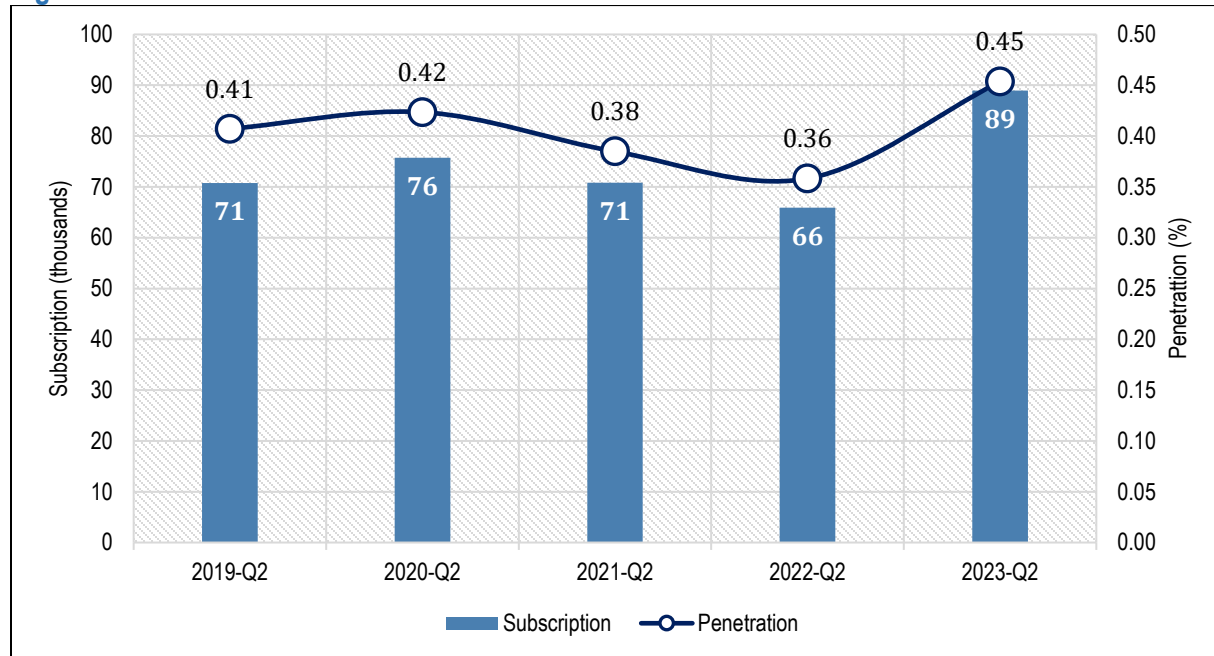
Source: Operator submissions

4.3. Fixed Telephony Sub Sector

4.3.1. Fixed Telephone Subscription

There was a notable increase in subscriptions of fixed telephone (PSTN¹⁸) services during the period under review. Between June 2022 and June 2023, subscription increased by 34.9 percent to 89 thousand subscribers from 66 thousand subscribers. The PSTN performance reflects a corresponding increase in fixed telephone penetration from 0.36 percent to 0.42 percent over the review period.

Figure 18: Active PSTN Lines and Penetration Rates: June 2022 to June 2023



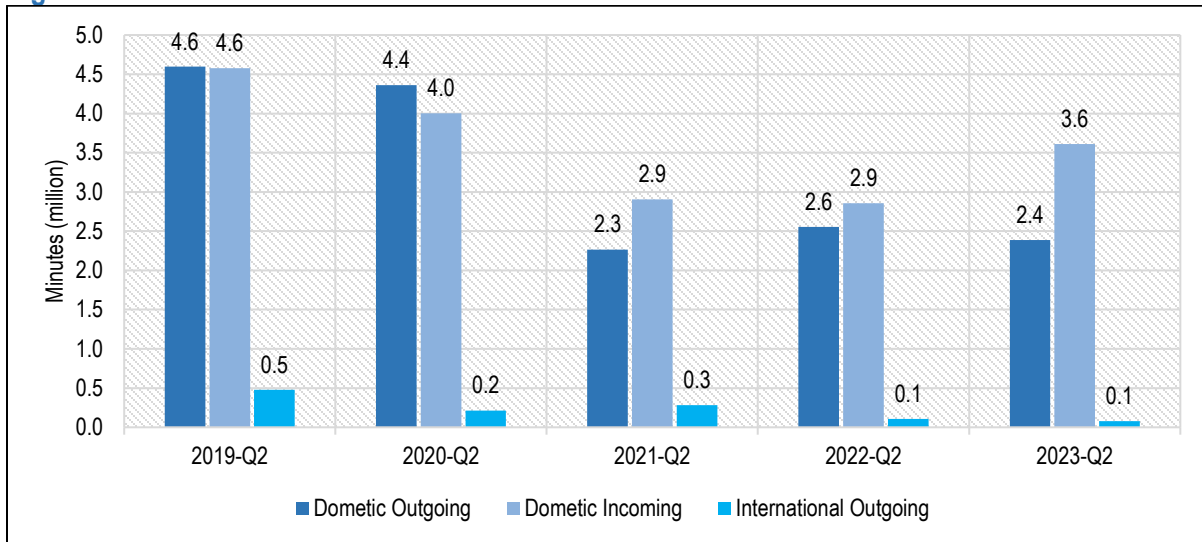
Source: Operator submissions

4.3.2. Fixed Telephone Traffic

There was a noted reduction in both domestic outgoing and international outgoing traffic from PSTN lines between June 2022 and June 2023. Total domestic outgoing traffic reduced by 1.6 percent to 5.2 million minutes during the first half of 2023 from 5.3 million minutes reported during the first half of 2022. Similarly, the total number international outgoing minutes reduced by 34.9 percent to 177 thousand minutes during the first half of 2023 from 271 thousand minutes reported during the first half of 2022. However, domestic incoming increased by 18.8 percent to 7.0 million minutes during the first half of 2023 from 5.9 million minutes reported in the first half of 2022. The outgoing PSTN traffic has continued to exhibit a continuous reduction mainly due to increased usage other telecommunication options offered by the ubiquitousness of the Internet and the mobile cellular technology.

¹⁸ Public switched Telephone Networks

Figure 19: Fixed Line Traffic: June 2022 to June 2023

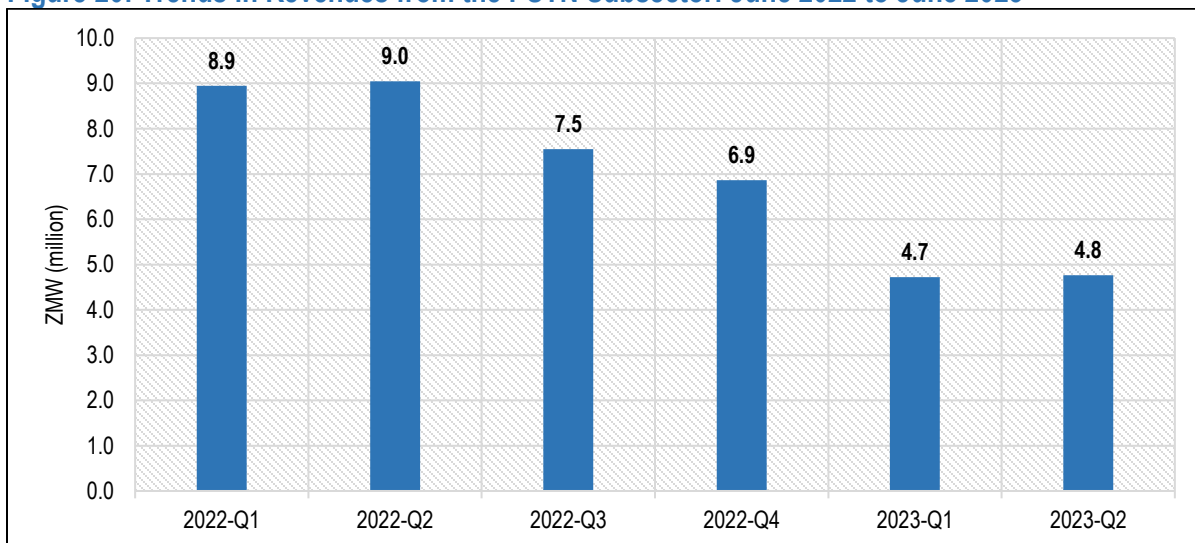


Source: Operator submissions

4.3.3. Fixed Telephone Revenue Performance

PSTN revenues declined between the first half 2022 and the first half of 2023. The total revenue generated from PSTN services declined by 47.3 percent to ZMW 9.5 million during the first half of 2023 from ZMW 18.0 million reported at the end of first half of 2022. This decline in revenues from fixed telephony services due to decrease in originating traffic compared to terminating traffic. PSTN services continue to be more attractive among corporate entities than households.

Figure 20: Trends in Revenues from the PSTN Subsector: June 2022 to June 2023



Source: Operator submissions

4.4. Fixed and Mobile Internet Services

4.4.1. Fixed and Mobile Internet Subscriptions

The total number of active internet subscriptions (fixed and mobile) in the country increased by 13.5 percent to 11.4 million subscriptions at the end of the first half of 2023 from 10.1 million subscriptions reported at the end of first half of 2022. Consequently, the internet penetration rate increased by 5.1 percentage points, from 53.2 percent to 58.3 percent between June, 2022 and June, 2023 respectively. It is also worth noting that fixed internet subscriptions decreased marginally during the review period. However, nearly 99 percent of the internet users are mobile internet users implying most internet services are accessed through SIM card based technology. This could partly be explained by the ease of accessing mobile internet services, the relatively lower cost of access and portability of the service compared to fixed internet services. In addition, the cost of rolling out of infrastructure needed to access fixed internet services is relatively high.

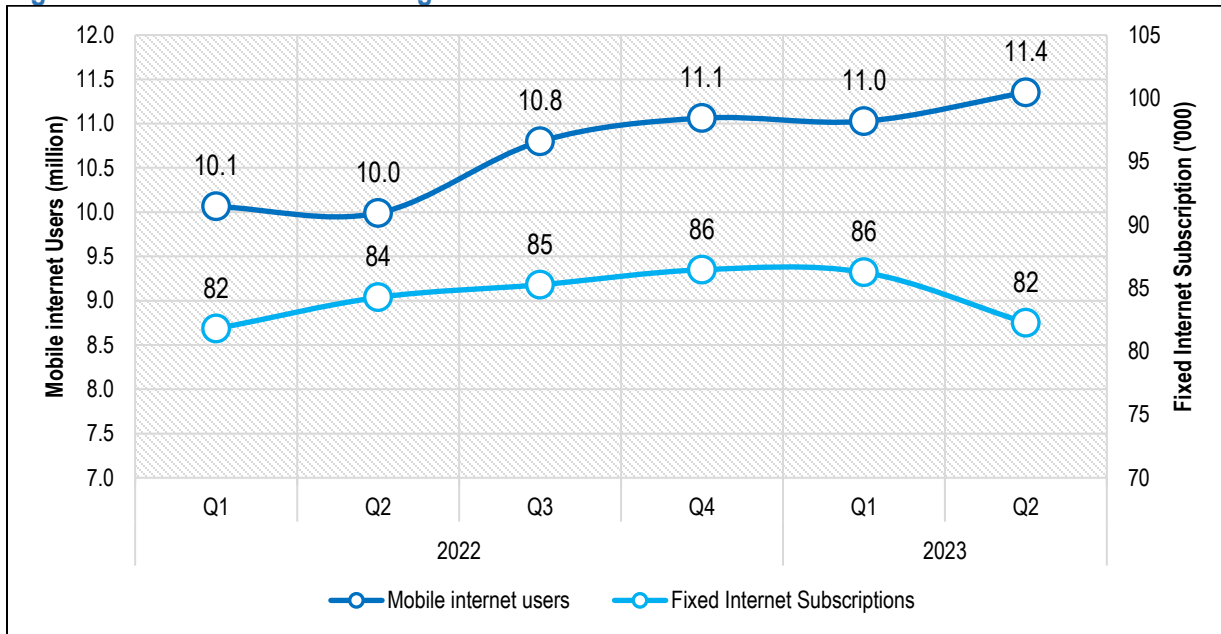
Usage of mobile internet services has continued to grow in Zambia because MNOs are continuously extending their network coverage with capacity to deliver high speed broadband services, affordable smart devices and increased use of social media applications. Further, some fixed Internet providers have also adopted the LTE technology for their customers. Subscription to fixed internet services decreased by 2.4 percent to about 82 thousand subscribers in June 2023 from 84 thousand subscribers in June, 2022. Fixed Internet is very common among corporate entities mainly due to reliability of service. However, the high cost associated with fixed Internet services hinders most of potential users at household level. Therefore, studies have shown that most households opt for mobile Internet to fixed Internet due to its affordability and ubiquitousness nature. Further, all mobile internet service providers are also participating in the fixed Internet market and have claimed significant market share of corporate clients.

Table 6: Trends in Internet Usage: June 2022 to June 2023

Internet Usage	2022				2023		YoY Change
	Q1	Q2	Q3	Q4	Q1	Q2	
Internet Subscriptions – Fixed	81,775	84,258	85,259	86,446	86,242	82,254	-2.4%
Fixed Internet penetration per 100 Inhabitants	0.43	0.45	0.43	0.44	0.44	0.42	-0.026
Internet users – Mobile	10,063,776	9,989,947	10,798,027	11,062,212	11,025,912	11,352,595	13.6%
Mobile Internet penetration per 100 Inhabitants	53.2	52.8	54.3	56.4	56.2	57.9	5.1
Internet Users – Fixed + Mobile	10,145,551	10,074,205	10,883,286	11,148,658	11,112,154	11,434,849	13.5%
Internet Users penetration per 100 Inhabitants	53.6	53.2	54.8	56.8	56.7	58.3	5.1

Source: Operator submissions

Figure 21: Trends in Internet Usage: June 2022 to June 2023

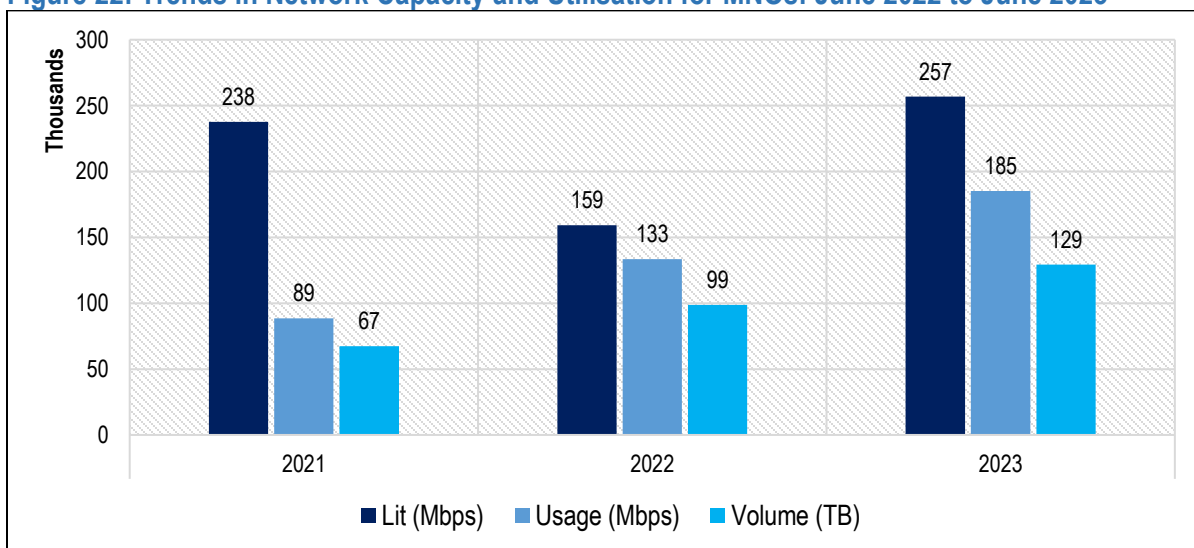


Source: Operator submissions

4.4.2. Mobile Internet Service Providers Capacity and Utilisation

The Lit/equipped capacity among mobile cellular network operators over the first half of 2023 increased by 61.3 percent to reach 257,000 Megabits per second (Mbps) from 159,000 Mbps reported in the first half of 2022. Overall, the used capacity increased by 38.9 percent during the review period. The throughput volume of data increased quite significantly during the review period. Specifically, the data volume increased by 31.1 percent to about 129,000 Terabytes (TB) in the first half of 2023 from 99,000 TB in the first half of 2022.

Figure 22: Trends in Network Capacity and Utilisation for MNOs: June 2022 to June 2023



Source: Operator submissions

4.4.3. Benchmarking of Mobile Voice and Data Basket Prices in the Region

A benchmarking of the price for a data bundle and average consumption bundles constituting data and voice minutes was carried out to determine the competitiveness of the services in the country. A data bundle consisting of at least a 2GB monthly bundle and a data and voice bundle consisting of at least 150 mins, 70 SMS and a data bundle of 1.5 GB valid for a month was considered in the assessment. Zambia ranked fourth (4th) with regards to pricing of a monthly data bundle of 1.5 GB relative to fourteen other countries, indicating the country's relative competitiveness with respect to affordability. The price of the average consumption bundle for Zambia was estimated at 2.99 percent of the country's Gross National Income (GNI) per capita. The average data bundle price was noted to be significantly above the UN broadband Commission target of 2 percent of GNI.

Table 7: Regional Benchmarking of Data and Voice Bundles

Country Name	Price 2GB Data Monthly Validity (USD)	Rank	Price of Data and Voice consumption Bundle as % of GNI per capita	Rank
Angola	3.7989	7	2.1302	2
Botswana	13.9947	15	2.5933	4
DR Congo	0.2858	1	2.1672	3
Eswatini	9.8039	13	4.5426	9
Kenya	2.5854	3	3.5369	6
Lesotho	8.4022	11	21.3105	15
Madagascar	4.8492	10	8.0513	12
Mozambique	4.3945	9	18.8817	14
Namibia	13.1296	14	3.7182	8
Nigeria	2.6303	5	1.8437	1
Rwanda	2.3677	2	5.8045	11
South Africa	9.7513	12	3.5375	7
Tanzania	4.0034	8	5.7193	10
Uganda	2.9226	6	14.8159	13
Zambia	2.5710	4	2.99	5

4.1.1. Benchmarking of 1GB and 5GB Monthly Bundle Data Prices in the Region

A benchmarking of the price of a 1GB and 5GB monthly data bundle was carried out to determine the competitiveness of the services in the country. Zambia ranked 'second' (2nd) and 'fifth' (5th) with regards to pricing of a 1GB and 5GB monthly data bundle respectively relative to thirteen other countries, indicating a high country competitiveness with respect to affordability. The average price of the 1GB and 5GB monthly data bundle were estimated at USD 4.96 and USD 5.62 respectively which made Zambia very competitive in the provision of mobile data services in the region.

Table 8: Benchmarking of 1GB and 5GB Monthly Bundle Data Prices in Selected Countries

Country	Price 1GB Data Monthly Validity (USD)	RANK	Price 5GB Data Monthly Validity (USD)	RANK
Angola	1.49	1	1.49	1
Botswana	2.59	4	5.18	10
DRC	4.93	9	4.93	9
Eswatini	5.48	11	5.53	11
Lesotho	4.54	7	2.21	2
Malawi	2.37	3	2.37	3
Mauritius	5.14	10	2.47	4
Mozambique	3.13	5	3.13	6
Namibia	10.63	12	28.33	13
South Africa	4.70	8	4.37	8
Tanzania	4.29	6	3.43	7
Zambia	1.90	2	2.53	5
Zimbabwe	13.23	13	7.09	12

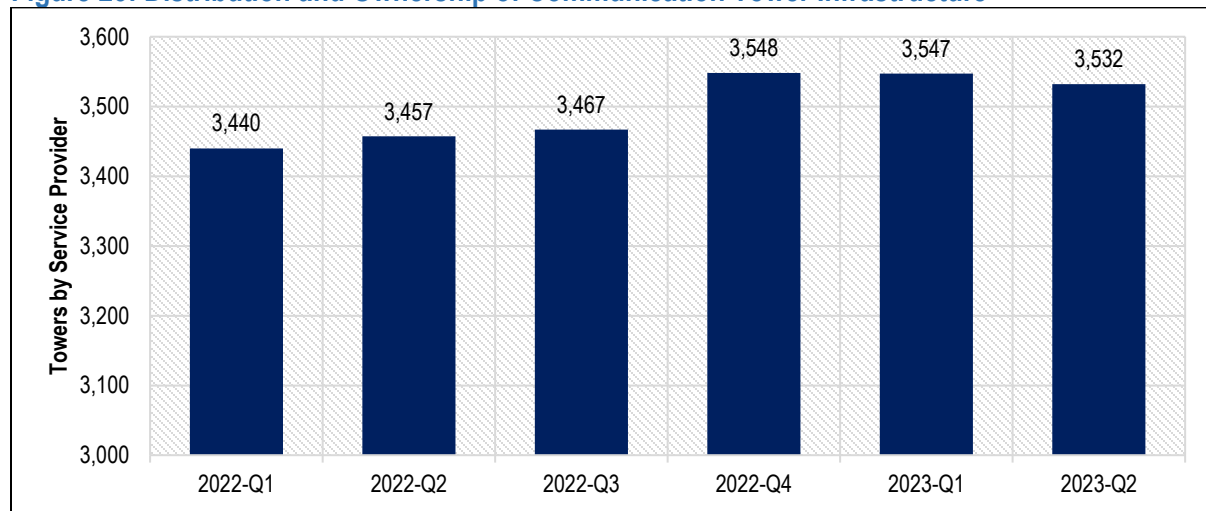
Source: CRASA Consolidated Country Report

4.5. Passive Infrastructure

4.5.1. Ownership of Tower Infrastructure

The total number of communication towers in Zambia increased by 2.2 percent to 3,532 towers at the end of June 2023 from 3,457 towers reported at the end of June 2022. Most tower infrastructure reported growth during the review period while sharing of passive infrastructure continued to be an industry practice.

Figure 23: Distribution and Ownership of Communication Tower Infrastructure



Source: Operator submissions

4.6. Data Storage Facilities

4.6.1. Capacity and Utilisation of Data Storage Facilities

The cloud services subsector has grown in terms of size and scope of services since the first operator was licenced in 2017. The growth has been supported by the continued use of cloud services during the post COVID-19 pandemic era. Cloud service providers provide a host of remotely accessed ICT services like rack colocation, data storage, virtual machines (VM), physical servers, virtual desktop infrastructure (VDI) and other hosting and backup services. **Table 9** shows performance statistics of selected indicators for the three cloud services providers for 2022 and the first half of 2023. Notably physical rack has changed marginally during the period under review. However, during the same period cloud service providers reported significant growth in total data storage capacity, bandwidth usage and total customer numbers. Despite the observed growth, own data storage has remained unchanged in the first half of 2023 while number of customers declined significantly for some service providers over the review period. Therefore, the notable growth in own data storage and customer numbers was largely attributed to the acquisition and deployment of the Microsoft Azure cloud services platform by some service providers, and to a large extent the entry of more providers in the cloud service market segment. Usage of own data storage increased by 9.2 percent while the usage of physical racks declined by 72.1 percent over the review period. Despite the mixed performance reported by cloud service providers, the overall revenue increased by 17.9 percent to ZMW 33.8 million on a year to date basis in the first half of 2023 from ZMW 28.6 million reported in the first half of 2022.

Table 9: Data Centre service providers' performance statistics: June 2021 to June 2022

Period	Physical Racks		Own Data Storage		Bandwidth Usage		Customers	Revenue
	Capacity	Usage	Capacity	Usage	Capacity	Usage	Number	ZMW'000
2022-Q1	221	37%	4.07 PB	1.79 PB	410 Mbps	22%	1,007	14,532.19
2022-Q2	221	42%	4.07 PB	1.72 PB	410 Mbps	22%	1,062	14,115.80
2022-Q3	221	46%	4.77 PB	2.14 PB	410 Mbps	22%	3,630	14,800.93
2022-Q4	221	46%	4.77 PB	0.10 PB	410 Mbps	22%	3,316	14,300.40
2023-Q1	222	9%	453.61 PB	0.54 PB	1,434 Mbps	21%	4,452	16,679.84
2023-Q2	222	12%	453.61 PB	1.88 PB	2,458 Mbps	20%	4,622	17,093.25
Percent (%)	0.5	-72.1	11,040.6	9.2	499.5	-7.4	335.2	17.9

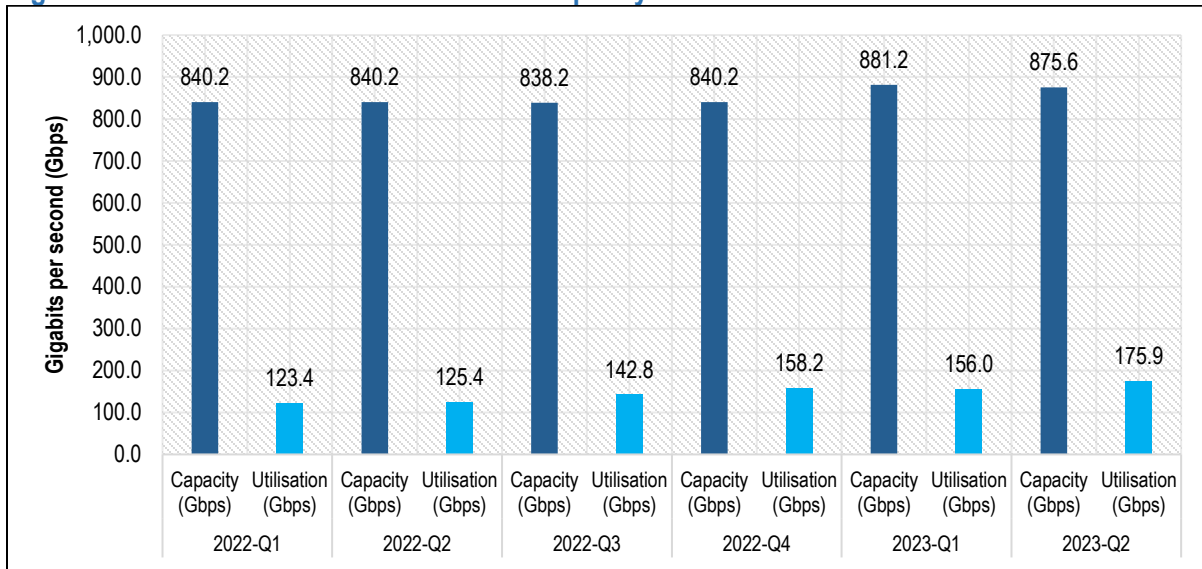
Source: Operator submissions

4.7. Transmission Network Market

4.7.1. Network Capacity and Utilisation in the Transmission Network Market

The average available capacity among wholesale carriers increased by 4.5 percent to 878.4 Gigabits per second (Gbps) at the end of June 2023 from 840.2 Gbps at the end of June 2022 on a year to date basis. Similarly, the average utilization of available capacity increased by 33.4 percent from 166.0 Gbps at the end of June 2022 on a year to date basis. The rise in capacity utilization were largely attributed to the positive growth in utilization of available capacities among wholesale carriers.

Figure 24: Trend in Network Transmission Capacity and Utilisation: 2022 to June 2023



Source: Operator submissions

4.7.1.1. Fibrecom Fibre Network

Fibrecom has deployed over 12,000 km of optic Fibre cables countrywide enabling a wide coverage and making it the only network that has directly connected all 10 provincial centres. The operator has continued to intensify its optic-fibre network in the Eastern, Northern and Central areas of the country. Through submarine cables, Fibercom has interconnected its optic fibre network internationally to Namibia, Botswana, Zimbabwe, Malawi, Angola and Tanzania.

Figure 25: Fibrecom Network Map: June 2023

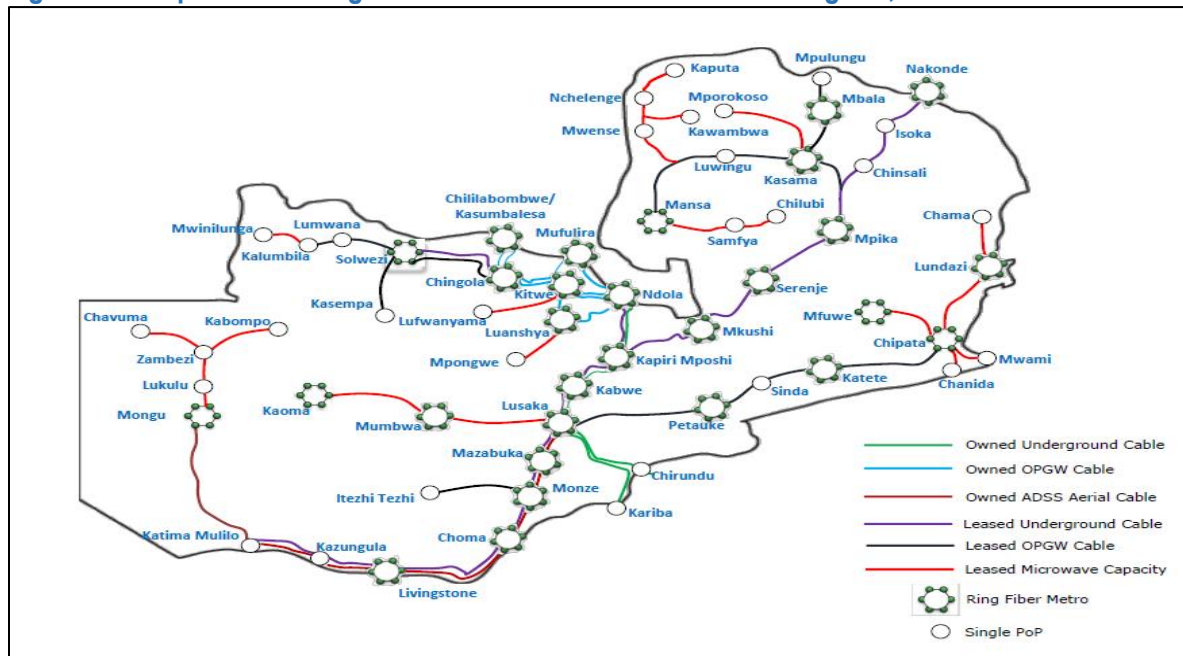


Source: Operator submissions

4.7.1.2. Liquid Telecom Network

Liquid Telecom had deployed a total optic fibre duct length of 8,195.6 km countrywide as at the end of June, 2023. The backbone network is linked to 29 ring fibre metro networks with several microwave single points-of-presence (PoP). The network also has various international links through gateways at Livingstone, Nakonde, Chililabobwe and Sesheke. These gateways provide links to Zimbabwe, Tanzania and Democratic Republic of Congo.

Figure 26: Liquid Technologies Metro and Backbone Network Diagram, 2022

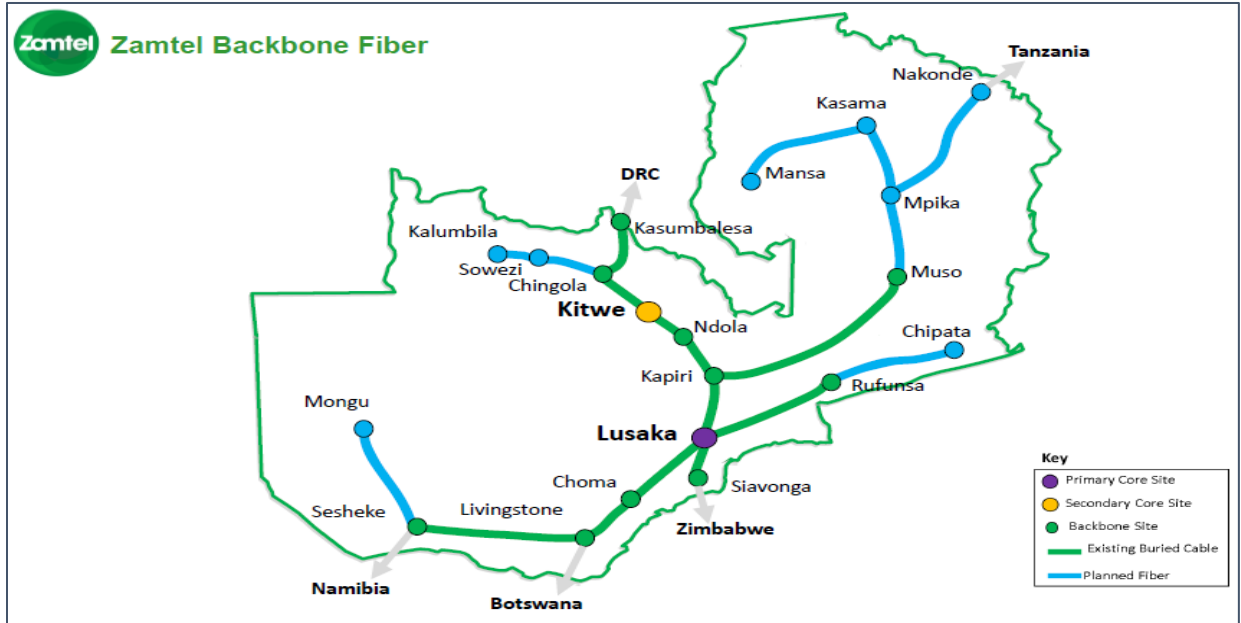


Source: Operator submissions

4.7.1.3. Zamtel Fibre Network

Zamtel fibre network is similarly extensive, covering most areas along the line of rail, with access to several international submarine cables. These links have enabled access to undersea fibre-optic cables since 2011. The international fiber links connect to the Democratic Republic of Congo, Tanzania, Zimbabwe, Namibia and Botswana.

Figure 27: Zamtel Fibre Backbone Infrastructure

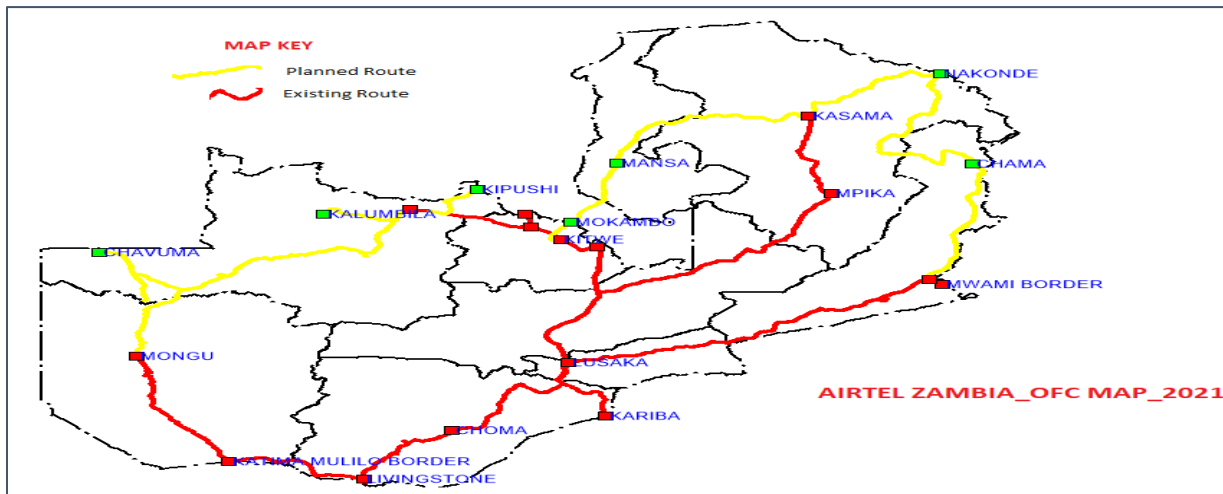


Source: Operator submissions

4.7.1.4. Airtel Networks Fibre Network

Airtel Zambia had, at the end of June, 2023, rolled out optic fiber network in all major towns of the country. The network also plans to expand its fiber network to other towns in the Luapula, Muchinga and North Western Provinces. Similarly, the national and international traffic fibre rings are planned for the next phase of expansion.

Figure 28: Airtel Network Planned and Existing Fibre Network Infrastructure



Source: Operator submissions

4.7.1.5. MTN Zambia Fibre Network

As at the end of June 2023, MTN Zambia surrendered MTN Global Connect Zambia the ownership of optic fiber network located mostly in the northern part of the country including the Copperbelt, Central, Lusaka,

North-Western, Northern and Muchinga Provinces. The total infrastructure deployed by the operator as at end of June 2023 was 4,386km in backbone and metro fibre. Backbone Fibre located in the Western and Southern Provinces was mostly co-owned with Airtel Zambia. MTN Global Connect Zambia has an international gateway for data to interconnect beyond the Zambian borders to Zimbabwe, Namibia, Tanzania, Botswana and the Democratic Republic of Congo (DRC).

Figure 29: MTN Zambia Aerial and Underground Backbone Fibre Network

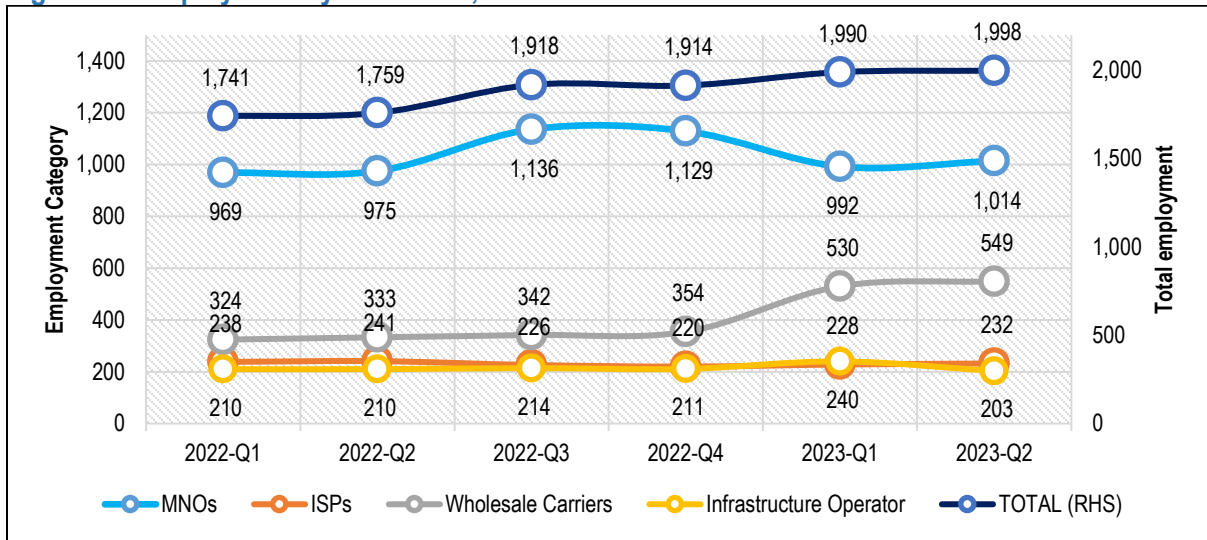


Source: Operator submissions

4.8. Employment in the ICT Sector

Overall employment among licensees increased between the first half of 2022 and the first half of 2023. Specifically, the total number of persons employed among licensees increased by 13.6 percent to 1,998 persons at the end of June 2023 from 1,759 persons at the end of June 2022. The largest increase in employment was reported among the wholesale carriers which grew by 64.9 percent on a year to date basis. However, employment among ISPs and INFRACOs declined by 3.3 percent and 3.7 percent during the same period respectively. The mobile cellular operators with 50.8 percent persons employed has continued to account for the largest proportion of persons employed in the ICT sector followed by the wholesale carriers at 27.5 percent. The smallest proportion of operators where from the tower infrastructure companies which accounted for 10.2 percent.

Figure 30: Employment by Subsector; 2019-2022



Source: Operator submissions

5.0. PERFORMANCE OF THE POSTAL SECTOR

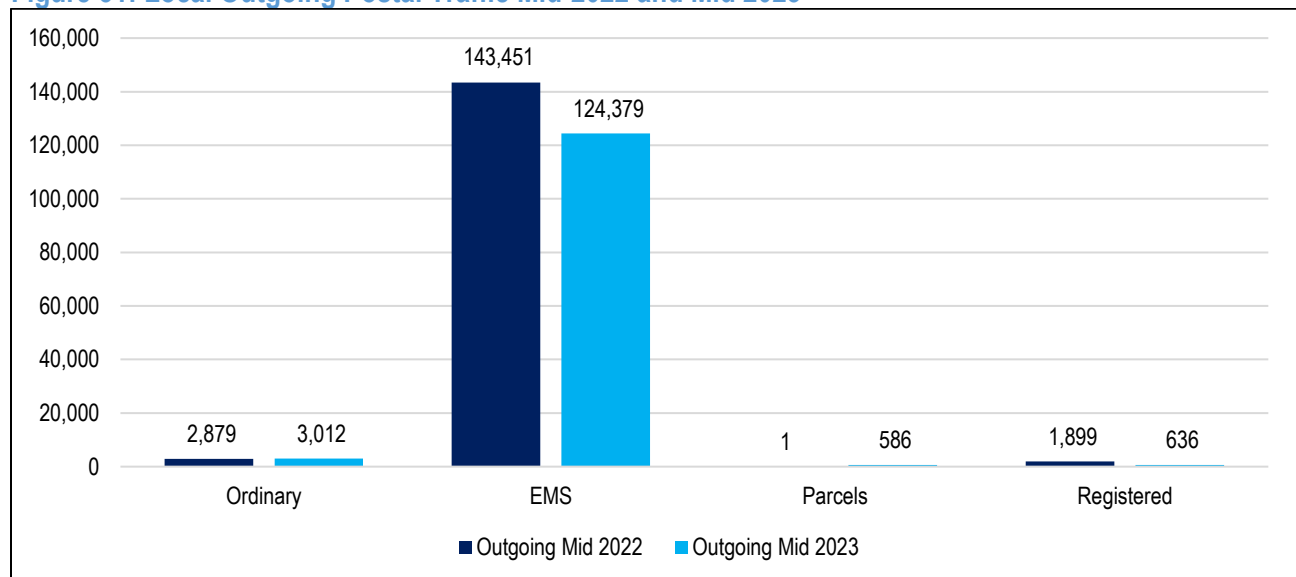
5.1. Traffic Performance by the Public Postal Operator

The Zambia Postal Corporation (ZAMPOST) launched a few initiatives during the first quarter of 2023 that were aimed at giving it a competitive edge. The most significant being the implementation of the Government Service Bus in collaboration with Smart Zambia. This entails the provision of government services such as company registration, application for land, borehole registration and so on through ZAMPOST's Post Office Network. In addition to this, ZAMPOST also added agency services on behalf of the National Credit and Savings Bank (NATSAVE) during the first half of the year.

5.2. Local Postal Traffic

In terms of outgoing local traffic, ZAMPOST experienced a 13.2 percent drop from mid-year 2022 to mid-year 2023. The largest proportion of this drop was accounted for by a reduction in the outgoing EMS traffic, which is Zampost's most popular service. EMS is Zampost's direct competitor of private-sector offered courier services. Outgoing Registered Mail also experienced a sharp decline of 66.5 percent. Both registered mail and EMS are competitors of courier services and hence their fall in traffic may be explained by the continued increase of courier operators especially in the domestic market.

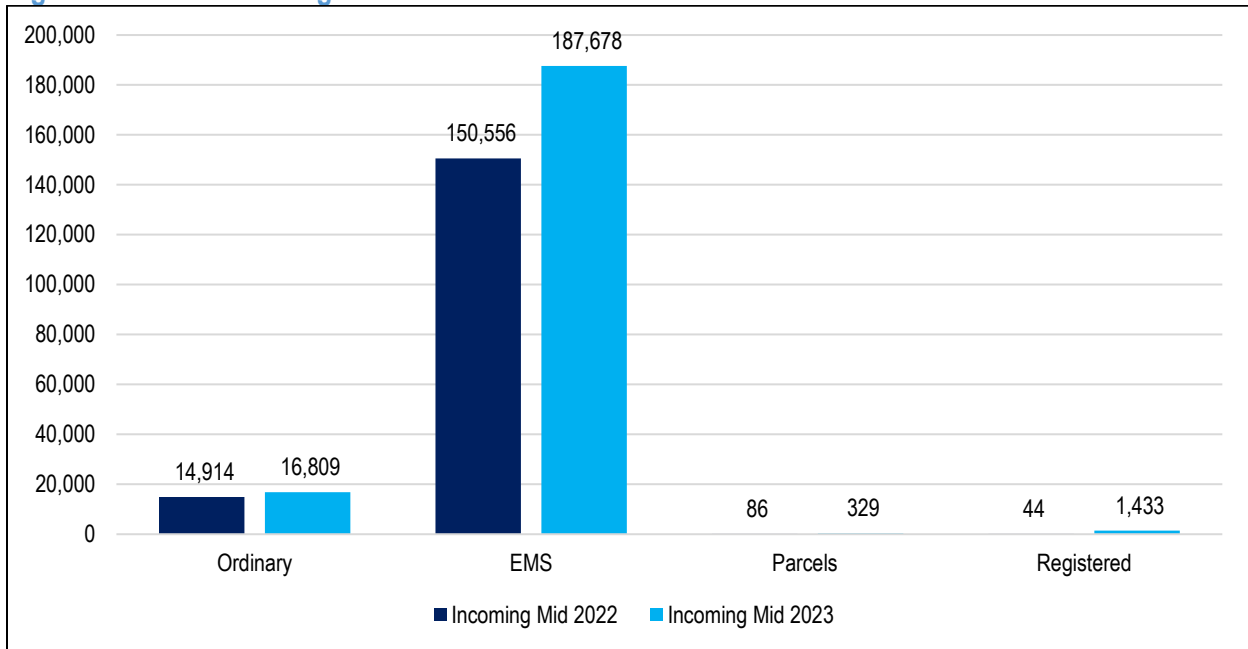
Figure 31: Local Outgoing Postal Traffic Mid-2022 and Mid 2023



Source: ZAMPOST

With respect to incoming traffic, ZAMPOST experienced an increase of 24.5 percent from Mid-2022 to Mid-2023. Registered and EMS traffic accounted for most of this increase. This increase signified that more mail was coming into the ZAMPOST network from courier operators. Overall, Zampost had more local mail, 206,249 items into its network than originating out of its network, 123,613.

Figure 32: Local Incoming Traffic Mid-2022 to Mid-2023

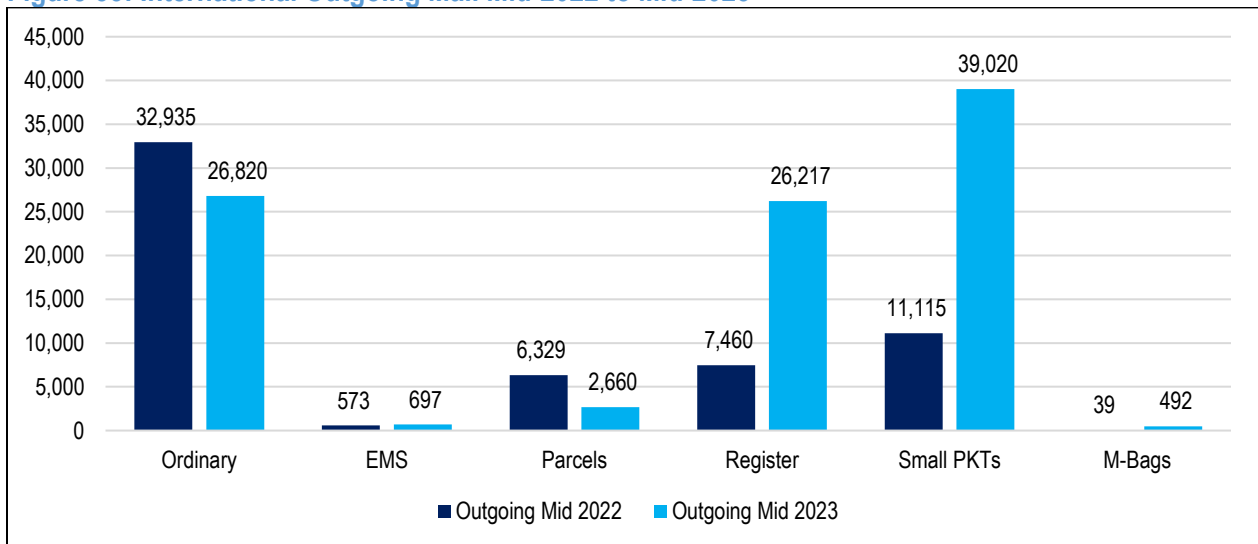


Source: ZAMPOST

5.3. International Postal Traffic

In terms of international traffic sent to other postal administrations, ZAMPOST experienced a massive traffic increase of 64 percent, especially on account of small packets and registered mail. The services are both categorized as ordinary mail and are cheaper than courier services. The increase in the traffic for these services may be explained by both the lower price in comparison to courier services and the links that ZAMPOST has to international Postal Administrations through the Universal Postal Union, whose efficiency is experienced to senders of international mail.

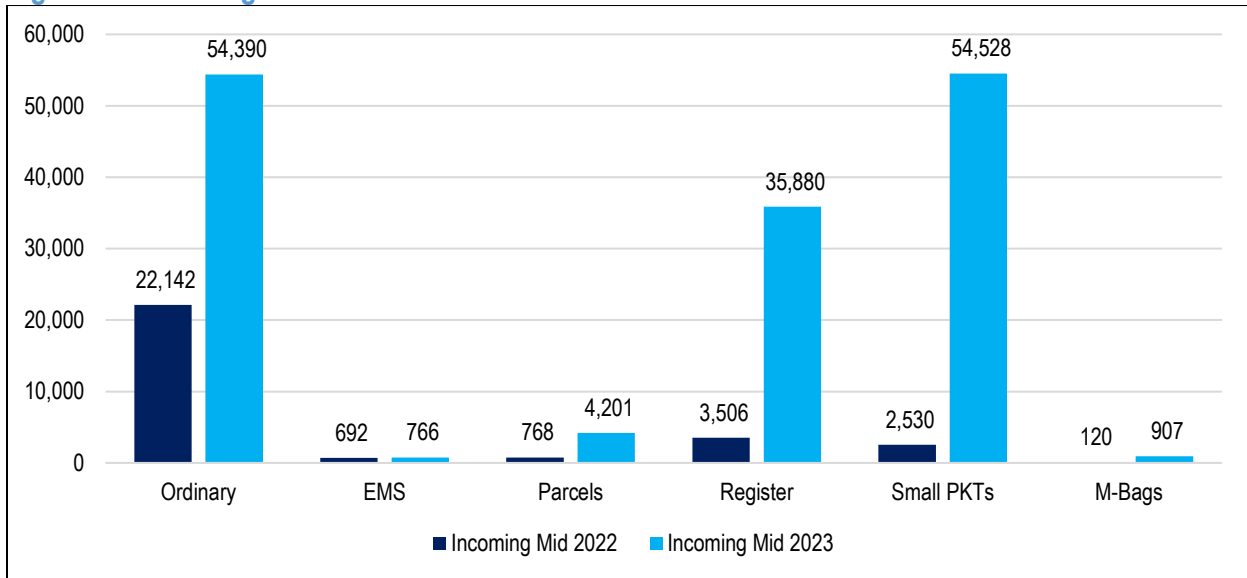
Figure 33: International Outgoing Mail Mid-2022 to Mid-2023



Source: ZAMPOST

With respect to incoming international mail, ZAMPOST had an increase of 400 percent. The biggest increase was in small packets, registered mail and ordinary mail whereas all other services also experienced increases in traffic.

Figure 34: Incoming International Mail - Mid 2022 and Mid 2023

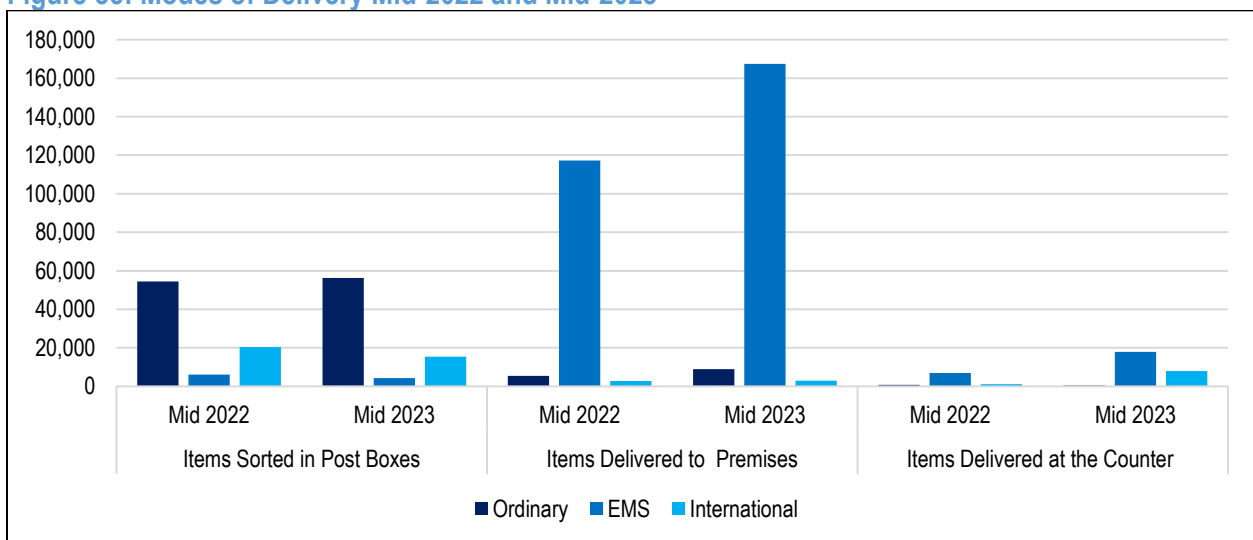


Source: ZAMPOST

5.4. Modes of Postal Delivery

With respect to ZAMPOST’s modes of delivery of items, EMS delivery to the premises was increasingly dominant at mid-2022 and mid-2023. This depicted the importance of physical addresses to the existence of this service. The least popular mode of delivery of postal was over the counter which indicated the reduced usefulness of Post Office Counters for last mile delivery. Post Boxes were the most popular mode of delivery for both ordinary and international mail at mid-2022 and mid-2023.

Figure 35: Modes of Delivery Mid-2022 and Mid-2023



Source: ZAMPOST

6.0. MID-YEAR SECTORIAL POLICY AND REGULATORY REVIEW

ZICTA undertakes periodic assessments on the policy and regulatory environment in the ICT sector that are aimed at identifying any positive enablers to the operations of the players in the sector as well as establishing any existing or emerging constraints in the business environment that could limit growth. The assessments are based on qualitative interviews with all the operators on the market. As part of the assessments, operators are also engaged to provide proposals on how the identified challenges could be addressed as well as how the general business environment could be enhanced. In June, 2023, the Authority undertook the mid-year sectorial policy and regulatory review which would inform part of its focus in the second half of the year. The sentiments on the business environment from the industry are outlined in the ensuing sections.

6.1. Positive Factors Influencing Growth on the Market

- a) **Investment in Telecommunication Infrastructure:** A number of operators indicated that they continued to invest in their networks to extend their reach and improve the reliability of their networks a major positive attribute to their growth in the first half of 2023. Notably there were extensive investments in fiber infrastructure aimed at increasing the data transmission capabilities of the operators as well as meeting the growing demand for data on the market. In addition, a number of telecommunication sites were deployed to align with the extending geographical boundaries for cities and towns as well as the establishment of infill sites to match the capacity needs due to the growth in demand.
- b) **Introduction of Innovative Service Offers:** Service providers reported that they had made significant changes in their product offers to respond to the changing patterns in communication needs for their customers. These innovations in product development were aimed at ensuring that the products on offer are responsive to consumer usage patterns and affordability. This was also a useful strategy for growth and ensuring that operators maximize their revenue from the market.
- c) **Deployment of 5G and Monetisation of 4G Network:** Operators indicated that there has been a significant improvement in the uptake of data products in the country which has prompted the increased investments in 4G networks as well as the latest deployment of 5G Network by MTN and Airtel Zambia. The operators expressed commitment to continue investing in both 4G and 5G networks to match the growing demand for data products.
- d) **Investment in Customer Care and Cybersecurity Systems:** some service providers of ICT services indicated having invested in the improvement of their customer service systems aimed at ensuring that they enhance consumer welfare and redress for customer complaints. Customer care services were recognized a growing key differentiator among the providers. The operators also reported that they had invested in training programmes for their customer care staff to ensure that they were adequately equipped to respond to consumer inquiries and any cyber related incidents. In some instances, operators have adopted artificial intelligence driven tools for automated assistance such as chat box platforms.

- e) **Cabinet Approval of the ICT Policy and Development of the Digital Transformation Strategy:** Operators expressed their support and appreciation of the efforts being made by the Government through the Ministry of Technology and Science through the cabinet approval of the revised National ICT policy as well as the ongoing development of the Digital Transformation Strategy. These documents were expected to provide details on the medium term strategy and focus of the Government on the ICT sector as well as ensure that the policy was aligned to current developments on the market.

6.2. Constraints to Growth on the Market

The sectorial policy and regulatory review undertaken at the end of June, 2023 through extensive consultations with operators revealed the following challenges:

- g) **Deterioration in the Macro economic Environment:** Operators continued to highlight the challenges associated with the prevailing macro-economic environment. Notably, the depreciation of the local currency, rising inflation and high interest rates were noted to have increased the cost of acquiring key inputs for their operations as well as limited their prospects on profitability.
- h) **Delays in Issuance of Statutory Instruments:** There was a noted concern on the delayed issuance of statutory instruments that would operationalise the legislation on cyber security, data protection and electronic transactions.
- i) **High tax incidence in the ICT sector.** The tax burden in the ICT sector was considered high in spite of the harmonisation of the general corporate tax rate from 35 percent to 30 percent. Particularly, the excise duty of 17.5 percent applied on airtime was reported to have a direct effect of increasing the cost of services and consequently reduced the pace of adoption as well as intensity of usage of ICT services.
- j) **Delays in Approval for installation of infrastructure:** Operators indicated that there were delays by the Zambia Environmental Management Authority (ZEMA) in obtaining approvals for installation of infrastructure such as the construction of communication towers.
- k) **Rising energy Costs:** The cost of diesel which is a key input in the provision of services remained significantly high over the first half of 2023. In addition, following the change of frequency of adjustments in the pricing to monthly, this has led to more periodic variations in the price of fuel. Operators indicated that the cost of fuel adversely affected the cost of providing services as fuel was a key input in the provision of ICT services.
- l) **Low Awareness on Cyber Security Risks:** Operators identified cyber security risks as a growing challenge in the country. The incidence of these risks was particularly of concern given the growing number of users of ICT services and value added services such as mobile money. However, it was also observed that the extent of awareness of the existing risks and mitigation strategies among users of ICT services was low.

7.0. OUTLOOK FOR THE ICT SECTOR IN THE SECOND HALF OF 2023

The outlook for the second half of 2023 based on the trends noted on the market as well as sentiments gathered from operators are summarized below:

- a) **Increased Participation in International Data Services:** The Authority issued licenses to additional players in the international data services market segment. The increased participation of international data service providers will assist with deepening competition in the provision of such services which would in turn improve quality of service, coverage and pricing outcomes.
- b) **Growth in Uptake of ICTs:** The demand for ICT services is expected to continue on a positive trajectory mainly on account of the increased relevance of services such as mobile money as well as social media adoption.
- c) **Macro-economic outlook and its implications:** The overall macro-economic environment presents some risks related to exchange rate movements and its pass-through effects on inflation. However, efforts by the Central Bank to manage these risks through its monetary policy interventions are likely to restore stability.
- d) **Investment in Infrastructure:** The continued investments in backbone and metro fiber networks as well as telecommunication sites by operators is expected to extend coverage and improve quality of services. It is anticipated that mobile network operators will continue investing in their 4G networks aimed at extending broadband coverage. Two Mobile Network Operators have now launched 5G services and are expected to expand to more areas while other players may equally launch similar technologies. Additionally, the government through the universal access and service fund is poised to deploy over 100 communication towers in unserved and underserved areas over the medium term.